A MODEL OF THE CONTRIBUTION OF INFORMATION COMMUNICATION TECHNOLOGY TO THE TOURISM VALUE CHAIN FOR PRO-POOR BENEFITS IN RWANDA

by

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DECLARATION

I, Ernest Safari, student number 204223083, of the Cape Peninsula University of Technology, hereby declare that declare that the content of this research represents my own unaided work, and that this thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

SIGNATURE  **DATE: 2 DECEMBER 2017**

ABSTRACT

Prior studies have shown that the information communication technology sector worldwide is perceived as a transformative and enabling tool for the other economic activities to improve citizens' lives. In a Rwandan context, information communication technology integration in economic sector activities such as tourism, with the adoption of a value chain approach, is thought to be an answer to a number of social and economic challenges, including unemployment, customer care services, and poor information knowledge. In combination with the tourism sector, it is possible that job creation opportunities could benefit unemployed Rwandans, particularly the young, where information communication technology is identified as a business in itself, and an enabling tool to improve inter-economic and crosscutting activities in a growing economy. Despite mixed results from various studies, information communication technology for a tourism village could be an enabling tool for national and regional development, if priority focus on ICT and tourism quality infrastructures is maintained. Research on the evolving nature of the information communication technology sector, through tourism activities in Rwanda, could yield many off-farm jobs besides solely agrarian activities.

The study was conducted on an extensive scale, in order to facilitate the generalisation of the results, employing 720 tourism stakeholders' surveys, ten interviews with government tourism officials, and ten focus group discussions to garner both quantitative and qualitative data. A mixed research method was used to minimise possible research bias and maximise the accuracy of the findings in the four provinces and Kigali City in Rwanda.

Of the 720 questionnaires distributed, 615 were usable. Regarding the interviews with government officials, focus group discussions, field observations and secondary data analysis, the researcher found that the information communication technology contribution to tourism stakeholders' economic lives was at variance with residents' perceptions in the provinces and districts, and contradicted the information communication technology benefits of connectivity, internet accessibility and usability in their locality. It was also confirmed that information communication technology contributions to tourism stakeholders were at a very low level, where the contribution was limited to telephone subscriptions and their uses, for example for mobile money transfers. The future of information communication technology contributions to tourism stakeholders is positive, if integrated value chain approaches are adopted to benefit poor communities at a tourist destination being visited. A model of an information communication technology village for the development of a tourism village is proposed. This could serve as a catalyst to measure the impacts on both the information

communication technology and tourism sectors discussed in this study. More importantly, it was clearly found that the culture of approaching local communities in the process of policy drafting, or any developmental programme, is not present in Rwanda, and this was shown as a critical issue because of the costly nature of implementation of changes. Consequently, this study found that there was potential to support projections for information communication technology policies to achieve the objectives of sustainable development through tourism, promoting rural development, and a reduction of poverty in general.

Key words:

Information communication technology

Tourism value chain

Pro-poor benefits

Sustainable tourism development.

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DEDICATION

Firstly, I dedicate this work to Almighty God who provided all means for me to achieve this work. Secondly, I dedicate this work to my wife Anne Clarisse Burundi and my daughter Shami Ndiho Divine, without their prayers, patience, support, love and care, none of this work would have been achieved. You are and will always continue to be the most incredible gifts in my life.

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GLOSSARY

Terms/Acronyms/ Abbreviations	Definition/Explanation
3G	Internet of third generation
4G	Internet of fourth generation
AfT	Aid for Trade
AISI	African Information Society Initiative
AMIS	Agricultural Management Information System
APF	African Partnership Forum
B2B	Business-to-business
B2C	Business-to-consumer
BDC	Business Development Centre
BOP	Balance of payment
CBO(s)	Community-based organisation(s)
CBTO(s)	Community-based tourism organisation(s)
CMU	Carnegie Mellon University
COMESA	Common Market for Eastern and Southern Africa
CSO(s)	Civil society organisation(s)
DFID	Department for International Development
DOT	Digital Opportunity Task Force
E&M	Evaluation and monitoring
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
EFS	Electronic filing system
EUREP-GAP	European Retailer Produce Working Group - Good Agricultural Practice
FLM	Fetakgomo Local Municipality
G8	Great Eight Research Group
GKP	Global knowledge partnership
GVC	Global value chain
ICT	Information communication technology
ICTD	ICT for Development
ICT	Information and communication technology
ICT village	Refers to an integrated model designed to fight poverty as a response to the first Millennium Development Goal (MDG) of the United Nations (UN), by providing high technology with low-cost solutions in the study area

	(UNESCO, 1997:1).
IT	Information technology
ITU	International Telecommunication Union
KFTZ	Kigali Free Trade Zone
LCB	Local capacity building
LEDCs	Least developed countries
Mainframe computer	A large, fast, and very powerful computer typically used by large businesses and government agencies, banks, airlines, insurance companies, and any organisation with hundreds or thousands of customers.
MDG	Millenium development goal
MINEDUC	Ministry of Education of Rwanda
Minicomputer	A medium-sized computer that is faster, more powerful, and more expensive than a workstation, but less than a mainframe. Possibly small businesses and divisions of larger companies would use these.
MyICT	Ministry of Youth and ICT
n.d.	No date
n.p.	No page
N/A	Not applicable
NEPAD	New Partnership for Africa's Development
NGO(s)	Non-governmental organisation(s)
NICI	National Information and Communication Infrastructure
OECD	Organisation for Economic Co-operation and Development
OLPC	One Laptop Per Child
OpenMRS	Open-source medical records system
ORTPN	Rwanda Office of Tourism and National Parks
PDA	Personal digital/data assistant
PDS	Property distribution system
Personal computer	A small desktop or portable computer based on a single silicon chip called a microprocessor. This category includes Apple's Macintosh and IBM's Aptiva.
PMS	Property management systems
PPT	Pro-poor tourism
Primary industry	The conversion of raw material into primary goods and the creation of raw materials for the secondary industry. It includes agriculture (cultivation of animals, plants, food), agribusiness (farming, contract farming, seed supply, co-operatives, animal husbandry, processing and farm machinery), fishing (catching of fish, fish farming and commercial fishing), mining (extraction of coal, gold, diamonds), forestry (plantation development, production of wood, wildlife management, water quality

	management, watershed management, erosion control and recreation), and quarrying (extraction of rock, sand, building material, road material). The reference to Secondary and Tertiary Industry (n.d.) discusses into which category forestry should fall
PRS	Poverty reduction strategies
Pro-poor tourism	Ashley (2007:18) in her Pro-Poor Tourism (PPT) working paper explained that PPT is tourism that results in increased net benefits for poor people. PPT is not a specific product or niche sector but an approach to tourism development and management.
Quaternary industry	Is a relatively new type of knowledge-based industry dealing with technological research, design and development. It includes information technology, computers, communication services, research and development, product design, financial planning, knowledge-based services, the media and pharmaceuticals.
RDB	Rwandan Development Board
RRA	Rwanda Revenue Authority
SADC	Southern African Development Community
Secondary industry	Includes refining, light engineering, industrial engineering, electrical engineering, civil engineering, electronics and electronic engineering, manufacturing, production and construction.
SNV	Netherlands Development Organisation
SQF	Safe quality food
Supercomputer	This is the largest, fastest, and most powerful type of computer. It began as a tool used to design nuclear weapons, rockets and other military devices which required an enormous number of calculations. Today, they are used by businesses and universities for a wide variety of commercial and scientific applications. Administrative functions of organisations, such as clearing cheques, taking reservations, processing claims, tracking sales, and taking inventory, require the speed and power that only a mainframe can provide.
Tertiary industry	Known as the service industry, it deals with services and the distribution of finished goods. It includes government services RRA, postal services, the defence force, the police), local government services, financial services, education, healthcare, banking, insurance, life assurance, investments, public health, waste removal, accounting services, legal services, business consulting, news media, hospitality, events management, hotels, B&Bs, travel, car hire, tourism and tourist guides, retailing, wholesaling, franchising, real estate, pest control, distribution services, transport, logistic services (import agents, export agents, freight forwarders and entertainment) and sales (motor cars, trucks, clothing)
TIGA	Technology in Government in Africa
TIM	Travel Industry Management
Tourism value chain	According to Yılmaz and Bititci (2006a) the tourism value chain starts with the customer order. Customers or tourists have some alternatives when they purchase the tourism product. They can either arrange their travel plan with the help of tour operators or outbound travel agents

	(package travel)
Tourism village.	This refers to a model of making tourism working for the local communities in order to fight poverty at the local governments.
TRACnet	Central collection system for storage of clinical health information
TracPlus	Central collection system for storage of clinical health information
TRASA	Telecommunications Regulators' Association for southern Africa
TVC	Tourism value chain
TVCD	Tourism value chain development
TVET	Technical and Vocational Education and Training
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNWTO	United Nations World Tourism Organisation
Value chain	Kaplinsky and Morris (2001:4) identify a value chain as the full range of activities which is required to bring a product or service from conception through different phases of production (involving a combination of physical transformation and the input of the services of various producers) and delivery to final consumers, while final disposal after use is added to make it a closed chain.
VCF	Video conferencing facility
Virtual education	Virtual education is synonymous with online learning. Virtual education, in the past would have included distance education but in the second decade of the 20th century it would usually imply learning via the Internet without any formal requirement to attend a physical campus (Virtual Education, n.d.).
Workstation	A desktop computer that is faster, more powerful and more expensive than a personal computer. This category is used mostly by engineers, architects, scientists, commercial artists and others who need computers for speedy number crunching and graphics applications.
WSIS	World Summit on the Information Society
WWW	World Wide Web

CHAPTER ONE
INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

The contribution of information communication technology (ICT) to the economic lives of tourism stakeholders in Rwanda is a research project in response to poverty alleviation. The study was undertaken in Rwanda, a country where the past, present and future are all relevant.

Often strategies by African governments to showcase their country after struggles, as in the Rwanda case, are not open and transparent. International marketing is undertaken, designed to attract investors, funders, supporters and partners to the big themes like ICT and tourism to meet the Millennium Development Goals (MDGs), but when the money is obtained, the rich continue to be rich and poor become poorer. There is a confidence gap between the wonderful speeches and practical reality. It is in this context that the researcher investigated the effects of ICT in Rwanda from 2001 to 2015, particularly its impact on the pro-poor benefits in the tourism value chain in the vibrant Western and Northern regions, both of which have a flourishing tourism sector.

Within higher education, there is constant innovation and changing approaches, seeking solutions to the problem of poverty in developing countries. In Rwanda, since the end of the 1994 genocide against the Tutsi, the country has developed exponentially in many areas of industry. The primary, secondary, tertiary and quaternary industries as envisaged in this study are defined in the glossary on page xvi.

As the quaternary industry deals with a new type of knowledge industry, this research project was designed to investigate its impact on generating income in Rwanda to eradicate poverty through pro-poor tourism projects by using the tourism value chain (TVC) approach. The information technology (IT) movement and TVC approach gave rise to a campaign called One Laptop Per Child (OLPC) in primary schools. However, little thought was given to how IT could positively influence the effective implementation of TVC for pro-poor benefits in destinations with a flourishing tourism sector.

Whilst some research has begun to examine the functionality of TVC analysis for pro-poor impacts, little attention has been paid to the importance of IT, in particular to the computerisation of all tourism businesses, and quality of records kept by tourism businesses. Some research studies, such as pro-poor analysis of the Rwandan tourism value chain by Ashley (2007:3) and the Gambian tourist value chain and prospects for pro-poor tourism by Mitchell and Faal (2008:18), have shown that the TVC analysis faced the challenges of

having inaccurate information but no studies have been conducted on the contribution of IT to tourism stakeholders for pro-poor benefits. None of the three ICT plans for Rwanda stipulated how the tourism sector could be geared and be beneficial to all parties in the chains. Hence, the research is important to also examine what the contribution of IT could be towards tourism stakeholders for pro-poor benefits and integrate this into the ICT plans of the country. This research aimed to develop a framework for ICT for tourism village to test the integrative measurement model development in the TVC analysis (see the Aim under 1.3). This should improve accuracy in TVC analysis practices in Rwanda, which the researcher will propose for the third plan scheduled to run after 2015 (Republic of Rwanda, n.d.:6). This could speed up the introduction of services to exploit IT in tourism businesses, at the same time positioning the country ahead of regional rivals.

1.2 Problem statement

According to Aaker, Kumar and Day (2003:45), a research problem is "a gap between what was supposed to happen and what did happen between an objective and an accomplishment".

There is some evidence that tourism is growing rapidly in parallel with ICT in Rwanda, and one of the goals of ICT is to drive sector development for economic growth. However, although the country has established ICT plans to transform an agrarian society into a sophisticated knowledge-based economy it is still unknown whether the contribution from ICT is understood or applied by tourism stakeholders, and whether communities benefit from ICT contribution in terms of pro-poor contributions.

Therefore, although there is a reasonable level of local and international tourism, local communities in the Western and Northern Provinces of Rwanda have not benefited sufficiently from such tourism due to the perceived lack of ICT structures.

1.3 Study aim

The aim of the study was to explore the role ICT structures can play to improve the pro-poor benefits of local and international tourism in local communities in the Western and Northern Provinces of Rwanda.

1.4 Study objectives

The primary objective of the study was to determine the contribution of ICT to the tourism sector of the Western and Northern Provinces of Rwanda to answer the possible knowledge gap and improve the lives of community members in the five study areas.

Supporting objectives to be addressed are:

- To determine the expectations of both service providers of tourism businesses and local communities of destination that will successfully attract tourists to the area;
- To determine how ICT can be integrated;
- To investigate the structures of ICT that can contribute to the economic lives of tourism stakeholders;
- To investigate the relationship between tourism marketing strategy and ICT structures that will make TVC more effective in the area; and
- To propose a general framework to guide stakeholders on how to use ICT structures to support local and international tourism.

1.5 Study questions

This research sought to address the following questions:

1. What are the expectations of service providers and local communities at Rwandan destinations to attract tourists?
2. How can ICT be integrated into TVC development?
3. What ICT structures can contribute to the economic livelihood of tourism stakeholders?
4. What is the relationship between tourism marketing strategies and ICT structures to make TVC effective?

1.6 Delineation of the study

The research was limited to Rwanda, with special focus on the Western and Northern Provinces, and to tourism businesses, customers and skills and service suppliers in the study area. Therefore, the opinions gathered from various respondents in the study, and the conclusions and recommendations emanating therefrom may be deemed representative of all players in the Rwandan tourism industry.

Furthermore, as the study drew heavily on the already established agricultural value chain, and was confined to the tourism business sector which uses or wishes to use IT, what emerged from the research could be generalised to issues of other supply chain members in the industry in Rwanda.

Figure 1.1 represents the study area, specifically the tourism-rich Western and Northern Provinces of Rwanda and Kigali City.

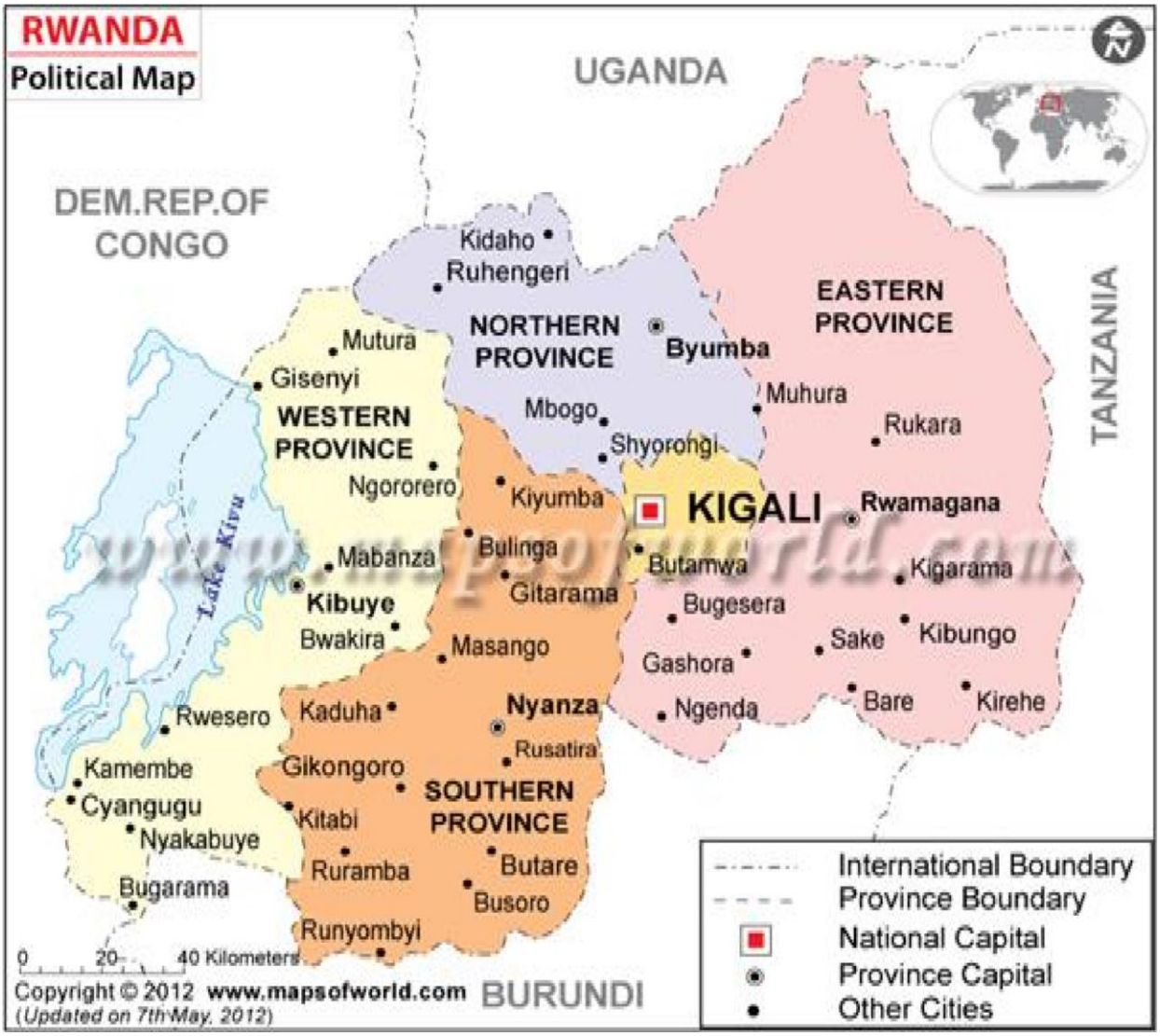

Figure 1.1: Map of Rwanda (www.mapsofworld.com, 2012)

1.7 Study framework

According to Murphy's argument, tourism is an industry that uses the community as a resource, sells it as a product and in the process affects the lives of everyone (Murphy, 1980:1). Murphy continues, stating that the community as a product is an amalgam of the destination's resources. The researcher supports this argument and values the communities' perceptions on destination planning and development of social-economic transformation of the people.

However, many developing-country governments within the East African Community (EAC), such as Rwanda, do not ensure that the tourism sector is developed according to the desires and needs of the host community, simply because these governments underestimate the perceptions of communities regarding further development, as is happening in the capital cities.

1.8 Main theoretical framework

The theory to be tested is based on Porter's (1985) Value Chain Development, with specific reference to the tourism sector for pro-poor impacts. According to Ashley, Boyd and Goodwin (2000) and Ashley and Mitchell (2008) who consider the challenges facing poor communities and the use of tourism to counter these, and Chen and Ravallion (2008) who write about international poverty, a range of activities are performed within a firm in order to produce a certain output. This might include the conception and design stage, the process of acquisition of input, production, marketing and distribution activities and after-sale services. All these activities constitute the 'chain' which links producers to consumers and each activity adds value to the final product (Engelen, 2011).

1.9 Practical framework of the study

It is believed that community involvement in the establishment of ICT villages in Rwanda, especially in the Western and Northern Provinces, will boost pro-poor benefits in the tourism sector. The pro-poor concept is discussed in detail in section 3.6 of Chapter Three, literature review.

1.10 Research contribution

The contribution of this study is twofold: to the scientific community and community of practices.

1.10.1. Scientific community contribution/body of knowledge

The outcome of the research provided:

- Evidence of the need for an ICT structure to influence tourism in local communities to benefit pro-poor needs, and
- A framework for a tourism strategy to enable the tourism value chain to be more effective in Rwanda, thus enabling supporters and influencers to access accurate information and to utilise tourism value chain analysis for pro-poor benefits.

1.10.2 Community of practices contribution

How would communities benefit from the study? Communities at the destinations in the Northern and Western Provinces could be uplifted by ICT structures to improve tourism businesses that should lead to pro-poor benefits. Improvements, which could result from ICT becoming an enabling tool of tourism impacting on pro-poor, include:

- video conferencing;
- teleconference centres;
- cyber coffee shops;

- computer laboratories;
- access to the network and wires at the destinations;
- tourism business record-keeping;
- banking system;
- market access;
- schools access; and
- re-skilling to reduce unemployment.

Although Singh (2012:3-4) asserts that the community of practices should be improved into reflexive networks, the researcher tends to disagree, because Singh refers to the real people who subconsciously should be linked to each other to solve their problems. The strategy to which Singh refers is still in a theoretical framework, while the contribution of communities to practices answers the question of how this theory or strategy framework solves the real problems of real people.

1.11 Research design and method

The research included an action research element to investigate questions raised in the study, which were primarily targeted at tourism businesses within the two regions that have flourishing tourism sectors in Rwanda, being the Western and Northern Provinces. Stumpf, Sandstrom and Swanger (2016:1692) stress the need to bridge the gap between research theory and practical applications for sustainable tourism development, therefore a mixed grounded methodological approach was used to collect both qualitative and quantitative data. The data collection instruments were survey questionnaires, interviews, focus groups and observations to gather both quantitative and qualitative data.

There are two ways to collect data: the first method, deemed not appropriate for this study, requires a study of all elements within the population (census), which was impossible due to financial and time constraints. The alternative method is to collect data from a proportion of the population adopting a sampling frame.

Respondents were selected from random number generating that was used to create a list of random numbers from the district's electronic database of the two provinces and Kigali City (Kotler & Keller, 2009:140). This guaranteed that the sample was representative and ensured generalisation of the survey results to the entire population of Rwanda. A sampling survey has the advantage of enabling one to make inferences about the population, which is quick and economical (Struwig & Stead, 2001:122).

This method was deemed appropriate for this study because the focus was on the sample size to be surveyed and this was not a very large sample. In addition, the identification of the

sample size was enabled by the number of subgroups (independent variables) since time and financial constraints were important considerations in this study.

1.12 Structure of the study

Chapter One introduces the study and gives a background to the research. The problem statement and related problems are stated, as well as the research objectives and research questions. The delineation of the study is explained, as well as the significance of the research. The main conceptual framework and main theoretical framework are discussed and the research design is described. The chapter concludes by outlining the structure of the study.

Chapter Two investigates the meaning and importance of ICT as an enabling tool in creating an effective tourism value chain (TVC) from which the poor can benefit. The evolution of ICT is discussed and the researcher establishes the link between ICT and the tourism sector. A perspective on pro-poor tourism globally, within Africa and specifically in Rwanda, is given. The possible impacts of ICT on a tourism value chain for pro-poor benefits in Rwanda are considered, based on the extensive Rwandan agricultural value chains.

Chapter Three examines theoretical issues and their implications in the Rwandan context and multidimensional impacts on the communities of the tourism destinations. Also investigated are tourism developmental planning issues in Rwanda, tourism demand and the tourism supply chain, ICT applications in stakeholders' economic lives in Rwanda, poverty concepts and the poverty theories, and pro-poor impacts.

Chapter Four discusses the research design and the advantages, disadvantages and relevance of the methodology used in the study. Qualitative, quantitative and mixed methods approaches are explained to provide a comprehensive understanding of the research topic. Interviews, focus group discussions, and questionnaires were utilised in the data collection process.

Chapter Five presents the findings from the questionnaires, interviews and focus group discussions that provided the basis for the establishment of the social and economic structures, focusing on two destinations, the Western and Northern Provinces of Rwanda. This chapter also presents and discusses the data from field-based research in the Western and Northern Provinces, to explore the contribution of ICT to tourism activities that involve individuals and communities.

Chapter Six focuses on the development of a model for the contribution of ICT to the tourism value chain for pro-poor benefits in Rwanda. The components of the proposed model are discussed.

Chapter Seven concludes the study and suggests strategic recommendations.

1.13 Summary

In summary, this first chapter provides an introduction and background of the study, the problem statement, study aim, research objectives and questions, delineation of the study and its significance, main conceptual framework, main theoretical framework, practical framework and research contribution. Chapter One also briefly describes the research design, methodology and sample. It concludes with a chapter overview and summary of issues covered in this study.

CHAPTER TWO
INFORMATION COMMUNICATION TECHNOLOGY

2.1 Introduction

Chapter One discussed the research objectives and questions which could be partly answered by reviewing relevant literature. The aim of a literature review is to obtain a view of the agreed academic opinion on the study (the connections), to discover the disagreements on the study (the contradictions) and to find opportunities (the gaps) for developing and expressing new proposals. The Southern African Languages & Literatures Guide (n.d.) states that a thesis is a proposed idea, an antithesis is a opposing proposed idea, and a revised idea incorporating the opposing idea is arrived at (a synthesis). This revised idea (synthesis) sometimes sparks another opposing idea, another synthesis, and so forth. Fink (2010:3) supports this explanation in stating that a literature review is a systematic, explicit, and reproducible method for identifying, evaluating, and synthesising the existing body of a completed and recorded body of knowledge produced by researchers, scholars, and practitioners.

This chapter investigates the meaning and importance of ICT based on the writings of, amongst others, Alzouma (2005) and Torero and Von Braun (2006), as an enabling tool in creating an effective tourism value chain (TVC) from which the poor may benefit. Carmody (2012:1233-134) has written quite extensively on 'informationalisation' of poverty in Africa, while Castells (1999) identified almost 20 years ago the need to harness ICT in social development. The evolution of ICT is discussed and links established between ICT and the tourism sector, based on Mazimhaka's (2007) descriptions, and are addressed using information offered by Foster and Graham (2014). A perspective on pro-poor tourism globally, within Africa and specifically in Rwanda, is given, and the possible impacts of ICT on a tourism value chain for pro-poor benefits in Rwanda, as expounded by Hameed (2007) and Kalinowski and Park (2016), are considered, based on the Rwandan agricultural value chains.

Tourism development planning issues in Rwanda are discussed, as well as tourism demand, tourism supply chains, local community participation in tourism planning, and outputs and outcomes of tourism planning, where references is made to Potter, Binns, Elliot and Smith (2008).

2.2 Meaning and importance of ICT as an enabling tool

Before proceeding, it is prudent to offer a brief explanation of the Internet and the Web, the best-known ICT platform today, and the differences between the two. ICT is the acronym for

information and communication technology and is defined as "…a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information" (Okello, Adhiambo & Martim, 2014:37).

Beal (2010) describes the Internet as a massive networking infrastructure, a network of networks. It connects millions of computers globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet. The World Wide Web, or simply the Web, is a way of accessing information via the medium of the Internet. The Web is an information-sharing platform that is built on top of the Internet. The Web uses browsers such as Internet Explorer, Firefox and Google Chrome to access Web pages, which contain graphics, sounds, text and video. The Web is just one of the ways that information can be disseminated over the Internet. The Internet, not the Web, is also used for e-mail, so the Web is just a portion of the Internet, albeit a large portion, but the two terms are not synonymous and should not be confused.

Before discussing the meaning and importance of ICT, one may ask what is ICT for development, and how does ICT for development relate to the tourism sector. Nadkarni (2008) and Unwin (2009) defines ICT4D (ICT for development) in relation to pro-poor tourism development, and Kramer, Jenkins and Katz (2007:6) explain that the ICT sector was a pioneer and a powerful catalyst in addressing the interests of low-income communities in developing countries, certainly needed in Rwanda (Republic of Rwanda, 2012). However, it is debatable whether this is the case in Rwanda as an example of a developing country. Rwanda is rapidly rebuilding its economy after the terrible genocide against the Tutsi of 1994. It is only now, some 20 years after the atrocities of the genocide, that the Rwandan leadership have realised that ICT could have a significant impact on the economy and particularly within the tourism sector, to create more economic opportunities, including for Rwandan residents (Internet Worlds Stats, 2015).

In recent years, there has been an increased interest in how computers and the Internet can improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings. Tian, Mak and Leung (2011), who discuss full and adjacent labour, note the contribution of tourism to regional GDP. The use of computers and the Internet is still in the embryonic stage in developing countries and these may be measured according to when they evolved, how many users, and how much it costs the attendants to access the facilities. From this perspective, it is understandable that a gap exists between the developed countries using ICT, and developing countries in need of ICT for their development, like Rwanda.

Although technology has evolved, it is still typically used in combination rather than as the sole delivery mechanism. For instance, the Kothmale Community Radio Internet uses both

radio broadcasts and computer and Internet technology to facilitate the sharing of information and provide educational opportunities in a rural community in Sri Lanka (Slater, Tacchi & Lewis, 2002:44). The same situation exists in the Indira Gandhi National Open University of India whereby combinations of print, recorded audio and video, broadcast radio and television, and audio on conferencing technology is commonly used (Wikibooks, n.d.).

How then does ICT relate to tourism? Buhalis and O'Connor (2005:11) speak of the Internet combining features of existing media offering inter-activity and accessibility, including education, while Buhalis and Sou Hyu Jun (2012) emphasise that ICT assists in travel planning and links to Central Reservation Systems (CSR). ICT is a crosscutting economic sector, which includes tourism and hospitality. However, little attention was given to how ICT can contribute to tourism and hospitality growth in Rwanda, particularly in the Western and Northern Provinces. With a comprehensive understanding of ICT and its components, Fourie (2008:8) explains that ICT includes a range of technology, and facilitates communication processing and transmission of information by electronic means, including both traditional ICT, such as radio, landline telephones, newspapers, TV and libraries, and new ICT such as mobile phones, landline computers, the Internet and fax. Fourie (2008) further notes that ICT is by definition a means of communication and information sourcing and manipulation. For this reason it is important to include traditional information sources/facilities, such as libraries and post offices, in areas where the general level of access to ICT is still growing, such as in the provinces of Rwanda. Libraries can form logical deployment points for ICT facilities if they are well placed and accessible to members of the community. Both types of ICT need to be promoted to narrow the digital divide between Kigali City and societies of more remote areas.

2.2.1 Information communication technology: a development context

The following sections will place ICT in a developmental context, followed by a discussion on ICT development in Africa (2.2.3), and then in Rwanda specifically (2.2.4).

There are four main ages that divide the history of IT (pre-mechanical, mechanical, electro-mechanical and electronic) (ICT and IT are used interchangeably and they mean the same in the context of simplifying concepts). Only the latest age (electronic) and some of the electro-mechanical age really affects us in the 21st century, but it is important to learn how we got to the point we are at with technology today (History of Information Technology, n.d.).

History informs us that during the 19th and the first half of the 20th centuries, considerable advances were made in the development of heavy industry. Since there was a change in emphasis from agriculture to industry, the period was known as the Industrial Revolution. In the latter half of the 20th century, electronics and light industries based on electronics became more significant. The advances in electronics and the invention of transistors and

integrated circuits made the development of the modern computer possible (Varley, 2001:12).

This author continues to explain that the movement of ICT in the 21st century, the large-scale production of cheap and fast computers with large capacities to store, retrieve and analyse information, has changed the emphasis of modern commerce and industry to information. The current period in our history is generally referred to as the 'information age'. We no longer need to remember vast amounts of information as there are computers to do this for us, but we do need to know how to use computer technology to access appropriate information rapidly on demand (Varley, 2001:13). The explanation of the evolution of ICT as it appears, does not give a clear, holistic picture of ICT as it pertains to the research topic. However, Laudon, Traver and Laudon (1997:238) indicated how ICT was notably changing other areas of our lives, such as medicine, education, science, popular culture, business, leisure and sports.

According to Bates (2001), the capacity for ICT had been growing exponentially and one of the ICT tools, the computer, has become extremely powerful. Satellite, fibre-optic and wireless technology has increased transmission capacity, and software developments such as multimedia authoring systems have made it easier to create digital materials such as electronic games, computer simulations and educational materials (Bates, 2001:1).

Globally, ICT started as hard copy and evolved into softcopy (digital document) which penetrated every sector of the world. ICT is continuously evolving and who knows where it will lead this generation. Many changes have happened in the primary, secondary, tertiary and quaternary sectors (as defined in the Glossary) in developed and developing countries. No country can ignore the expansion of ICT into areas such as health and social care, education, business and society. This argument is supported by Alzouma (2005) for digital technology in Africa.

The relevance of areas (schools, universities, hospitals, government offices, churches) is to bring the attention of the reader to an understanding of visible applications of ICT in real life. Bhasin (2012:131) urges the integration of ICT in promoting education and learning, explaining that the introduction of ICT tools like embedded computers, personal computers, workstations, minicomputers, mainframe computers and supercomputers have become common in the everyday life of Rwandan residents. Becton & Graetz (2001:107-108) discuss the need for training in the tourism and hospitality industries, while Cruz & Giles (2000:32) urge a community-service learning approach. This area is also important because it enables a broader understanding of the contribution of information communications technology to the tourism value chain for pro-poor benefits in Rwanda. Peters, Freshe and Buhalis (2009:397) note the problems encountered in starting and managing a business, and emphasise the

importance of lifelong learning for business opportunities. The computers mentioned above are explained in the Glossary.

ICT capacity will continue to grow rapidly throughout the world. This growth is mainly fuelled by commercial requirements but does create educational and work opportunities. However, for virtual education to be successful, a rigorous set of conditions needs to exist and the accompanying costs of investment and training are high. It would be naïve to believe that the developing world would be able to repay the high cost of ICT if the technological infrastructure is not in place (Bates, 2001).

Buhalis and Deimezi (2003) proposed ICT and e-tourism developments in Greece, in part supporting Castells' (1999) plea for ICT in globalised social development. With globalisation, governments tend to encourage the right environment for virtual education because they cannot afford *not* to expose at least a minimum number of their nationals to the benefits of virtual education, as pointed out by Bates (2001:25). He explains that the existing virtual education results from partnerships with more developed countries, collaboration between countries with similar cultures and stages of economic development, and well targeted, small-scale projects in order to assist in the development of capacity and skills in disadvantaged nations (Bates, 2001:25). Vallabh (2012) advocates the role of tourism SMMEs becoming significant players in the tourism economy of Rwanda.

2.2.2 Capabilities of ICT

IT includes communication technology, which ties together and transmits data throughout the different parts of a computer system and connects individual computer systems to other systems (Laudon *et al.*, 1997:27; Buhalis & O'Connor, 2005:10; Buhalis & Sou Hyu Jun, 2012). Organisations often use computer systems as part of an information system. An information system is a collection of computer systems, business procedures, and people working together to help organisations achieve their goals by converting raw data into usable information (Laudon *et al.*, 1997:27).

The extraordinary interest in ICT usage is a topic for debate nationally and internationally as explained by Hameed (2007). Miller, Esselaar, Hesselmark and James (2001) assert that countries conduct surveys, developing ICT policies, designing programmes and projects to enhance the exploitation of ICT for social and economic benefit (Hameed, 2007). Based on the research information regarding the ICT movement, developed countries and major organisation-supported business are benefiting immensely from the use of ICT (Kalinowski & Park, 2016).

The spirit of competition, according to Cunningham and Froschi (1999), has pushed ICT owners to expand their markets from internal out into the developing world. Thus 'electronic

commerce or e-commerce‘, ‘‘electronic business‘, ‘electronic government‘ have become ICT phenomena which boost the economic advantage of those who possess electronics over those who do not. To this end, some researchers, such as Laudon *et al.* (1997), Cunningham and Froschi (1999) and Bates (2001), conclude that after the world has become a village, because distance is no longer an obstacle, developing countries will also benefit from ICT but they will lag behind because they are consumers of other's ICT products. This aspect is clearly illustrated by Lewis (1992), while Buhalis and O'Connor (2005:7-16) emphasise the challenges in the process of management and marketing for tourism products and destinations.

Globally, the United Nations agencies are enabled by ICT to carry out their missions in developing countries. It is believed that the lives of citizens of the developing world will be transformed if they embark on new paradigms by using ICT in all aspects of their lives. In sensitising the developing world to the good practices of ICT, SIDA (2001:2-3) reports that United Nation volunteer agencies deployed 10 000 online sites in hospitals and clinics. This aimed to distribute ICT opportunities to developing countries for providing access to the latest medical information and a disaster response initiative, known as "First on the Ground". This will provide mobile and satellite telephones as well as microwave links for humanitarian relief workers in areas affected by natural disasters and emergencies. The United Nations does not advocate only technical assistance for developing nations but also advocates for financial assistance via the World Bank's InfoDev programme. This financial assistance funds well-assessed ICT projects in developing countries. These ICT projects can be either private or public and draw from the work of Buhalis and O'Connor (2012:8). It is agreeable that the majority of these projects are predominantly public or para-public. The latter include "E-readiness assessments" and "E-government studies" (SIDA, 2001:3). The discussion now considers ICT in an African context.

2.2.3 Information communication technology: an African context

This section considers some ICT developments in Africa relative to the thesis, and notes the part played by infrastructure, accessibility, and enabling environments to place the research into perspective.

At the 10th meeting of the African Partnership Forum it was revealed that for more than a decade ICT had played a key role in social, economic and political transformation for both public and private development (APF, 2008:3). For some countries in Africa, economic growth and poverty reduction is becoming a reality because of ICT applications (World Bank, 2010). As early as 1998 (Betz, 1998) for example in the sub-Saharan region, with specific reference to Rwanda, it is believed that Rwanda is advancing towards transforming the social and economic lives of its citizens. In general, the Government of Rwanda established that

ICT has applications in every sector of the economy and reduces unnecessary expenses in the area of choice (MINOLOC, 2013:61).

It is envisaged in Rwanda's Economic Development and Poverty Reduction Strategy (EDPRS) Phase 2 that improving the Internet and mobile phone infrastructure will reduce the costs of sharing information. As has been the case in other countries, business efficiency will be increased, agricultural and labour market efficiency will be improved through quick price and information sharing, and communication costs for consumers will be reduced. More importantly, the ICT applications are expected to enhance the growth of the mobile money sector through responding to the specific needs of businesses in the sector (Mazimhaka, 2007:492). This will facilitate access to financial services between the period 2013–2018, which will yield substantial numbers of jobs in the sector through sales, repairs, servicing and software development (MINOLOC, 2013:61). These views enjoy some support from Tsegay and Maekele (2016:84) in discussing the access and inclusion of ICT education in sub-Saharan Africa, and Carmody (2012:131) in his discussions on informationalisation on poverty in Africa.

For more than a decade, many African countries were disadvantaged by not having access to ICT. Kinoti, Kimuyu, IFES Anglophone Africa and AISRED (1997:154) explain that it is the most important means of improving economic and social life. Although Africa's backwardness in science and technology is said to be a formidable barrier to development, some African initiatives taken in the process to become self-reliant in the fields of science and technology, and thus to overcome the technological barriers to economic and social development, are noteworthy, for example technology applications in agriculture, business and manufacturing.

Some ICT strategies have been drafted in some countries and started to be implemented by governments both nationally and regionally. However, it is unknown if those programmes were initiated in Africa, particularly Rwanda, or were imported. Although several efforts have been made to breach the digital divide (GMSA, 2011), the Africa Partnership Forum notes that interventions include diversity of ICT stakeholders, namely the Great Eight Research Group (G8), the New Partnership for Africa's Development (NEPAD), the UN Economic Commission for Africa (UN-ECA), the International Telecommunication Union (ITU), other UN organisations, international networks such as the Global Knowledge Partnership (GKP), various non-governmental organisations (NGOs), research development centres, bilateral donor agencies, development banks and many influencing private sector actors. However, nothing has stopped the visible separation between the northern and southern African countries (APF, 2008:3).

According to the Chennai Statement (2005), conventionalising ICT in poverty reduction strategies (PRS) is a key issue. It is believed that ICT in itself can be a business with which anyone can trade to facilitate the poverty reduction strategy process. Spenceley and Meyer (2012:298) note the link between tourism and poverty reduction, and Uwamariya, Cremer and Loebbecke (2015) advocate adopting E-Commerce for economic development in Rwanda. Poor people will remain poor, unless some measures are taken in their favour. Setting regulations and policies targeting pro-poor (called targeted pro-poor regulations and policies) can be regarded as a good start to equal access to ICT benefits. NEPAD (cited by World Bank, 2005:31) believes that "Better connectivity offers the prospect for African countries to transform their economies" and Pomerantz (2004:40) believes that African nations will change drastically, depending on a firm commitment to ICT development from developed countries.

Although there are indications that Africa certainly has made some progress in terms of science and technology, there is a need to be realistic about the remaining gap between the Northern hemisphere (developed countries) and Africa. Certain African countries, like Rwanda among others in the East African Community, aspire to become self-reliant socially and economically but they do not grasp that the key to that transformation is science and technology. For instance, the countries of the Northern hemisphere have invested vast sums of money and tremendous effort into research and development and have clearly earned the scientific knowledge and technology they possess (Kinoti *et al.*, 1997:166-167).

These authors argue that the majority of factories and manufacturing industries are of Northern hemisphere origin, providing medicine products, fertilisers, textiles, military equipment, automobiles, telecommunication equipment, office stationery, machinery for processing agri-husbandry products, mining equipment, energy exploration and production equipment, and road construction equipment. Also of Northern hemisphere origin are the scientific experts—engineers, agriculturalists, physicians and technicians employed in Africa as consultants for research and development (R&D) institutions.

A contribution by ICT to the tourism value chain for pro-poor benefits is not taken as an isolated topic from other hot debates on the continent, as noted by Foster and Graham (2014) in their discussions on the impact of ICT (and tourism) on Rwanda. For instance, in developed countries there are challenges of climate change due to industries and factories attempting to overcome climate change impacts by the use of modern technology. Once again, it is believed that traditional African knowledge and technology can be a source of important new ideas, and simple but effective technology that is affordable. The green movement, the green economy, green society and culture, green politics, green technology,

and green tourism can be an African reality. If China, Japan and Korea have succeeded, African nations can also succeed (Spenceley & Meyer, 2012:299, 306).

Rwanda, which is rebuilding its economy after the devastating effects of the 1994 genocide, today borrows (ex) USA President Obama's "Yes we can" slogan. The burden of balance-of-payment (BOP) debt may be reduced through exports and bilateral or multilateral co-operation. The irony of this is that Africa has become a consumer of products that are made from raw materials sourced in Africa. For prosperity in African countries to be achieved, Africa needs to exploit her own available resources and become a manufacturer of goods, not remain merely an importer (Ashley *et al.* 2000: 1-6).

This is seen in the use of telephone and Internet networks in our daily lives. For instance, it is cheaper for an African to phone America or Europe than to call people within Africa. Gerster and Zimmerman (2003) report that within Africa a regional telephone and Internet network only exists in a rudimentary form (Murphy, Carmody & Surborgc, 2014). The fact that Africa lacks the financial means to install direct connections, the act of borrowing the North American and European connectors to connect Africa, is an economic trap. This explains why millions of US dollars yielded by African telephone companies go to feed the American and European economy every year. In brief, African countries were refused the ownership of ICT direct benefits, however, the international debate about uplifting the disadvantaged nations, notably African, has led to the success story that can be read nowadays in Africa.

For instance, Farrell (2007) and Gakuru, Winters and Stepman (2009:2) indicate that progress is taking place within Africa. It is reported that this is emerging across different types of technology, in which the Internet is becoming the common platform for voice, data and broadcast information. The APF (2008:6) explain that the late development offered potential for cutting the costs of network deployment, along with providing new synergies, products and mediums for exchange.

The APF (2008) further points out that the Internet became a multi-dimension tool to reduce the costs incurred by African companies and governments some 100 years ago. Now, as in 1998 (Buhalis, 1998:410-412), the Internet and mobile phones serve as a mechanism for the dissemination of information from primary to quaternary industries, a broadcasting system, a platform for individuals to interact, and a market-place.

For example, Gakuru *et al.* (2009:2) opine that throughout Africa ICT has become increasingly integrated into information disseminated to farmers. These authors further indicate that radio and TV programmes feature agricultural information, and they highlight the importance of establishing telecentres in remotes areas to provide information on education, agricultural and health issues, and equip rural citizens with skills on how to use computers and provide basic literacy, thereby agreeing with Alzouma (2005). Some publications on the

ICT explosion revealed a remarkable virtual explosion of mobile phones in many African countries; over 200 million had been recorded by early 2007, and to date the number might have changed exponentially in the rest of the region (Gakuru *et al.*, 2009). Wilson, Ugwanta, Eneje and Okwo (2014:22) argue that rural areas are also beneficiaries of the mobile phone explosion. An international report by the ITU (2005) reveals that less than 3% of the peoples in sub-Saharan Africa have a fixed line telephone connection, while 7% of rural households had a mobile service subscription in 2006. The Pew Research Center (2015:7) confirmed that mobile networks in sub-Saharan Africa show a dramatic growth, with slight increases in landline penetration, supporting the Global Mobile Systems Association.

For instance, in a 2014 survey of seven sub-Saharan African countries (Ghana, Kenya, Nigeria, Senegal, South Africa, Tanzania and Uganda) the findings indicate that a median of only 2% across these nations reported that they have working landline telephones in their houses, while a high median of 97% reported that they have none (Pew Research Center, 2015:7).

The APF (2008) indicates some inclusive factors as a function of the current spread and use of ICT in selected areas of Africa. These factors include:

Infrastructure

Being interdisciplinary, ICT has become a crosscutting issue and transportation is not an exceptional area of ICT application. In their paper investigating the value of location information in taxi dispatching services, Zhengchuan, Huilang, Yufei and Hong (2005) explain that a unique feature associated with the mobile communication infrastructure is the location identification capability by GPS and other network-based services. This means that with technology related to the transportation industry, the driver can easily identify the passenger and he can deliver a service related to his/her location based on location based services (LBS) incorporated in the dispatching systems already installed in the vehicle. Guermazi and Satola (n.d.:26) support the relationship between ICT infrastructure and transport by indicating that transport is a typical area of ICT application, but also transportation equipment, such as vehicles, are the products of engineering technology, without which the ICT application cannot be available. The same authors continued to witness the inclusiveness of ICT equipment such as transport and electricity as emerging technology in practice. Relative progress and availability of transportation and energy infrastructure in Africa is associated with the high level of dependence in the vast majority of African countries, as pointed out by Guermazi and Satola (n.d.:26).

Accessibility

In records of characteristics of public access facilities, the existence of relevant content and adequate capacity at different levels in the country's governance, and promising experiences

with respect to mobile telephony, there is a gap between good content and its implementation to public accessibility. This might be caused by limited funds and limited quality skills. It is obvious that mobile phones in Africa have become a popular ICT tool from urban to remote areas. Nevertheless, in the sub-Saharan African region, there is a marked difference. GSMA (2014:3) reports, supporting Alzouma (2005), that the contribution of the mobile industry amounts to 5.4% of overall gross domestic product in the region, which is expected to increase to 6.2% by 2020.

GSMA (2015:21) notes that in 2013 the industry created employment for approximately 2.4 million people and this number is expected to grow to 3.5 million by 2020 (GSMA, 2015:21). Peters *et al.* (2009) identify the importance of entrepreneurship in creating employment. In addition, Carmody (2012:132, 138) and GSMA (2015:22) indicate that the mobile industry has had a remarkable impact on national economies worldwide, particularly in the areas of job creation and economic growth through the taxes and licensing of operations. High-speed mobile networks contributed to many aspects of economic, political and social life in both developed and developing regions. Although there has been remarkable progress to date, the reality is there remains a significant proportion of the population in sub-Saharan African countries who do not have access to the Internet, compared to other parts of the world. This lack of Internet access, or even existing but unsecured because of other internal dynamics such as a shortage of electricity, improper housing, lack of IT skills and unsafe environment, has the potential to hinder development opportunities and prevent the region from truly engaging in the information age (GSMA, 2014:3).

Supportive enabling environments

ICT, being a new movement in Africa, requires important regulations and policies related to the sector to make a significant impact on public and private services (Guermazi & Satola, n.d.:37). GSMA (2015:3) indicates that there is much to gain if enabling environments are structured to the benefit of ICT users. However, the visible disparity of the Internet presence in Africa, and particularly in SSA, constitutes a barrier to others. Understanding the affirmation of GSMA that Internet access rates in SSA will continue to lag behind the global average does not mean that SSA and Africa as a whole cannot progress.

According to Deloitte (2012:9), there is a link between mobile penetration and economic growth. Deloitte further reports that mobile phones generate a positive impact on workers' productivity, which in turn affects business productivity through routes such as improved information flows on prices, quantities and quality, reduced travel time and costs, improved efficiency of mobile workers, improved job search and promotion of entrepreneurialism (Uwamariya *et al.* 2015).

Governments and stakeholders worldwide are highly pressurised to meet global, national, regional and local needs. Hart (2004) believes that the effective achievement of ICT in Africa is in direct proportion to the relationship between multi-stakeholder partnerships and the area needing to develop. This argument supports the Digital Opportunity Task Force (DOT Force) created by the G8 heads of state at their Kyushu-Okinawa Summit in July 2000. This summit drew 43 teams from governments, the private sector, non-profit organisations and international organisations, representing both developed and developing countries, in a co-operative effort to identify ways in which the digital revolution could benefit people all over the world, especially the poorest and most marginalised groups (Hart, 2004:10; Alzouma, 2005). The 'digital divide' is threatening to exacerbate the existing social and economic inequalities between countries and communities, so the potential costs of inaction are greater than ever before (University of Toronto and G8 Research Group, 2004).

In Africa, the Economic Commission for Africa launched its African Information Society Initiative (AISI) in 1996 and since then has supported several country projects to enhance National Information and Communications Infrastructures (NICIs). Miller *et al.* (2001:3) indicate that the AISI has brought about the following:

- Policies and strategies are in place;
- ICT in the health sector;
- E-commerce;
- ICT for youth and education;
- Formation of national and regional platforms fostering ICT, like the Common Market for Eastern and Southern Africa (COMESA);
- Southern African Development Community (SADC); and
- Telecommunications Regulators' Association for southern Africa (TRASA).

Miller *et al.* (2001:4-5) state that some African countries have moved from theory to practice. For instance, Rwanda has started implementing ICT strategies and South Africa is finalising E-commerce legislation and liberalising telecommunications. Other countries, like Namibia, are looking towards implementation of their ICT policy. Mauritius, Senegal, Ghana and Mozambique are a group of African countries that are looking to their future through ICT policy and strategy implementation by working together with private sector actors. Lewis (1992) explained that the adoption of the microcomputer in Tanzania led to an increase in business professionalism, while Okpaku (2006) studied the information economy in Botswana, Mauritania and Tanzania.

It is reported that despite worldwide publicity on the ICT movement in Africa, a number of challenges for many African countries are still common. These include the traditional banking

systems, poor procurement systems and time-consuming customs formalities, business-to-business (B2B) transactions, and business-to-consumer (B2C) activities.

2.2.4 Information communication technology: a Rwandan context

Rwanda is well known as a divided society with discrimination based on ethnicity, social class and regionalism which led to the 1994 genocide in which over a million people lost their lives and basic infrastructure such as roads, water, telecommunication and electricity was destroyed.

In the process of rebuilding the country, the Rwandan Government embarked on the use of ICT as a key instrument for future information society development and implemented the Rwandan ICT for Development (ICT4D) policy, known as the National Information and Communication Infrastructure (NICI) plan (RITA, 2006:17; GSMA, 2011). The process was designed to implement the necessary policies and plans capable of addressing Rwanda's developmental challenges in the information and technology age in order to accelerate the country's EDPRS.

The ICT4D or NICI process began in 1998 with the support and approval of the AISI of the United Nations Economic Commission for Africa (UNECA) but its implementation started in 2000 (Farrell, 2007:4). It is reported by Miller *et al.* (2001:3) that the UNECA mission to Rwanda was initiated sometime in August 1999, during which the process of a national dialogue with national leaders and stakeholders on the role of ICT to speed up the social and economic development took place. In accordance with the Rwanda Information Technology Agency (RITA), Rwanda's NICI plan was structured in different phases. The first phase would be from 2001 to 2005; the second phase was scheduled for 2006 to 2010; the third phase was proposed for the period from 2011 to 2015; and the fourth phase was scheduled for 2016 to 2020 (RITA, 2006:18).

Rwanda's final stages of the second phase of the NICI plan (2006-2010) saw the implementation of 30 telecentres to achieve its goals and those of the EDPRS Plan (Republic of Rwanda, 2008:9). Apart from establishing telecentres around the country, the EDPRS aim was also to lead to a steady and sustainable process in which young people from primary and secondary schools and graduates are equipped with skills which will enable them to function as equals in the emerging knowledge economy and information society of the 21st century.

Another progress aspect of ICT4D in Rwanda is that the telecommunication industry is liberalised to such an extent that more than one overseas telecommunication operator is well established in Rwanda, and provides Internet services, among others, that benefit the real people. Alzouma (2005) and Donner (2007:6) point out that the telephone, being

information-related technology, has done the most to reduce costs and increase income, and reduce uncertainty and risk in both informal and formal businesses. Buhalis and Deimezi (2003:105) argue that ICT resulted from the diffusion of innovation leading to their employment in businesses. New technologies have changed the way tourism businesses operate, resulting in dramatic changes in the structures and operations of, for example, tour operators and travel agencies.

Buhigiro (2012:8) states that Rwanda is putting ICT infrastructure in place and the issues related to Internet connectivity are being addressed. These include moving from third generation wireless digital technology standards (3G) to fourth-generation wireless digital technology standards (4G) and increasing the numbers of young engineers and ICT experts. The research suggests believes that the next step is to convince the end-user of the benefits of ICT–how it will contribute to wealth creation, how it can boost the economy, and how it can assist the government to serve its citizens efficiently.

The next section focuses on the applications of ICT in the tourism sector, the role of ICT in the tourism value chain and the applications of ICT for pro-poor benefits with reference to Rwanda in general, but particularly in the Western and Northern Provinces.

2.3 ICT for the Rwandan tourism industry

Since 2000, the Rwandan Government initiated developments to contribute to the achievement of the country's 2020 vision (Republic of Rwanda, 2000). ICT development is believed to be an enabler to the country's economic growth and social transformation. A study revealed that efforts were deployed in southern Korean telecommunication companies, the outcome of which was that South Korea's support for ICT aid was closely linked to Korean telecommunication's involvement in the Rwandan ICT industry (Kalinowski & Park, 2016:67-68). Internet services, digital television, financial services, entertainment, education, real estate, sport, and software development were addressed. It is certain that Korean Telecommunication ICT tools and devices, including wireless high-speed internet, are present in Rwanda according to the deal signed in 2007 (Kalinowski & Park, 2016:67), for the effective connectivity of the capital of Kigali with 30 other cities in Rwanda. This major project involved the construction of a nationwide fibre optic cable network, transmission network, and internet network, as well as equipment supply, construction engineering, and operator training.

A study by Uwamariya *et al.* (2015), supported by Tsegay and Maekele (2016:89), found that Rwanda made significant progress in the deployment of an ICT infrastructure that connected the country to global networks. The existing national fibre optic network connects Rwanda by international undersea cables and thus provides for affordable access to internet across the

country. Buhalis and O'Connor (2005) emphasise key challenges to ICT and changing the tourism industry. These authors note the changes needed in development, management and marketing of tourism products and destinations, focusing on 'consumer-centric technologies' (Buhalis & O'Connor, 2005:7-16).

Focusing on SMEs (including tourism enterprises), Rwanda received a variety of government and non-government initiatives to foster ICT and e-commerce usage. Uwamariya *et al.* (2015) note that SMEs still face limitations, especially with regard to system standardisation and payment solutions (NICI, 2015). Nibigira (2014) and Uwamariya *et al.* (2015) report that Rwanda's tourism lags behind other sectors in terms of ICT usage as it limits itself to the rudimental use of social media, whereas ICT promises to be significant for transforming the tourism industry as a largely consumer-oriented sector (Set, 2014:73-74). The actual rollout of ICT and e-commerce throughout Rwandan tourism SMEs is still limited (Foster & Graham, 2014; Musahara, Akorlu & Rukamba, 2014). These authors found that high-speed connectivity was available but tourism firms were not deploying it, so Internet usage in Rwanda's tourism SMEs is limited. According to Nibigira (2014, cited by Uwamariya *et al.,* 2015), a shortage of skilled ICT staff and e-commerce systems limits adoption in tourism SMEs. ICT systems are very important in the development of tourism in Rwanda, specifically the (tourism) value chains.

2.3.1 Value chains

According to Yilmaz and Bititci (2006a:372, cited by Safari, 2011:18), a value chain may be described as a series of interlinked activities that create and build value at every step. 'Tourism value chain' means the complete range of activities needed to bring a tourist to a destination and provide all the necessary services, for example accommodation, catering and entertainment. Tourists bring foreign exchange and tend to spend far more on holiday compared to what they would spend at home. Income from tourism thus has the potential to contribute very significantly to the economy of a country. Simply put, ICT applications are tools that facilitate dissemination of information and interaction between the tourism operator and the consumer and are crucial to all stages of the tourism value chain.

Designed tourism planning, which does not indicate clearly the various role players in the tourism industry, implies enhancing tourism value chains for performance management and measurement framework which would allow the tourism industry to identify various players to communicate and co-ordinate their processes and activities in a more mature way (Yilmaz & Bititci, 2006b:342). According to Ashley and Mitchell (2008:4), tourism value chains are quite different to value chains of manufactured or agricultural products (for example, textiles or coffee) because of the nature of the tourism product. Tourism features a complex set of complementary services, including for example, accommodation, transport, food and

beverage, entertainment, cultural heritage, and shopping. These authors note that tourism services cannot be stored, and production and consumption of the services are usually simultaneous and at a specific location, which is the tourist destination. In tourism, the market (tourists) moves to the product (the destination) and is the opposite pattern observed in conventional product chains, where the product moves through different stages from primary production through adjustment/export to final consumption (Ashley & Mitchell, 2008:4).

Following these authors' argument, it is logical to admit that supply chains are different to value chains in the sense that a value chain describes the full range of activities required to bring a product from conception to its end use and beyond (Pastakia & Oza, n.d.). It includes design, production, marketing, distribution and support for the final consumer (de Ruijter de Wildt, Elliot & Hitchins, 2006). Supply chains are extended value chains because they bring value to the final consumer and competitive advantages to the producer through strategic alliances.

There are debates on tourism and poverty, including the study by Engelen (2011). She articulate that some developing countries adopted specific programmes and policies to promote tourism growth as part of their development strategies (Engelen, 2011:13). Rwanda is not an isolated case since tourism is considered as a role player in achieving the country's economic targets through revenue gains, job creation, poverty alleviation, and local community upliftment (Mazimhaka, 2007:497).

Potter *et al.* (2008) and Engelen (2011:13) explain that tourism can contribute to the development of the country because it provides employment and a redistribution of income for a broad range of people. It also has potential for strengthening the links between the tourism sector and, for example, the local food and beverage industry's production and supply systems. Engelen's (2011) ideas support Mazimhaka (2007:491) where she argues that tourism should be diversified and have domestic as well as international options, and involve local communities because they face poverty in reality on a daily basis.

Moreover, Mazimhaka (2007:491) calls on policy makers to look at what benefits such forms of tourism can bring to their countries, and for more serious research and analysis of domestic tourism across the developing world in general, and notes the case of Rwanda. Although this country has a record of progress in tourism development, Mazimhaka argues that the country should search for an alternative, less exploitative form of tourism development than that dominated by interests of multi-national capital, and should encourage domestic tourism as this results in greater community ownership of tourism enterprises (Mazimhaka, 2007:491), hopefully contributing to poverty alleviation.

There is a link between tourism and poverty, as noted by UNWTO (2006), Wroughton (2008), Chen and Ravallion (2008) and Spenceley and Meyer (2012:299-301). It is estimated that approximately 20% of the world's population (1.4 million people in 2015) are living in 'extreme poverty' as they survive on under $1.25 per day. On the other hand, the International Poverty Line measures poverty largely in monetary terms. According to Sen (1999) and Spenceley and Meyer (2012:299), poverty is a multi-dimensional phenomenon, which arises when people lack key capabilities, such as inadequate income, lack of access to education, poor health, insecurity, low self-confidence, a sense of powerlessness, and the absence of rights, such as freedom of speech.

Tourism could provide the opportunity for a shift, for example to non-farm economic activities in peripheral areas, including Rwanda, struggling to keep agricultural activities afloat to counter poverty because they are unsuitable for large-scale export-orientated manufacturing (Farrington, Carney, Ashley & Turton, 1999; Spenceley & Meyer, 2012:299). These authors propose that the tourism sector has promising potential to contribute to poverty reduction in Least Developed Countries (LEDCs), and that Rwanda is not an exception, for the following reasons:

- The market comes to the producers providing additional sales opportunities in the destinations, such as natural foods and beverages and handcrafts.
- Inter-sectoral linkages can be created, especially with agriculture, artisan production and additional services, which are essential for livelihood diversification.
- Tourism is generally labour intensive (less so than agriculture).
- Tourism could take place in disadvantaged areas, where the majority of the poor live.
- Tourism generally employs a high percentage of females, young people, and unskilled or semi-skilled individuals
- Tourism has rather limited barriers to entry when compared to manufacturing or other export activities, and
- The tourism sector is growing at a very fast rate in many LEDCs (Spenceley & Meyer, 2012:301).

Having outlined the causes (above) it is important to know that the role of domestic tourism in Africa (including Rwanda) is one of the neglected themes in African tourism scholarship and in developing a sustainable tourism industry, especially using the ICT industry for poverty alleviation (Mazimhaka, 2007:502). There are socioeconomic and political benefits in promoting the growth of domestic tourism, including job creation and the stabilisation of the tourism industry as a whole. Moreover, developing a tourism culture in Rwanda that allows for regular travel by domestic tourists would mean a boost to both the informal tourism economy through the sale of local goods and services, and the formal tourism economy

through site visits and stays at the country's lakeside lodges and hotels; also, drawing on pro-environmental change in tourism destinations and encouraging sustainable travel in national parks via partnership/project creation and implementation (Stanford & Guiver, 2016:484-485). In political terms, it was proposed that the development of domestic tourism would potentially contribute to bringing Rwandans together in shared experiences of the beauty and uniqueness of the country, where the concept of tourism alleviating poverty is still new, and where it is known as pro-poor tourism (Engelen, 2011).

Mowforth and Munt (2009) and Carmody (2012) affirm that tourism could contribute to eradicating extreme poverty by practising sustainable supply chain management, such as sourcing of local products and services, building pro-poor partnerships, providing training, and support for small independent enterprises. Tourism could generate four types of income: wages for formal employees, earnings from selling goods, services or casual labour, increased profitability from locally owned enterprises, and collective income (Engelen, 2011:14). This money could be used to invest in health, education and improved infrastructure, or in assets to strengthen sustainable management of natural resources (Ashley *et al.*, 2000; Engelen, 2011:14).

2.4 ICT and the Rwandan tourism value chain

To support the concept of value chains, the following chains are relevant to the Rwandan tourism industry:

2.4.1 Accommodation value chain

Types of accommodation may include hotels, bed and breakfast establishments, resorts, guesthouses, apartments, backpackers' hostels and motels. The accommodation sector is a vital component of the tourism industry and has the potential of bringing significant economic benefits to both rural and urban populations. Accommodation accounts for the major portion of total tourist-spend, and according to Pastakia and Oza (n.d.), could be harnessed to alleviate poverty. The accommodation sector utilises ICT applications in areas such as reservations, reception (front office) and back office administrative functions such as housekeeping, cleaning, stores, inventory management and property management systems (PMS).

The accommodation value chain comprises a range of role players, from suppliers to the final consumers. In between the supplier and the consumer are numerous activities, including raw material supply, production, processing, packaging, advertising, selling and consuming. The accommodation establishment firstly has to be built and once building is complete, electrical installation and plumbing needs to be done. Furniture and equipment needs to be purchased.

Computer systems and other electronic systems for operational purposes need to be installed, for example, reservation system, communication system and security system. Becton and Graetz (2001:108) state that training needs to be addressed in the hospitality sub-sector of the tourism industry.

According to Bhatnagar (2000:2), ICT applications in the accommodation value chain, as in any other value chain, have three purposes: (1) administrative support, (2) to improve services to consumers and promote transparency, (3) to empower and distribute knowledge and information to users. ICT applications have contributed to a decrease in the administrative workload, for example, communication between top and bottom management is improved, ease of access to information is facilitated and time is saved. In addition, information is no longer centralised to one user of the ICT facility but disseminated to all workers in all departments of the establishment, which encourages high standards of customer care and in so doing, maximises the company's profits.

2.4.2 Food and beverage value chain

This value chain includes hotels, restaurants, bars and catering activities but it starts primarily with agriculture, fishing and factories. The food and beverage value chain involves a number of players and offers many areas for ICT application.

The food and beverage industry has great potential to expand economic opportunities and it all starts with agriculture. This industry is conducted at varying levels within society. Families grow crops for their own consumption, communities trade fresh produce, and local companies transform domestic crops for local markets. It is a cycle of grow, process (transform), sell. In developing countries, such as Rwanda, the agricultural sector is the largest economic sector.

Bhatnagar (cited by Tembo, 2008:26) and Winrock (2003) report that ICT has three purposes in any value chain. In the context of agriculture, these purposes are to ensure (i) improvement in planning and monitoring agriculture development programmes, (ii) enhancement of agricultural service delivery to farmers and all role players in the supply chain, and (iii) empowerment of people through training, providing access to up-to-date agricultural information and creating jobs. This is the structure envisaged for a tourism value chain in Rwanda

2.4.3 Transport value chain

According to Mulligan (2007:16), there are gains to be made by incentivising organisations and both national and local governments to share data and work together. He states that integrating ICT into the transportation sector will help companies achieve the required savings across the entire construction value chain for transportation infrastructure such as

bicycles, motorbike, vehicles, aircraft and trains. It would be remiss to discuss ICT contribution to the tourism value chain and neglect the role of ICT in the transportation sector, which is also a direct component of the tourism sector. Buhalis and O'Connor (2005:11) believe that transportation strongly relates to the study topic because of intertwined influences in both the ICT and tourism sectors (a CRS for example). It is indisputable that ICT applications (for example central reservation systems) have transformed the transportation industry, therefore, transportation and communication have become essential in industrialised and non-industrialised countries. In value chain development transportation plays a crucial role since without transportation between entry point and exit points of goods, the movement of commodities cannot happen.

2.4.4 Travel operations value chain

Typically, this would include tour operators, travel agencies, tour guides and tourism information centres. The travel operations value chain is another important area for ICT application since successful, scheduled, punctual transportation is closely linked to the communication sector. In developed countries, ICT revolutionised lives in real communities because of the existence of strong partnerships between all stakeholders in the ICT sector and a willingness of the government to serve the communities. The researcher believes that the cost of time, transportation fares, movement of information from one geographical location to another and from one person to another, are the key components in explaining the gaps that exist between the players along the travel operations and communication value chain in developing world countries, more specifically in the context of this research, in Rwanda.

2.4.5 Entertainment value chain

Social and cultural entertainment could take the form of cultural attractions, places of historic interest, dance troops, acting, sports, athletics, acrobatics, cultural tours and national and provincial events. Entertainment is a large component of the tourism industry, not only for young people, older people also have the skills to entertain. People involved and who make a living from entertainment would encourage implementation of ICT to modernise the industry. However, entertainment-based ICT applications differ from one country to another and the types of ICT differ too. The researcher believes that mixed entertainment could benefit both rural and urban communities in Rwanda, providing that the market is well selected.

The need for promoting essential skills and knowledge for industrial development should not be ignored. In a country like Rwanda the entertainment value chain, if analysed correctly, will highlight its strengths and weaknesses. This will guide decision makers in directing their efforts to the right geographical communities. The multiplier effect could be new telecentres,

teleconferences, easy access to the Internet, new skills and knowledge evolved in the area, and new infrastructures supported by ICT, such as electricity, roads, hospitals, water, schools and shops.

2.4.6 Trading value chain

This would include handcrafted goods, wholesalers, retailers/shops and curios, and financial institutions. The supply chain is the flow of materials, information, money and services from raw material suppliers through factories and warehouses to the end customers (Turban, Rainer & Potter, 2005:41).

The trading value chain is another very big niche area for ICT applications. This is the area of transactions ranging from national to international level, from rural to urban and from small to large businesses. It is explained by Brolén, Wilska and Bonsdorff (2007:10) that trade can serve as a strong catalyst for growth and poverty reduction in developing countries, for example in East-Asian countries. However, less developed countries, especially in Africa, face serious problems in their efforts to better-integrate into world trade, which may be due to complex problems such as a lack of products, service standards and borrowed ICT, amongst others.

Brolén *et al.* (2007:39) state that African countries lack the ability to produce competitive products for world markets, which inhibits them from using the full potential of trade in reaching their development goals. Thus, overcoming this serious challenge, which the Aid for Trade (AfT) initiative tries to resolve in some countries, needs effective political-economic policies in Africa and building strong institutions that will serve its citizens. It is understandable that a need exists for ICT infrastructures to monitor and control human capital and goods of all kinds, to ensure the satisfaction of all players in the various trading value chains.

Figure 2.1 below illustrates the various components, which together form the tourism value chain.

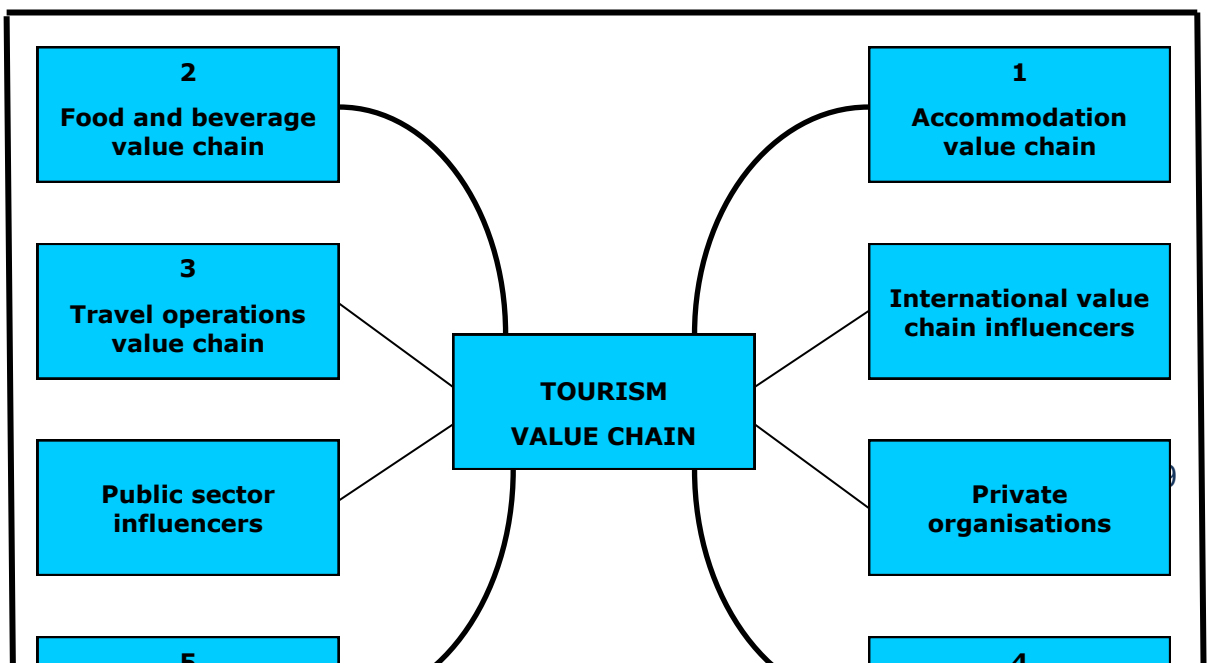

Figure 2.1: The Rwandan tourism value chain, influencers and supporters (Researcher's own construct, 2013)

In addition to the components already discussed in the previous pages (especially Engelen, 2011 and Pastakia & Oza, n.d.) two other factors, public organisation influencers and private organisation influencers, also influence the tourism value chain:

(a) Public sector influencers

It is believed that the public sector is accountable for the full capacity to enable people to believe in the ICT capabilities towards their socioeconomic transformation. Buhigiro (2012:16) points out that the public and private sectors can improve the quality of service delivery by putting telecentres in place at district levels, since these could upgrade the community ICT literacy level through basic ICT training and providing access to information via Internet or other ICT-based services. In this way unnecessary transportation expenses and administration spends (registries, laws, rights,) would not be incurred because participation, e-government, e-commerce and other online services are available at their homes or workplaces.

Regarding poverty alleviation, ICT could be used to empower local governments to provide strong structures which could enable social inclusion, knowledge distribution to all community members, sharing opportunities such as tele-medicine and warning systems of epidemics, and access to information related to ICT infrastructure needed in the daily lives of people, among which agriculture and husbandry are the priority.

(b) Private sector influencers

The private sector is an important player in the tourism value chain in the broader sense. It consists of groups active in different industries including factories, manufacturing consumer goods, commerce consisting of shops, banks, and services like accommodation, private schools, and small, medium and multinational enterprises functioning to fight poverty at the destination (Swanepoel & de Beer, 2012:22). Studies reveal that private sector organisations play a role in making the tourism value chain work for the communities, where their influence is noticeable, for example their inputs into curriculum development in conjunction with the

tourism industry. According to Saayman and Geldenhuys' (2003:2) research, the quality outputs of the curriculum advance the country's development because the opinions from employers, employees and self-employed persons contribute to the changes in educational policies from time to time.

The participants are those who reveal knowledge and skills gaps that exist in the workplace and make proposals for solutions to closing that gap. Based on the above argument, it is possible that capitalising the private sector development is another way to contribute to the success of a nation, where the use of the Geographic Information System (GIS) and early warning systems will contribute towards improved safety and security within a community. This will further enhance food safety and security, which could ultimately contribute to pro-poor benefits.

An issue to consider is the extent to which Rwandans find ICT applications to be eco-friendly. In the process of answering the research questions, UNDP (2001:3), supported by Gomez (2001), explains that an understanding of how ICT can service specific development goals requires both knowledge of appropriate technology and a grounded appreciation of how this technology can be deployed to address problems in people's lives, such as job creation. At a national or international level, Information Communication Technology Development (ICTD) is a complex multi-sectoral endeavour, requiring analysis, political will and concerted action across a wide spectrum of sectors and actors. Informed stakeholders, whether top-level policy makers or rural beneficiaries, can help to ensure that technology is matched to needs in a meaningful and sustainable manner (UNDP, 2001:3). The UNDP authors align the key participant groups of pro-poor ICT (UNDP, 2001:4). For instance, the authors explain who plays what role in the following paragraph:

Firstly, in the government there is a double assignment attributed to the decision makers who are critical for visioning, initiating, sanctioning and spurring ICT4D initiatives and for legislating and enacting 'enabling' policy frameworks. Secondly, the assignment is performed by the line managers who are often the implementers of ICT4D initiatives. These line managers can also act as important identifiers and promoters of new initiatives, especially when they have a good understanding of ICT potential. Thirdly, the private sector is recognised in the age of ICT4D, as it possesses the greatest capacity to invest and innovate, especially when an enabling environment is in place. It serves as the critical motor for ICT development and key witnesses of sustainable growth and outreach. Finally, the UNDP (2001:4) regards civil society organisations (CSOs) and NGOs as significant key players in ICT4D in people's lives. The UNDP describes them as a subset, independent moral person with capacity to influence, to initiate, implement and be mediators and recipients of ICT4D projects because of the trust built between funders of big ICT projects and the developing

world in need (UNDP, 2001:4). They are required to be accessible when the services of developmentally-minded endeavours are needed. By highlighting this point, the UNDP (2001:4) comments that CSOs are also important partners in policy dialogue:

> …without the participation of organised civil society, policy formulation is incomplete since not all initiatives that contribute to human development are economically profitable (as the private sector would like) or politically attractive (as governments would wish).

2.5 Information technology and impacts on the tourism sector

The reason for this subsection is to establish whether, after the adoption of economy-based knowledge in particular using ICT as an enabling tool, there are direct and indirect impacts on individual residents (tourism actors in their chains), organisations and societies in the selected destinations with flourishing tourism sectors (Buhalis & O'Connor, 2005; Buhalis & Sou Hyu Jun, 2012; Nadkarni, 2008). For example, a study by UNWTO (2011:5) reveals that combining technology with tourism activities changed the way business was done, and direct and indirect impacts were observed in the social and economic lives of the residents. In other words, there was a creation of new ways of shaping prices of tourism products and services, revisiting unexploited destinations, creating friendly environments to attract tourists, and developing the guest relationship. This was due to new applications for mobiles that offer a wide range of economic opportunities and creation of social networks that attract the attention of decision makers in the tourism sector.

Subsequently, transparent markets in some destinations in which citizens are able to provide services, together with changes in the concept of the value chain producing new business models, were enabled by the use of IT. This emphasises the belief that IT and ICT infrastructures, such as Internet infrastructure, have enabled the tourism sector to grow. Although UNWTO (2011:14) indicates that using technology, for example the reservation system Amadeus in the tourism sector, could boost development in disadvantaged communities, it is unknown whether such technology is accessible to tourism businesses in developing countries with limited resources.

The United Nations World Tourism Organisation (UNWTO) uses the experiences of developed countries to convince developing countries that the use of the appropriate technology in the tourism sector contributes towards development in the communities where it operates. This suggests that interaction between a technology provider (Amadeus) and the tourism sector could promote sustainable development for disadvantaged segments through tourism and technology in the markets in which Amadeus is present (UNWTO, 2011:14). This means that the presence of Amadeus gives a competitive advantage to small hotels, guesthouses or bed & breakfast establishments, often located in rural areas, because they

would have access to the technology and become the beneficiaries of e-tourism benefits, at the same time expanding their commercial activities.

2.5.1 Integrative measurement model development for the tourism value chain

A value chain has an economic value added at each stage of the product or service, from the supplier to the final consumer. For example, the Northern and Western Provinces of Rwanda, which have flourishing tourism sectors, have fertile soil and are well known for food production. Hence it is a reasonable expectation that agri-tourism could be developed in the area. According to OECD (2013:6), during the period 2001 to 2012, with the expansion of ICT, the country was enabled to develop a technology system whereby each resident in the area would be able to purchase a product or service in the accommodation or catering establishment, using income obtained from selling produce to the market.

Van Niekerk's (2013:41) views are that agri-tourism is not to be seen as a new industry and that there is only a limited amount of empirical research on the agri-tourism industry in a number of developing countries, including Rwanda. As Rwanda has embarked on mechanising agriculture, scholars need to show how competitive advantages could be related to tourism, to promote agri-tourism as a link to full tourism.

2.5.2 ICT integration to a tourism village model

Generally, an ICT village to a tourism village refers to an integrated model designed to fight poverty as a response to the first Millennium Development Goal (MDG) of the United Nations by providing high technology with low-cost solutions in a study area (UNESCO, 1997:1; Pastakia & Oza, n.d.). In particular, the relevance of the discussion about an ICT village to tourism village in this study is the journey of exploration of how the integration of ICT in local communities residing around the tourism destinations could create a vibrant change in community social and economic livelihood.

The expected multiplier effects of an ICT village being established in local communities are listed hereunder. These may be seen as economic indicators of best practices of ICT villages at community level anywhere in the world where ICT has been used effectively. This suggests that the tourism multiplier effects relevant to this study should include:

- Improved quality service delivery;
- Improved destination and attractions infrastructure;
- Improved lifestyle of participating communities;
- Abundant mentalities—seeing life as an ever-increasing excess of resources that gets larger and larger and that causes participants to question the use of these resources (Covey, 2015:59);
- Visible shift from poverty to affluent levels;

- Tourism products diversification;
- A history of exodus from rural to urban areas—people move from rural areas to urban areas seeking better opportunities for success;
- Increase of receipts and arrivals—more visitors who stay for longer periods, spending more money in an area;
- Good governance; and
- Equal benefits from tourism for villagers.

2.5.3 Technology commercialisation

Still referring to Figure 2.1, Rwanda's challenge is existing technology that presently offers no substantial benefits to the user (the poor). The following factors support this argument:

- Firstly, the insight of the Rwandan Ministry of Education, along with other stakeholders, is that the potential use of ICT within the Rwandan education system is in an early phase. The researcher concurs with the experience of Farrell and Isaacs (2007:6) that integration of ICT into the Rwandan education system should improve learning and apprenticeship. However, it was revealed more than a decade ago that the lack of innovation and entrepreneurship skills was a result of inadequate education at primary, secondary and tertiary schools, which translates into the failure to impart scientific and technical knowledge and skills to African children. This explains why the majority of the developing world still depends on overseas ICT equipment and software development, which is exorbitantly expensive (Farrell & Isaacs, 2007:7).
- Secondly, the Rwandan leadership has failed to implement transformative policies which could guide all players in economic value chains to link technology to their market.
- Thirdly, private sector participation in the economic transformation is limited by misunderstanding of the technology that meets the needs of the citizens outside of their usual frame of reference. The lack of an aggressive entrepreneurship culture has created unlawful competition and other dysfunctional behaviour against development (Farrell & Isaacs, 2007).
- Lastly, the involvement of CSOs in the transformation of Rwanda does not reveal how ICT contributes to the economic lives of tourism stakeholders.

Quinn (2005:38) argues that we are living in the information age, an era characterised by ubiquitous computing and communication devices that have made information much easier to collect, to transmit, store and retrieve. Quinn however appears to ignores other needs, apart from information communication networking, such as clean energy, safe water, and food security. Based on Senevirante's (1999:43) arguments, Quinn seems to forget that from

the 17th century to date, many inventors, including Blaise Pascal, have proved that computing technology has evolved together with other inventions such as mechanical engineering, energy and water technology and others, in a lively economy.

From a global perspective, the explanation of an ICT contribution to the tourism value chain for pro-poor benefits should reveal a standard path that any country could follow to make the use of ICT in the tourism industry of benefit to the poor. According to Miller, Saroja and Linder (2013:17), the concept of ICT in a value chain development is still new. Studies regarding its contribution to the tourism value chain, for instance for pro-poor impacts, have not been rolled out in a robust way and have not yet achieved critical success factors such as adoption, scale (measure) and viability (Miller & Brewer, 2003).

Carmody (2012) argues that ICT contribution to TVC for pro-poor impacts is a relatively new area of research in general. This research attempts to reach conclusions based on the findings of this study to propose a model that could promote a tourism value chain for pro-poor benefits. A value chain approach is the method of identifying all possible actors or players at each stage of economic activity, such as manufacturing, agriculture, tourism, handcrafts and husbandry. At each step there is a value, starting with input-suppliers to the final consumer via value-adding stages, minimising the costs and maximising the benefits, and ICT could be the driver of developing/promoting these economic activities (Carmody, 2012).

2.5.4 ICT in the food and beverage value chain

The food and beverage value chain, with other tourism sub-value chains, as well as the nature of the approach, enables the practitioner to identify the number of stages and values added from the producer to the final consumer. ICT has promoted opportunities for improved livelihoods, such as increasing agricultural productivity, increasing food crops, improving market access for cash crops, or the creation of employment opportunities—a lesson to be learnt for a tourism value chain, through invoicing/billing systems, stock controlling and monitoring debtors and creditors.

The ICT contribution in the food and beverage value chain arose to address the problem of standards from a global value chain (GVC) perspective. According to Humphrey and Memedovic (2006:4), global agricultural trade in general is characterised by the increasing importance of standards. In other words, Humphrey and Memedovic's argument is to underline the need for building the agriculture sector based on regional and international norms in order to unlock the trade between countries. This goes hand-in-hand with borrowing developed international technology that helps to produce quality crops in the right course of time, at the same time meeting the quantity demand from internal use to exports.

The effective standardisation due to the ICT capabilities is thus for joint actions between private and public bodies with a clear understanding of how standardisation processes work beyond the borders. For example, Rwandan farmers, as part of the EAC countries, would want to trade with European countries (Baghasa, 2008) but the certification process would not succeed until international standards, such as European Retailer Produce Working Group—Good Agricultural Practice (EUREP-GAP) and Safe Quality Food (SQF), were applied (Humphrey, 2008:43). In Humphrey's reviews the issues regarding public and private standards development indicates that there is a need for joint actions of different value chain actors at different points along the value chain. In order to apply agriculture-tourism principles to the study topic, a specific product development, such as wine-tourism, or in the Rwandan case, coffee-tourism or tea-tourism is considered.

For example, with the Cape Winelands tourism in South Africa, it is clear that the agriculture product is specific (viticulture) and the activity of visiting wine cellars by tourists in a wine region is the essence of wine tourism (Bruwer & Alant, 2009:9). Based on these tourism experiences, viticulture has been further developed for tourism, based on the attractiveness of the farm-settings that enhance the tourists' experiences (Bruwer & Alant, 2009:9). According to Getz and Brown (cited by Bruwer & Alant, 2009:9), core destination appeal includes features such as "attractive scenery, pleasant climate, moderately priced accommodation, easy to obtain information, well-signposted wine trails, and a variety of things to see and do".

Although mechanisms for controlling standards are in place, it is important to record that in some cases assessments of produce, particularly at points of export and import, need to be controlled. Humphrey and Memedovic (2006:17) confirm that in the process of standards evaluation even stringent testing programmes could fail to disclose potential hazards to human health from questionable foods.

The need for ICT skills and knowledge at each stage of the chain (Bhasin, 2012) ensures effective standardisation. ICT applications differ between value chains, for example, ICT capabilities as applied in the food and beverage tourism value chain is, and would be different, from related biotechnology, designs, engineering, electronics, recycling, computing and property management systems. In the standardisation process each progressive stage is interdependent, from the initial supplier (a destination or attraction) to the final consumer (the tourist). The importance of IT cannot be over-emphasised. It is used by firms to assist them in attaining their business strategic and competitive goals (Aziz, Bakhtiar, Kamaruddin & Ahmad, 2012:38). These authors assert that firms in the hospitality industry now rely on their IT departments to plan, build and install online solutions and to unite an organisation with its stakeholders such as consumers (tourists), suppliers, workers and management.

However, skills and knowledge are required to effect transformation. The Ministry of Education of Rwanda (MINEDUC) highlights the country's efforts to transform the socioeconomic lives of its citizens. For example, the introduction of Technical Vocational Education and Training (TVET) serves to identify candidates with practical skills and places them in vocational professional training programmes so that they may acquire skills and knowledge and become effective in the drive towards improving the socio-techno-economic needs of the communities (MINEDUC, 2008:11).

Rurangwa (2011:19) explains in his dissertation that the food and beverage sector comprises various establishments that offer food and drink for a profit for the Rwandan tourism industry. This sector serves to satisfy the meals and liquid refreshment needs of the tourist and non-tourist. Although Rurangwa (2011:19) asserts that the food and beverage sector is closely linked to accommodation and collectively form the hospitality industry, it is arguable that food and beverage is indeed a sector in the TVC.

For example, according to the 2010 Canadian Tourism Human Resources Council Report (cited by Rurangwa, 2011:19), the food and beverage industry in Canada was considered a 32 billion dollar industry 20 years ago in 1990 and it had 913 000 people directly in its employ. This industry had grown to 46.2 billion dollars by 2014 with 890 450 employees (TIAC, 2014:5). In the Canadian Food and Beverage Journal, it is reported that the forecast for the food and beverage industry would have increased by 7% in the early period of 2015 (Burn, 2015:5). In the case of South Africa, the food and beverage sector is also experiencing phenomenal growth, with increased earnings of 5.2% between 2009 and 2010 (SSA, 2010) and a 5.8% increase between 2012 and 2013 (SSA, 2013).

On the issue of standards, Nadvi (2008:8) explains that many African countries are still 'standards takers' rather than 'standards setters' which is considered as an imposed system because of colonisation. Unlike any other African country, Rwanda is only now establishing stable institutions, including the Rwanda Bureau of Standards Authority, for standards to be put in place to ensure the design, the testable physical characteristics of products, production, handling and processing to ensure that products meet certain national, regional and international desired physical characteristics, particularly product safety (Humphrey & Memedovic, 2006:15).

2.5.5 ICT in the accommodation value chain

The researcher has previously noted that types of accommodation include hotels, bed and breakfast establishments, resorts, guesthouses, apartments, backpacker hostels, motels and any other form of shelter for tourists on holiday or people on business trips. The value chain approach has not been studied in any depth in Rwanda, except possibly by Ashley (2007:6) who points out that business tourism data relates mainly to the 3-, 4- or 5-star business

hotels in Kigali (the Mille Collines, Novotel and Serena). Ashley indicates that accommodation structures inject considerable cash income into the local economy, mainly via wages of semi-skilled and unskilled workers and purchases of Rwandan food. However, pertaining to the study topic, no evidence was found of any study on the role of ICT in the accommodation value chain.

Globally, studies have shown that the accommodation sector is one of the largest tourism sub-industries in the world, generating millions of dollars in revenue. According to Rurangwa (2011:16) and SSA (2010:2), in South Africa the accommodation sector generated R28 122 million in 2009. In the developed world, HAC (2009) confirms that the accommodation sector is among the fastest growing industries in the world. The Canadian Tourism Human Resource Council (2010) reports that between 2005 and 2010 the Canadian accommodation sector experienced a growth rate of 39%. Total spend for 2009 reached $17.478 billion (HAC, 2009). The figures of overall spending in 2014 in the tourism industry exceeded US$ 613 million but only 13% was attributed to the accommodation sector and the number of employees was to 210 470 (TIAC, 2014:17). In the case of Australia, total spend for 2014 amounted to $35.6 million according to Collier International (2014:9). India had a total spend from January to July 2014 of US$11.055 billion, covering domestic expenditure at 15% and foreign expenditure at 80% (CCI, 2015:10).

Like most other African states, statistics on the performance of the accommodation sector are still a challenge and not readily available. As demand for accommodation increases, new jobs are created, career development becomes possible for those employed in the industry, designs and quality of accommodation improves and from small guest houses to large hotel chains, growth is experienced (CEDEFOP, 2005:9-10). Big hotel development, mostly by multinational companies, is viewed as a form of direct foreign investment necessary for economic development of a host destination.

Rwandan statistics over five years to 2015 report the trends and contribution of the tourism industry in the Rwandan economy. For example, in 2010 tourism receipts were US$ 224 million, in 2011 tourism receipts were US$298 million, in 2012 tourism receipts amounted to US$337 million, while in 2013 tourism generated US$351 million and in 2014 receipts amounted to US$304 million. In 2015 tourism receipts were US$318 million, implying a viable tourism industry (Index Mundi, n.d.).

The debate therefore is ongoing in the agri-tourism sector where ICT could be used for pro-poor benefits. It is still unknown what technology would be effective in the accommodation sector in developing countries, besides ICT facilities like the Internet and telephony. In today's competitive world, communication technology is constantly evolving and establishments are utilising increasingly sophisticated technology to boost sales volumes

and minimise costs. Historically, accommodation in general has relied on central reservation offices to control the pricing and distribution of overnight accommodation (Kasavana & Cahill, 2007:21). The authors explain that the Internet is a large and complex series of electronic networks designed to provide universal access to information and communication services around the world (Kasavana & Cahill, 2007:19). This has created a communications and information explosion with the potential to affect virtually every aspect of the hospitality industry, of which accommodation is one component.

There is much to know about ICT applications in the accommodation sector. Kasavana and Cahill promote e-commerce in the hospitality industry and opine that the world of business began to change when hospitality businesses integrated electronic commerce that involved the buying and selling of goods and services, unlike traditional transactions (Kasavana & Cahill, 2007:20). These authors highlight a tremendous shift from traditional practices to electronic performance in the hospitality industry. For instance, they elucidate that a company's e-commerce offers an electronic brochure describing the company and its products and services, or as sophisticated as an online catalogue featuring thousands of products, which traditional hospitality companies cannot do. E-commerce offers instant access to information enabling the client to quickly compare products, make choices, purchase items and complete a transaction. An ever-increasing number of routine tasks and transactions are performed online on a daily basis worldwide (Kasavana & Cahill, 2007:21). Although Kasavana and Cahill provide a broad picture of the use of ICT in the hospitality industry, they do not mention local communities and the use of ICT applications towards poverty reduction in a tourism value chain.

Kasavana & Cahill (2007:21) further indicate that online communities are likely to demand changes in the way business is conducted, from production to consumption, and could even affect those accommodation organisations that might otherwise not be part of the electronic economy, beyond accepting online reservations. According to PraniČević, Alfirević and Štemberger (2011) and DiPietro and Wang (2010), the tourism industry, including the hospitality sector, is highly dependent on successful information management. These authors elucidate that the use of IT has a triple influence in the hospitality industry, namely:

- Business reform because of automation and cost reductions;
- Additional benefits are obtained from improved communication within a hotel (or a hospitality enterprise); and
- Customer relationships are improved by means of IT.

In other words, the majority of tourist products/services are sold before they are consumed, which stresses the quality and distribution of hotel presentations and the distribution of such

information to the right audience (PraniČević *et al.*, 2011:2). In the Rwandan case, given an opportunity, every citizen could conduct business if they had Internet access and are ICT literate. It is believed that with telecentres, business mentors, coaches and role model entrepreneurs, communities should be encouraged to be hospitality business-minded.

Gregory, Kline and Breiter, and Grüter, Blattmann, von Burg and Myrach (cited by PraniČević *et al.*, 2011:228) assert that in the developed world and in some developing countries website design is proving to be essential for the success of hospitality enterprises. It follows that the use of social software nowadays enables networking with existing and potential customers (O'Reilly, cited by PraniČević *et al.*, 2011:228). One may ask to what extent Rwandan hospitality businesses value the importance of using a website to up-sell and cross-sell their products and services within the country and outside, and so address the pro-poor problem.

2.5.6 Trading value chain

WEF (2012) reports that Rwanda's economy has been growing consistently at an average of 8% per annum. Further, World Bank (2011:3) reveals that Rwanda ranked number one, was the most competitive economy among East African communities, and ranked third in sub-Saharan Africa regarding the processes to start a business, registration of the property, investor interest protection, enforcement of contracts and easy access to credit. According to RDB (2013:4), the Rwandan economy has been developing at a steady pace over the past 13 years, from 2000 to 2012, and was mentioned in a number of reports by the World Bank for its performance to date. The Rwandan economy is currently transitioning from agriculture-based development to multi-sector-based development with an emphasis on the services and industry sector (Republic of Rwanda, n.d.).

Ntale, Yamanaka and Nkurikiyimfura (2013) list a number of components to consider when defining a trading value chain. The authors mention business incubation and career development, support services, online trade information gateways, online tax calculators, a credit reference bureau, a land administration and management information system, an electronic case management system for legal cases, online business registration, a SMART national identification system, improvements in online banking and the E-transaction regulatory system.

Kigali is two hours from Tanzania, two hours from Uganda, three hours from the Democratic Republic of Congo and three hours from Burundi. Two of the three principal land routes from the East African coast to the Great Lakes Region, the corridor from Mombasa to Uganda and the corridor from Dar as Salaam to Tanzania and Rwanda, all converge in Kigali (KFTZ, 2014). Kigali is already an established goods distribution centre to Burundi and the eastern

Congo, both markets with a population of more than 32 million people, traditionally served by Rwanda exports.

This economic development bodes well for pro-poor benefits via the tourism value chain. The Kigali Free Trade Zone (KFTZ) will become home to various industries, including an ICT park, (termed an ICT village) which could be a further catalyst to tourism development. The critique pertaining to the KFTZ is at national level. If it provides tax incentives for businesses situated there, especially those targeting the export market, these incentives should include a 0% corporate tax value-added exemption, 0% import duty and a 100% research and development cost write-off, among other advantages. The model should also be rolled out in the rest of the country. It is believed that this goal will be easy to attain because it is central to the Technology Park and Centre of Excellence that will develop much-needed, highly skilled ICT professionals. The process is ongoing in the partnership between the Carnegie Mellon University (CMU), a world-class USA university, and the Government of Rwanda according to Kanyesigye (2012).

The progress towards ICT, with the inclusion of other subcontracting business out of Rwanda, different computer users, ICT education and training, E-government, cyber security, mobile solutions providers and green recycling, would cement Rwanda's position as the leading country in central Africa in terms of economic reforms.

2.5.7 Travel operations value chain

The issues pertaining to the quantity and quality of transport before and after the genocide is not relevant to this study since the researcher is not doing an assessment of the sector. Nevertheless, a recent study done by the Organisation for Economic Co-operation and Development indicates that transportation is one of the top three priorities in AfT in Africa (OECD, 2013:15). It is believed that there is no other sector that has undivided acknowledgement as a core level for growth and development in a national development strategy (OECD, 2013:16). With specific reference to Rwanda, the transport sector has developed significantly if compared to 20 years ago. Development in trade is mirrored in the development in transport and the OECD expounds that transport is not separate from logistical development, Rather, it is one of the constituents of the mechanism of social and economic development in the poverty-reduction struggle.

OECD (2013:15) further advises country-partners in the developing world to use a GVC approach through active participation as an opportunity to increase trade connections and boost social and economic development. Areas of concern that have positive impacts are increase of exports and decline of imports, diversification of exports, increase of economic growth, creation of employment, poverty alleviation, greater environmental sustainability and women's economic empowerment.

The practice of a GVC approach with ICT integration might have caused only a gradual change in the stated areas of concern but they can serve as social and economic measurement indicators within a particular country. Economic leakage remains a concern to the research effort as very significant amounts of money from government and the private sector exit Rwanda to the benefit of overseas companies. These amounts are spent on transport-related tools or parts to be assembled by the external experts. Income is obviously a very important factor in measuring both economic and social development. Again, access to knowledge and skills, numbers of jobs, numbers of vehicles, motorcycles, bicycles, maintenance facilities and gender mainstreaming focus would explain how the transportation value chain could bring about significant change in Africa, and particularly in Rwanda.

ICT applications are widespread in transportation. It must be noted that various technology such as engineering, electronics, communication, biotechnology, technology systems, information systems and security systems are all embedded in the transportation infrastructure. In Africa, there are institutions of higher learning that offer disciplines related to ICT applications in transport but graduates find it difficult to find work in the transportation arena. OECD (2013:34) reveals that a number of issues that lead to African finances being leaked are mostly related to transport equipment and ICT infrastructures.

Regarding constraints, the private sector reported four important areas as typical difficulties in developing countries: national supply-side constraints, operational difficulties, GVC sourcing and investment decisions.

Firstly, it was reported that national supply-side constraints are a major issue and failure to address them causes a country to regress. These constraints mostly comprise inadequate airport, rail, road or maritime infrastructural capacity or links, and national ICT infrastructure. Secondly, operational difficulties are another challenge because skilled human resources management is lacking in that domain in Africa. Thirdly, with GVC sourcing and investment, it was reported that a majority of African countries suffer from not meeting their goals in their respective economic sectors because of the poor quality of the infrastructure (OECD, 2013:34). African countries appear satisfied with poor quality infrastructure and this mindset needs to change in order to bring about a renaissance on the African continent. Lastly, many African countries have common problems, difficulties that are typical in developing countries. These are mostly observed in inadequate airports, railways, poor road or maritime infrastructure links, or even non-existent ones and the research suggests that these factors impact negatively on tourist numbers in developing countries.

2.5.8 Entertainment value chain

Entertainment has long been part of the tourism industry and plays an important role in the itineraries of both tourists and non-tourists while away from home, where they enjoy

spending on a tour package that includes cultural tours, village visits and dance performances, all of which enhance their experience of a destination. Ashley (2007:6) describes the tour package as a tourism activity that can generate an income for local communities around the destination, and that would be pro-poor income from tourism. Although folklore and entertainment still play a role in the tourism industry, the sophisticated tourist is now looking for more, with a decided shift towards digital entertainment (Ashley, 2007:6).

With the advent of digital entertainment, a new value chain has been created. PWC (2013:5) explain that a new value chain means new opportunities and the growth in digital media is affecting the entertainment and media industry, to which all businesses have to respond. This suggests that technology allows businesses to create and distribute content efficiently and effectively, across multiple regions and platforms. It also allows them to control costs and risks by avoiding large capital investments upfront. PWC (2013:5) assert that the growing complexity of entertainment and media means that the traditional entertainment and media value chain is no longer linear but fluid and multi-directional.

Compared to traditional entertainment such as folk dancing, singing or cultural tours, current trends indicate that consumer behaviour is rapidly changing, with 'digital' activities growing rapidly in every sphere. Music is even more digital, with growing usage of streaming services, MP3 files and satellite radio, leaving traditional AM/terrestrial FM radio with a minimal usage share. There is a decline in the number of people who prefer to own music in physical form, while the number of those who download music or video content is growing. These user-behaviour changes could disrupt existing Evaluation and Monitoring (E&M) industry value chains and economics, creating other opportunities (and risks) for stakeholders.

Technology and innovation are changing and people tend to embrace new things, like entertainment in the new age. PWC (2013:2) explains that E&M customers 'want everything and they want it now'. While traditional entertainers would continue to provide revenue, at least for now, growth would likely come from digital entertainment. PWC further state that the market is likely to grow from 40% to 87% with digital content.

Entertainment value chain statistics from 2008 to 2013, and its forecast from 2014 to 2017, are interesting to note. For instance, for the 2008–2013 period the entertainment value chain amounted to US$349 018 of non-digital spend consumers and US$172 947 of digital spend worldwide. The forecast for the period 2014 to 2017 is that non-digital spend consumers in the entertainment value chain will account for US$362 884 and digital spend consumers will grow to US$269 250 (PWC, 2013:2).

2.5.9 Value chain influencers

Making ICT work through a tourism value chain for pro-poor benefits needs more than one player. Value chain influencers may include international and national influencers such as regulatory frameworks, policies, infrastructures and research. One may ask why and how value chain influencers are important. To answer this question, it is very important to know where each influencer/actor is positioned in the value chain.

For instance, according to Roduner (2007:18), international development agencies can influence an enabling business environment for value chain development in four different ways:

- Enable local actors to lobby at policy level through the local government or civil society (for example, chambers of commerce);
- Influence public and private local actors to come together and define a regional policy favorable for businesses and value chains operating in their area;
- Support governmental agencies with technical assistance so they are able to offer a demand-oriented and efficient service to rural entrepreneurs (bureaucracy can be a business killer); and
- Gain experience through small field-level projects (action research and R&D) and use the lessons learnt for direct policy dialogue.

In a developing country like Rwanda, the only way forward is through change—mindset changes, changes in ways of doing things, technology, laws, regulations, and policy change, to the benefit of all citizens in both urban and rural communities. Rwanda did not focus on past failures when rebuilding (apart from the Genocide Museum) but rather the focus was on the present and the future.

Unless international agencies support and improve the technology knowledge that exists in host countries and contribute their expertise, the host countries will remain merely consumers and never become producers. For instance, it is believed that developing countries have obsolete ICT, while thinking that they are on the same level as developed countries. In reality, these ICT applications are 5 to 10 years behind developed countries and were received as donations. These devices include computers, laptops, I-pads, tablets, printers, and inter-sectoral infrastructures such as radiology machines and X-ray scanners.

Foster and Graham (2014:8) note that tourism in Rwanda consists of only a tiny piece of the global pie, yet it is a crucial element of the Rwandan economy. If travel and tourism statistics across the East African region are compared, they highlight that Rwandan tourism is smaller than neighbouring East African countries. This is not surprising, given that Kenya and Tanzania have been renowned for many years as home of the big game safari (Foster &

Graham, 2014:8). However, given the small size of the country's economy, tourism is still significant in Rwanda. According to Foster and Graham (2014:8), it is notable that tourism expenditure is an important contributor (28%) to exports, a larger figure than any other East African country.

Tourism in Rwanda and the importance of this economy is discussed in detail in Chapter Three.

2.6 Summary: an overview of ICT

Generally it is believed that ICT and development in Africa, and specifically in Rwanda, are not separate entities, and the researcher's concern pertains to the need for funding. For instance, Onyeani (2006:11) raises serious concerns regarding the use of borrowed funds in Africa. The author explains that Africa owed the world over US$375 billion by 2006, and that this money was recklessly lent to African countries by the Western world with no expectation that it would be paid back. Onyeani's view is that "…if given manna without working up a sweat to get it, you are liable to misuse it". This could be the premise from which Africa learns effective and efficient management, instead of mismanagement.

African leaders should think change and transformational strategy, using different kinds of ICT applications to increase production. Here, as Okello *et al.* (2014:36) state, ICT should increase innovation in every local setting, thereby enabling individuals and institutions to interact more productively with the global economy. Africans should embark on the culture of deconstructing, disassembling and re-engineering the external ICT applications and adapt them to the African context.

The World Bank (2012:3) says it is mandated and ready to guide reforms to improve expertise in business process re-engineering, change management and proper design of the procurement of ICT components but in order to produce satisfying end results there must be synergy between the World Bank and its clients. African students who have been afforded the opportunity to study ICT software applications abroad, where ICT applications are developed, should complete their studies and return home to initiate innovative and entrepreneurial programmes that can impact locally, regionally and internationally and provide pro-poor benefits for Rwandan communities.

According to Okello *et al.* (2014:47), ICT applications have extensive significance and benefits in eastern Africa only if the respective governments, private sector actors, civil societies and other stakeholders work together in the pursuit of a shared strategic model.

However, Rwanda may be considered an exception in Africa.

Post-genocide, ICT integration became a high-priority issue in transforming the socioeconomic lives of Rwandans. It is believed that ICT could transform Rwanda from an agrarian economy to a knowledge-based country, where television plays a key role by informing, educating and entertaining people. For this reason the government has set the target for TV penetration of at least 30% in 2017, compared to 10% in 2013 (Republic of Rwanda, 2014).

For ICT to improve the economic situation of communities it is vital that community needs are first investigated and assessed. It cannot just be assumed that ICT integration into regulations, policies and developmental approaches will automatically improve the lot of poor communities. This will require co-ordinated and determined efforts from government and stakeholders to ensure that ICT applications are incorporated into policies in the areas of healthcare, food and nutrition, clean water supply and civil rights, among others. To answer the objectives of this study, tourism value chains must be fully identified and developed for pro-poor benefits.

In Chapter Three tourism development and ICT applications in Rwanda are further discussed.

CHAPTER THREE
TOURISM DEVELOPMENT AND ICT APPLICATIONS IN RWANDA

3.1 Introduction

ICT was the topic for Chapter Two, while this chapter explores the dynamics of tourism development and planning issues in Rwanda for pro-poor impacts, with specific emphasis on the use of the value chain development approach to encourage revenue flow-down to communities. This chapter is divided into sections that examine tourism development and planning issues, tourism demand, the tourism supply chain approach, tourism value chain, tourism marketing, the participation of local communities in tourism, ICT applications and contributions to the tourism value chain for pro-poor impacts. The poverty concept and its triple problem are also discussed.

It is believed that for tourism to have a pro-poor impact depends on the quality strategic plan process utilised to prioritise the market segments and to profile the product offering. Therefore, this section will also discuss some successful cases of pro-poor tourism on the African the continent and elsewhere in the world (Ashley, 2007:49).

As Banu (2012:1) and Rogerson (2012) point out, tourism in developing countries is a source of significant potential income but this potential income continues to be debated across the globe. In developing countries the tourism industry, except for agribusiness, could dominate all other sources of income. Banu (2012:1) further points out that tourism is considered a wide-sweeping phenomenon with comprehensive economic, social, and environmental consequences. He further highlights that the competitive advantage of tourism globally was boosted by integrating ICT applications and that the tourism industry globally employs in the region of 200 million people.

A promising future of a vibrant tourism industry for Rwanda is noted by international influencers such as the World Bank, which ranks Rwanda 52 out of the top 185 best-performing countries globally (World Bank, 2013:191). Rwanda is ranked as the best performing country in the East African region, as well as the third easiest country with which to do business in sub-Saharan Africa.

The World Travel and Tourism Council point out that in 2013 Rwanda accounted for a total contribution of travel and tourism to the GDP of RWF459.7bn (9.3% of GDP), and is forecasted to rise by 5.6% in 2014, and 4.5% p.a. to RWF752.3bn (7.6% of GDP) by 2024 (WTTC, 2014:5).

3.2 Tourism development planning in Rwanda

All issues pertaining to tourism development planning in Rwanda are addressed in the Rwandan Tourism policy. For example, the Republic of Rwanda (2009:7) indicates that the image of the country has considerably improved in the recent past but the key tourism source markets are not well known. For example, political stability, safety and security of the country have become positive factors for tourists, and the country is hosting regional and international conferences with delegations from across the African continent and American, European and Asian tourists are visiting the country. Much effort is being put into building better websites that will change the negative perceptions of overseas people who do not believe that Rwanda has recovered post- the 1994 genocide. Concerted efforts continue to maintain the achievements and move forward, transforming social and economic lives and making progress towards becoming a middle-income country.

According to the Republic of Rwanda (2009), the Rwandan Tourism Policy has many sound key points pertaining to tourism development planning. However, the research indicates uncertainty as to whether implementation of this tourism policy would yield any benefits for poor communities.

This is because of the existing gap of tourism development planning awareness between central and local governments and means that the local communities were not consulted during the drafting of the tourism policy.

This study identified the contribution of ICT (sections 2.3 and 2.4) to the tourism value chain as being a rich source of revenue for pro-poor benefits in Rwanda, where there is a direct relationship between poverty and development. Holden (2013:2) believes that economic growth and associated development means that abject poverty is now a condition of a significant minority rather than the majority of the world's population—yet this is a recent transformation. For example, in most sub-Saharan African regions millions of poor people do not have food, water, shelter and clothes. Although people are moving from rural to urban areas in an attempt to earn a liveable income, the numbers of those who do manage to settle in urban areas are minimal when compared to the numbers who remain in the more remote areas. It must be noted that billions of people worldwide live in rural areas and live in relative poverty, slaves to the soil in trying to eke out a precarious agri-living. Clarke (cited by Ukpere, 2007:155) supports this, saying that "…. the 225 richest individuals in the world have a combined wealth equal to the annual income of half of humanity". Mihajlović and Krželj (2014:113-114) report that there has been a positive shift in the global economy in the past few decades because of the tourism and hospitality industries. Ghosh and Gabbay (2003:17) hold that tourism has been the single most important factor in the growth of GDP worldwide. The authors point out that if the contribution of tourism to the global economy has been of the

same degree or magnitude as that of agriculture and mining, then it means that the tourism industry may be likened to pure gold in the eyes of some governments. This argument is apparently supported by the United Nations in their 2005 Economic Report (UNCTAD, 2008).

The subject of tourism development in Rwanda appears in many national reports and testimonies from international agencies, for example the Netherlands Development Organisation (SNV) and an article by Standford and Guiver (2016:484-505) advocating environmental change in the national parks for sustainable travel through creating and implementing partnerships. This NGO believes in their vision for East Africa, and particularly for tourism development, that tourism contributes to economic development and poverty reduction at household and community level through products and activities that are socially, environmentally and economically sustainable (SNV, 2011:5).

Since the SNV was the only international NGO active in the Rwandan tourism industry, they know the progress of the industry because they have participated in various interventions, engaged by private and public institutions, for their inputs. The SNV (2011) states that SNV intervention was driven by the conviction of the combined potential of tourism for the development of the country, as well as to address poverty alleviation.

Poverty is not merely a stand-alone phenomenon (Ashley *et al.*, 2000; Ashley & Mitchell, 2008; Chen & Ravallion, 2008) and will not cease in the world because it is a triple problem where trade, debt and monopoly of power are factors that all contribute to and exacerbate poverty. For poverty to be effectively reduced, a three-pronged attack is required from a committed and determined leadership to address these aspects. Sustainable tourism in Rwanda is dependent on achieving the MDGs and eradication of extreme poverty and hunger is MDG Number 1.

However, various tourism attractions have pursued development without proper planning and without investigating exactly what impacts such development will have on the communities. A tourism area to be visited, commonly named a tourism destination, can be an entire country, a region, an island, a resort area, or simply a single project. Tourism planning may be defined as a course to determine appropriate prospective action, after a series of choices (Gunn, cited by Qing-sheng, 2011:9). The School of Travel Industry Management at the University of Hawaii supports this definition, defining it as an official guiding document to both public and private sectors in development undertakings (TIM, n.d.).

3.2.1 The tourism planning process

In their programme TIM (n.d.:3) explains that effective tourism planning implementation should be done with a participative approach which integrates different levels of concern in the country or a given destination to avoid duplication of efforts and policies. This opinion is

supported by the SNV (2011:9) which promotes the participatory planning approach at national and district level to ensure stakeholder buy-in and relevance of the plans, and that the above concept of integration is very important—every actor has a responsibility and a role to play in the successful outcome of the process (Murphy & Anne, 2004). In order to ease the task of planning, the SNV explained that international, national, regional, local or community level, and site planning level, should be carefully considered in the process of planning.

Firstly, at the international level tourism planning includes overseas actors such as international transportation services, joint tourism marketing, regional tourism polices and standards, co-operation between sectors of member countries and other co-operative concerns (Mowforth & Munt, 2009; SNV, 2011:9).

Secondly, the aspect of national level planning engages tourism planning for one country. National level planning concerns national tourism policy making, structure planning, transportation networks within the country, major tourism attractions, national level facilities and service standards, investment policy, tourism education and training, and marketing of tourism (SNV, 2011:9; Musahara *et al.*, 2014).

Thirdly, regional level tourism planning generally includes provincial plans, state plans, or prefectural plans where applicable. It involves regional policy and infrastructure planning, regional access and transportation network, and other related functions at the regional level (SNV, 2011:9).

Fourthly, tourism planning at a local or community level mostly focuses on sub-regions, cities, towns, villages, resorts, rural areas and some tourist attractions (SNV, 2011:9).

Lastly, tourism planning at site level deals with specific locations of buildings and structures, recreational facilities, conservation and landscape areas and other facilities carried out for specific development sites, such as tourism resorts. It may also involve the design of buildings, structures, landscaping and engineering design based on the site plan (SNV, 2011:9).

Qing-sheng (2011:11) supports the tourism planning structure as described above but he states that the international plan arrangement is important, among others. However, on this facet of tourism development planning he expounds the issue as chains of goals and inclusive arrangements based on regional tourism, history, current context, and market factors. His approach is based on planning the opportunities in the decentralised system as a form of governance. He believes that dividing tourism development planning into a national tourism development plan, regional tourism development plan, and local tourism development plan, is a good initial structure. Like Qing-sheng, the researcher supports the

approach of tourism planning and believes that it promotes the top-down and bottom-up leadership theory, and it impacts on Rwanda.

3.2.2 Rwandan tourism master plan

The SNV (2011:9) identifies four promising destination areas within the Sustainable Tourism Development Master Plan for Rwanda: Musanze, Rubavu, Rusizi and Kigali. Identification of these destinations resulted from the survey conducted by the SNV, after which multi-stakeholder platforms and district steering committees were formed with tourism actors from the public, civil society and the private sector. Rwanda has noted the importance of civil society and local communities in the tourism master plan.

This is the active participation of local communities in the accommodation value chain as reported by the SNV (Kagire, 2009), whereby the purchase of local food items by Musanze hotels had registered an increase of approximately 30% over a two-month period after the sensitisation meetings. A master plan for a destination will differ for each project, depending on the sort of destination to be developed, its current level of development and the model or style of planning being used. Goeldner and Ritchie (2012:352) indicate that a one-year planning cycle is not uncommon, although three- to five-year plans are the norm.

These authors state that a destination vision may have a 5, 10, 50, or even a 100-year time horizon. For a master plan to be effective, the following aspects should be considered in the process of planning: economic development, human resources development, environmental impacts and social and cultural impacts. Werabe, the Director of Tourism in the Rwanda Office of Tourism and National Parks (ORTPN), during the presentation of the draft of the Tourism Master Plan in 2009, stated that the need for human resource development concepts, investment, research and development, and tourism marketing, all confirmed the need for revamping the tourism industry (Kagire, 2009).

TIM (n.d.) notes that elements of a tourism destination can vary from one destination to another. For instance, according to Kagire (2009), the Rwandan draft Tourism Master Plan reveals that major efforts are required to address the issues of improving infrastructure and other facilities used by tourists. This includes roads, hotels, airports, recreational facilities, shopping malls, resorts, cultural centres and many other products aimed at attracting and making tourists more comfortable. TIM (n.d.:4) advocates that any tourism destination plan should include a tourism demand analysis, a tourism supply analysis, a tourism impact analysis, economic and financial analysis, and action plans and recommendations.

Firstly, TIM (n.d.:4) explains that a tourism demand analysis examines the existing and future visitor markets for the destination, its characteristics, the travel patterns and trends of the

markets. Demand analysis is indispensable to understanding the competitiveness of the destination with other tourism destinations with similar attractions.

Secondly, tourism supply analysis examines all issues related to the destination itself, including transport services, accommodation services, reception services, catering services and other services that are sometimes referred to as tourism infrastructure (Godfrey & Clarke, 2007:71). These are the factors, among others, which have a significant impact on the quality of the visitor-experience at a given destination.

During the assessment of a new development for a previously undeveloped area, planning should consider the quality of tourist attractions, climate, conducive environment, land development, tourism integration to the other regional attractions, utilities infrastructure and geographical accessibility, for example, adequate transportation, residents' perceptions of the development of the area, and the local manpower and sufficient housing (Mazimhaka, 2007).

Thirdly, TIM explains that a tourism impact analysis examines the most important impacts of a tourism plan, that is the environmental impacts and the social and cultural impacts of development. TIM's argument supports Godfrey and Clarke (2007:4) in their belief that tourism impacts can be both good and bad and the actual effect depends very much on the character of the area and local circumstance. An important goal of tourism planning should be to protect the natural setting and avoid exploitation of the natural resources. This is in alignment with the arguments of Godfrey and Clarke (2007:10) and Mowforth and Munt (2009) who state that the goals of tourism planning should be achieved with consideration of local resources and market potential.

However, because communities do not have clear and realistic plans to attract visitors there will be a perpetual struggle to reach the tourism potential if local community participation is still ignored (Godfrey & Clarke, 2007:10). For Rwanda, there is hope that good governance will encourage green tourism that benefits the communities.

Kreag (2001:4) and Ahmed (2015:33) agree that social and cultural impacts concern the pressures and changes that tourism might bring to the resident communities at a given destination. Kreag further points out that those changes include economic, environmental, social and cultural, crowding and congestion, services, taxes and community attitude. Ahmed (2015:33) supports the TIM argument that tourism can have both real and perceived beneficial and harmful effects on local culture as a result of the use of culture as a tourist attraction and the direct contact between residents and tourists (TIM, n.d.:4). Furthermore, Kreag (2001:3) cautions on tourism impacts that may be harmful to destinations and local communities. There is a tendency to believe that economic development is the primary reason for tourism development at many destinations, like Godfrey and Clarke (2007:17) who

indicate that income and employment benefits created by visitor spending are the key reasons for encouraging tourism development.

The action plan and recommendations is the final product of the planning process and will depend on the goals of the plan (Musahara *et al.,* 2014; Nibigira, 2014; Republic of Rwanda, 2015). It generally includes a summary and analysis of all the data used in the planning process and also strategies, guidelines, recommendations and schedules for development. It is of concern that while governments of developing countries spend huge sums of money on developing tourism master plans, often this is done without seeking input from local communities. This opinion is echoed by the Fetakgomo Local Municipality (FLM), which believes that community involvement in planning and decision making must be ensured (FLM, 2008:18).

3.2.3 Rwanda tourism planning/development post-1994 genocide

The UNWTO (2002:3) report on food and agriculture organisation indicates that many developing countries rely on a single industry, such as agriculture. More than two decades ago Galor (1990:3-4) argued that agriculture was an exceedingly low productivity industry in developing countries due to archaic practices and people produced for daily consumption, not for exportation of the products. Even the products did not meet the daily needs of the population whereby, for example in Rwanda with the introduction of tourism, it often led to a decrease in the agricultural base of the country because a number of people left farming activities for tourism and hospitality job promises. Agricultural production declined as a result, just when the demand for food and beverages increased because of the number of tourist arrivals (Goeldner & Ritchie, 2012:396).

Tourism was a secondary revenue stream, based mainly on viewing Rwanda's gorillas. As mentioned by Nielsen and Spenceley (2010:2), Rwanda's gorillas first attracted international interest due to the conservation efforts of Dian Fossey in the 1960s and 1970s. Researchers like Nielsen and Spenceley (2010:4) report that the attraction of gorilla tourism lead to almost 22 000 visitors to Rwandan's three national parks in 1990. However, the numbers collapsed during the civil war, genocide and the subsequent periods of insecurity between 1994 and 1998. These authors indicate that 17 000 visitors came to see the gorillas in 2008 which is a significant increase in numbers from the late 1980s and an exciting recovery from only 417 tourists in 1999 after the reopening of the park (Nielsen & Spenceley, 2010:2).

Reported trends indicate that Rwanda deems gorilla-viewing tourism as a valuable conservation tool in the country's development, where the revenue funds not only the national parks and facilitates conservation activities, but 5% goes to community projects (Nielsen & Spenceley, 2010:2). Beyond this one success story of tourism development in

Rwanda there is still a need to improve distribution of tourism opportunities at other destinations of the country. In 1994, the primary tourist destination in Rwanda was the Virunga National Park (VNP) in the Northern Province because of the gorillas and the VNP continues to dominate the tourism industry. Gradually other parks, such as the Akagera National Park (ANP) and Nyungwe Forest National Park (NFNP) began to attract visitors. In any country, political stability is an important factor to tourists, but the converse is also true—political instability damages and undermines the industry. This is what happened in Rwanda during the genocide and civil war between 1994 and 1998. Prior to 1994, Rwanda did not have an important tourism industry but as the number of visitors grew in the following years, the need for a clear tourism strategy became a priority. Goals needed to be set, objectives identified and policies and guidelines for tourism development needed to be implemented.

The years 1994 post-genocide to 2001 were used by the Rwandan Government to establish a tourism-friendly environment. Nielsen & Spenceley (2010:5) indicate that the first meetings held with the private sector regarding the development of the tourism sector took place in 1999 in Kigali. From 2000 onwards, Rwanda participated in major tourism fairs and in late 2001 the Tourism Working Group, which included the public and the private sectors, was established. The Rwanda Tourism Strategy was developed and approved by Cabinet in 2002 and a National Tourism Policy was in place by 2006. A revised tourism strategy, called *Sustaining the Momentum*, was implemented in 2007 (Nielsen & Spenceley, 2010:5). The tourism strategy identified visitor destination areas throughout Rwanda for tourism promotion and development. The criteria for selection of these destination areas were based on climate, the mountain landscape, tourist targets and populations inhabiting the mountain.

Nielsen and Spenceley (2010:2) report that the revival of gorilla tourism has contributed to an increase in tourist arrivals and word-of-mouth referrals ensure more visitors every year. However, Rwandan tourism is not limited to gorillas and three national parks. The country is benefitting from a large number of business and conference travellers, mainly from the DRC as well as neighbouring countries of the EAC, Burundi, Kenya, Tanzania and Uganda. This is evidenced by the growing number of hotel bookings and restaurant reservations. In their report, Nielsen and Spenceley (2010:2) indicate that besides national and international investments in coffee and tea exports, the contribution of tourism export has significantly increased revenue.

3.2.4 Local community participation in tourism planning

Globally, the tourism industry offers very many job opportunities and this is especially important for developing countries. Joint collaborative actions promote a successful tourism sector that benefits all players, including public sector, private sector, civil societies and local communities. FLM (2008:17) advocates that it is necessary to ensure community

involvement in tourism that translates into direct benefits. In reviewing relevant literature, it is not always clear what benefits are derived by local communities (TIM, n.d.:9) and if there are barriers which prevent tourism income flowing down to local communities.

Murphy (cited by Van Breugel, 2013:5) and Sharma and Dyer (2009) argue that local people-involvement in tourism development is not new and the success of the tourism industry relies on good relationships and co-operation between local people and leaders. He points out that a mismatching of tourism development and planning with local aspirations and capabilities would affect the potential of the industry.

FLM (2008:18) advises that it is important to ensure community involvement in planning and decision making. Supporting community and private sector product owners and stakeholders will not only allow individual businesses to grow, but will result in the expansion and improvement of overall tourism benefits and contribute to overall social and economic growth (FLM, 2008:82). If tourism development and planning does not meet the aspirations and needs of local communities, it will have a severe negative impact on tourism.

Apleni (2012:2) explains that community participation needs to be integrated into sustainable tourism development and failure to do that will hinder the success of tourism development initiatives that will remain merely a dream. Nowadays, tourism is becoming an increasingly important economic sector in many developing countries such as Rwanda and the participation and empowerment of host communities are intertwined, essential objectives in any tourism initiative that seeks to address issues of poverty.

In many development initiatives, such as community-based programmes, huge amounts of money have been spent but with no visible results. For example, Waldman (2008:12) pointed out that donors have contributed to progress in Afghanistan but a large proportion of the aid was prescriptive and directed to advance the political and military objectives of the donors rather than responding to indigenous Afghan needs.

3.2.5 Community participation in tourism in Rwanda: a need to reinforce?

Tourism activities are happening, however, the main issue is the non-involvement of local communities in planning and development, not only in rural areas but in urban communities also. There is a lack of awareness, a lack of professionals in the industry who can contribute to the planning process. The industry is dominated by multinational tour operators, with very few Rwandans who have easy access to funds. Only in 2008 was it acknowledged that local communities had a pivotal role to play in developing tourism, such as agri-tourism and cultural tourism. However, in the tourism value chain development the role of local communities should be visible along the value chain stages so that the concept of tourism value chain can work for them.

National and international stakeholders provided input into a ten-year tourism master plan that resulted from consultation with independent experts and international agencies who work for community development. Emmanuel Werabe (cited by SNV, 2008:9) reports:

> ...developing the new tourism policy and the Tourism Master plan for Rwanda, SNV helped to write the plan in a comprehensive, technically smart way, and worked together to polish it up and make it acceptable to all players. Afterwards it was passed through cabinet and now we use it. The policy is meant for five years and the Master Plan covers a ten-year period.

SNV (2008:1) states that the global tourism industry is dominated by foreign companies that usually maintain a minimum of linkages to local tourism service suppliers. To facilitate a higher local share from the global tourism value chain, and to ensure a more equal distribution of tourism revenues over the urban and rural population, local value chains that increase the local content in the supply to foreign tourists need to be developed. Involving local tourism stakeholders in the international (re-)branding of the country as a tourism destination is an important element in that strategy.

The aforementioned strategies could be achieved through allowing community members to be included in tourism development. Van Breugel (2013) indicates that many organisations purport to use local communities in their programmes but in reality they do not. The advertised local community participation is merely used to enhance the projects to derive more benefits.

3.2.6 Community participation as a promoter of pro-poor tourism

Apleni (2012:5) explains that community participation in tourism expands the livelihood opportunities for the poor by ensuring that the barriers to their participation are removed. The concept of community-based tourism (CBT) overlaps with pro-poor tourism and its main aim is to involve local people in tourism initiatives. Supporters of pro-poor tourism (PPT) argue that some of the most successful examples of tourism occur in countries that actively support community involvement in tourism and there is a correlation between community participation and PPT.

It is therefore understood that the intention of PPT is to generate increased income for the poor and to ensure that tourism contributes to poverty reduction (Ashley *et al.*, 2000: Ashley & Mitchell, 2008; Chen & Ravallion, 2008; Engelen, 2011). To this end, PPT is an approach, not a product, to be used to unlock opportunities for the poor for economic gain and other livelihood benefits. This is supported by Gartner (cited by Stone, n.d.:247) who points out that community involvement can be viewed as part of the inexorable ‘democratisation‘ of public life as more countries move towards fully market-based economic systems and citizens demand more involvement in all matters affecting their lives, including issues surrounding tourism development. Ndivo and Cantoni (2015:116) question pro-poor tourism

and tourism value chain approaches in poverty alleviation. These authors propose a 'Pro-poor Tourism Value Chain' model to consolidate the strengths of these aspects (PPT and TVC), while addressing their limitations.

This indicates that the PPT approach focuses on strategies that enhance benefits to the poor and aim to unlock opportunities for the poor, whether for economic gain, other sources of revenue benefits or participation (Apleni, 2012:4).

3.3 Tourism demand and the tourism supply chain

Tourism demand and supply are two basic aspects of any tourism business. Generally, the demand side is viewed as tourists (travellers, guests, customers) and all related features, activities, behaviour and implications. Cooper, Fletcher, Fyall, Gilbert and Wanhill (2008:34) maintain that tourism demand has multiple definitions, depending on an author's perspective.

For instance, economists define demand as the schedule of the amount of any product or service that people are willing and able to buy at each specific price in a set of possible prices during a specific period. In contrast, psychologists view demand from the perspective of motivation and behaviour, while geographers define tourist demand as the total number of persons who travel, or wish to travel, to use tourist facilities and services at places away from their normal places of work and residence (Sen, 1999; Cooper *et al.*, 2008:33).

3.3.1 Types of tourism demand

Cooper *et al.* (2008:33-34) identify four types of tourism demand:

- *Effective or actual demand* which refers to a number of participants in tourism who actually are travelling at a point in time;
- *Potential demand* refers to those who will travel at some future date if they experience a change in their circumstances. In other words, people could travel if motivated. For instance, in domestic tourism residents may decide to visit national parks if their purchasing power has increased or they have received a paid holiday;
- *Deferred/postponed demand*. Here demand has been postponed because of a problem in the supply environment, such as a lack of capacity in accommodation, weather conditions, or perhaps a natural disaster, such as volcanic explosion. In other words, people wish to travel but are not travelling presently due to temporary reasons; and
- *Suppressed demand*. Everywhere there are people who simply do not wish to travel or are unable to travel; these constitute a category of no demand. These are people not interested in travel as they have other priorities on which they would rather spend their income than tourism.

Residents must be consulted before any tourism demand is planned. Thus, household surveys, en-route surveys, destination surveys, or surveys of suppliers need to be conducted. This is substantiated by Cooper *et al.* (2008:34) who point out the following concepts:

- *Demand substitution* refers to a case when demand for one activity is substituted by another, for example camping or leisure cruises is substituted by staying in commercial accommodation.
- *Demand redirection* is where the geographical location of demand is changed. For example, a trip to Rwanda is redirected to Uganda because of over-booking for viewing gorillas.
- *Demand generation* refers to a new market and new destination in order to create tourism flows. In other words, the creation of new demand has resulted from the creation of new products.

During the empirical study the participants indicated that there was a need for awareness-creation on how one could do business-based ICT. They argued that it is not sufficient to advertise the company's products and services, rather that understanding their own business and ICT integration is a pre-requisite. In addition, the realities in the City of Kigali are quite different from other provinces. Consequently, deployment of ICT infrastructures, resolving issues of connectivity, energy, understanding visitor-cultures, and information knowledge distribution between local communities on ICT as an enabling tool in doing business would help them achieve more for themselves and at the same time exceed visitor-needs (Carmody, 2012). To illustrate this, Rwanda attracts high-end income clients (Nkurayija, 2011) and all its efforts are to create long-term relationships with outgoing operators who promise to send tourists. In this category you may see the USA, Europe, Asia, and few regional and domestic clients; it is notable that tourism and hospitality in Rwanda offer huge opportunities that need to be understood. Moreover, an integration of the ICT sector to the tourism sector means demands appear in different forms. This is to say that the demand for tourism is changing and new tourism firms, for example the national and international tourism chains and the expansion of the Internet, may require a new approach to the marketing (Buhalis & O'Connor, 2005) of the Rwandan industry.

Foster and Graham (2014:12) indicate that the growth in demand has affected Rwandan tourism. This is evident in the increasing integration of Rwanda firms into global tourism, both multinationals and regional groups. This includes:

> ...hotel chains such as Serena which have invested in upgrading their Kigali facilities; lodges located around the Volcanos National Park, also are part of Kenyan and Ugandan eco-tourism groups; A concession to the South African private company African Parks to manage Akagera National Park; Massive private-sector investment in the new conference

centre in Kigali; and growing presence of multinational firms (US, UAE, India) who have established physical presence as local travel agents in Rwanda.

Future important implications for wider impacts of tourism in Rwanda are debatable because multinational firms would need to employ locally skilled people in both the ICT and tourism sectors, and trade-offs between local and imported resources (people, produce, services) are also important for the poverty-relief effects of tourism in Rwanda.

If demand data were available at the lower levels of village, cell, sector and district, the measurement of demand would be easy to determine. According to Cooper, Scott, March, Pforr and Thompson (2006) on a global level in 1950 one international trip was generated per 100 population, a figure that rose to 11 in 2000, and is forecast to increase to 21 trips per 100 population in 2020. The authors describe two forms of travel propensity as follows:

- Net travel propensity determines the percentage of the population that undertakes at the minimum level, one tourist trip in a given period, typically a year. One may determine what number of the population participates in tourism in that period of a tourist visit. It was explained that the suppressed and no demand components will therefore ensure that net travel propensity never approaches 100% and a figure of 70% or 80% is likely to be the maximum for developed Western economies. In this study, the description of net travel propensity means that the measurement of demand level in a given destination would help to determine how often the destination is visited in a year and how much money has been donated or spent in any kind of accommodation. Although it is stated that no demand components would ensure 100% of net travel propensity, at least one would be able to determine a minimum or maximum, depending on the demand seasons.
- Gross travel propensity gives the total number of tourism trips taken as a percentage of the population and is a measure of the penetration of trips and not individual travellers. This can be observed when travellers decide to travel many times, and then travel propensity becomes more relevant. As shown by Western experiences, gross travel propensity can exceed 100% and often approaches 200% because those participating in tourism may take more than one trip away from home per annum (Cooper *et al.*, 2008:40).

Subsequently, dividing gross travel propensity by the net will give travel frequency. Gross travel propensity appears irrelevant to this study but for tourism practitioners who need to forecast tourism supply, it is important to understand the demand phenomenon too. This means that the visitors can visit more often and many times in a year because there is still more to experience. Cooper *et al.* (2008:40) describe it as "...the richer the experience, the greater gross travel propensity and more and more receipts will be accumulated in a time

period". Involving local communities assists them to understand how often more visitors affect their economic lives and motivates them to become more responsible of domestic tourism (Schoeman & Mynhardt, 2005).

An index of 1.0 indicates an average generation capability and countries with an index greater than unity are generating more tourists than expected in terms of their population. Countries with an index below 1.0 generate fewer trips than average. Considering tourism demand, one may pose the question as to why people travel. Nelwamondo (2009:47) states that there are many different reasons for engaging in tourism and different people participate in tourism for different purposes. Every purpose comes with specific requirements but an overriding demand is for accommodation. Whatever the intention, tourists should be accommodated in one way or another.

3.3.2 Tourism supply

According Nelwamondo (2009:58) and confirmed by Zhang, Song and Huang (2009:348), tourism supply is related to the availability of the key components of the tourism industry by host governments or destinations. Such availabilities comprise infrastructure (airports, hotels), superstructure, for example supermarkets and malls, attractions, recreation facilities, marketing/promotion and destination image, supply chain actors such as airlines, tour operators, hotels, cruise ship lines, and recreation facility providers.

The tourism supply chain (TSC) approach is still new in Rwanda. Studies on the subject have been done, including that of Ashley (2007:4), but it is too early to believe that the poor understand how to diversify income besides agrarian activities, hence there is no practical inclusion of the poor in the tourism supply chain management.

Concerning a TSC on pro-poor tourism in Rwanda, it is important to understand the process of establishing linkages between tourism firms and poor households in Rwanda, yet there are opportunities for such entry. The scenario differs between upmarket tourism firms and smaller firms. In large markets, the tendency is to outsource the products from abroad and the impact on the poor is limited to wages and some skills acquired by on-the-job training in the host country.

Regarding product and service distribution to consumers, Foster and Graham (2014:32) and Buhalis and Sou Hyu Jun (2012) suggest that online visibility and accessibility offers the potential for Rwandan companies to directly reach customers, support references and market their products or services. However, it is important to note that besides connectivity issues, a number of dynamics still limit the ability of firms to reach customers directly, including low capacities around skills to exploit online resources, issues around finance, time management to interact with customers, brand names, logistic quality and power and

networking. Other considerations include procurement, building trust in the business, time management, market understanding and a change in mindset. In the researcher's opinion online visibility is not the solution to every problem in disadvantaged areas.

Foster and Graham (2014:32) report that low-income communities can be involved in tourism and community tourism by becoming guides in national parks, production of handcrafts, as recipients of community funds from national parks, and in the provision of jobs in hotels, but one should understand that significant impacts on poor communities could occur from changing connectivity. Some arguments hold good, such as the growth of community tourism being driven by the ability to sell niche tourism online, where some hotels and attractions are enabled to advertise vacant job positions online under a pretext of being transparent and cannot be considered as significant benefits for the poor community, as a result in changing connectivity.

For a TSC to be managed effectively, demand management clearly has to have a central position in the chain. In recent years, collaborative supply chain forecasting has become popular. The value of collaborative forecasting lies in the broad exchange of information to improve forecasting accuracy, as supply chain members collaborate through joint knowledge of sales promotions, pricing strategies, marketing and production information (Zhang *et al.*, 2009:348).

Tourism, being a sub-economic sector, the supply chain in it has been defined as a set-up of tourism businesses involved in diverse activities ranging from the supply of different elements of tourism products/services, such as airlines and accommodation establishments, to the distribution and marketing of the final tourism product at a specific tourism destination, and involves a wide range of participants in both the private and public sectors (Zhang *et al.*, 2009:347).

Tapper and Font (2004:2) define TSC as a chain that "…comprises the suppliers of all the goods and services that go into the delivery of tourism products to consumers". It has been used to explain how different businesses enter into contractual relationships to supply services and products and goods, and how these goods are assembled into products at different points in the supply chain. It is surprising that many tourism-related studies do not mention the TSC concept and perhaps do not consider the tourism industry as part of a country's economic activities, or it is because some consider the study of tourism supply as a theoretical economic concept and difficult to visualize (Siyanda Sifolo, 2015:7). However, UNWTO (2015:3) articulate that economic growth across the globe, in either developed countries or developing ones, is due to tourism.

The views of Zhang *et al.* (2009:347) describe the characteristics of tourism as part of the global economy and offer clarity and insight into the industry and this confirms the belief that

tourism has huge potential for economic reform, especially in Rwanda. They feature tourism as a co-ordination-intensive industry with perishable products/services, dependent on presentation and interpretation of the products, information-driven, dependent, heterogeneous, complex and uncertain.

Firstly, tourism in itself forms an industry of services. These authors expound that the quality of co-ordination of the industry determines the level of customer satisfaction. Thus, different services providers in the tourism industry must co-operate to predict a final tourism product to be sold. Secondly, these authors state that tourism products/services are now product/service consumption. Thirdly, tourists are motivated to consume the products and services when they are presented to and interpreted for them. Fourthly, a tourism industry depends on the popularity of the products and services (Ujma, 2001). Fifth, tourism products are interlinked to one another; one product/service does not alone define the tourism industry at any given destination. Sixth, Zhang *et al.* (2009:347) explain that the complexity of the industry is because one sub-tourism value chain must influence the cross-selling of tourism products and services across other value chains. These are, for instance, the cross-selling between accommodation, transportation, sightseeing and shopping. Finally, due to the highly competitive nature of the tourism industry, tourism businesses face uncertainty in their regular markets.

According to Zhang *et al.* (2009) tourism supply goes hand in hand with a TSC. Zhang *et al.* (2009:346) reveal very little on the subject in Africa, and particularly in Rwanda. The paucity of subject matter is perhaps due to a lack of attention to research and development from governments and leaderships (Mazimhaka, 2007; NICI, 2015). However, reports such as that of WTTC (2014) do assist in supplying statistical data. For instance, this report discussed the contribution of the industry to the GDP of Rwanda (including wider effects from investment). The supply chain and induced income impacts was RWF459.7bn in 2013 (9.3% of GDP) and was expected to grow by 5.6% to RWF485.5bn (9.2% of GDP) in 2014. It is forecast to rise by 4.5% per annum to RWF752.3bn by 2024 (7.6% of GDP) and in terms of employment, travel and tourism generated 66 500 jobs directly in 2013 (3.1% of total employment) and this was forecast to grow by 0.2% in 2014 to 66 600 (3.0% of total employment).

This includes employment by hotels, travel agents, airlines and other passenger transportation services (excluding customer services). It also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. By 2024, travel and tourism will account for 72 000 jobs directly, an increase of 0.7% per annum over the next ten years (WTTC, 2014:7-8).

The concept of a supply chain is not mentioned in the Rwanda Vision 2020 document (Republic of Rwanda, 2000:6). It merely states that the Rwandan government will not

interject in providing services and products that can be delivered more efficiently by the private sector. This statement is meant to empower other institutions and the public to own Vision 2020. It is probably a good strategy for the central government to strengthen legal frameworks and be a catalyst towards infrastructure development, human resources capacity development, social and economic development and justice, and leave other responsibilities to the private sector and civil societies to bring about changes in the rest of the country. Issues like financial intervention to fund formal businesses, business promotion, and an increase of local products exportation, multiplying vocational and technical jobs, developing informal businesses such as retail businesses, repair workshops, garages, handcrafts and metal works, are awaited from the private sector (Republic of Rwanda, 2000:14).

Zhang *et al.* (2009:349) note that a TSC seems to be a promising approach to success in disrupted countries, and Rwanda is one of the examples. The researcher concurs with these authors that after the genocide, the country needs modern approaches to gear its change through strong administration management. They argue that effective supply chain management relies strongly on the success of relationship management. This implies that regardless of the nature or complexity of a TSC network, there is a general need for tourism businesses to acknowledge the structure of the markets of other non-tourism sectors for the country's development as a whole. Nelwamondo (2009:58) explains that beside the economic factors influencing tourism supply, there are political, geographical, legal, technological and social factors to be considered, and that all these factors play an integral part in meeting the multiplicity of needs and wants of tourists in desired destinations.

Vision 2020 (Republic of Rwanda, 2000:4) indicates that economic growth alone is not sufficient to bring about the necessary rise in the standard of living of the population. Thus, to overcome hunger and poverty, growth must be pro-poor, giving all Rwandans the chance to gain from the new economic opportunities. Creating economic linkages around tourism will increase the benefits to the poor from tourism growth in Rwanda. There are a number of initiatives that need to be appreciated, such as the introduction of the EDPRS phases 1 and 2 for social and economic transformation of its citizens.

3.3.3 Tourism value chain

Porter's approach was used to link the tourism sector with ICT for pro-poor benefit in Rwanda. Porter introduced the idea that a firm's competitiveness does not exclusively relate to the production process. Enterprise competitiveness can be analysed by considering the value chain, which includes product design, input procurement, logistics, outbound logistics, marketing, sales, after-sales and support services such as strategic planning, human resource management and research activities (Kaplinsky & Morris, 2001:8), and the Rwandan knowledge economy through the (perceived) low barriers to enter the industry, and

unrestricted entrepreneurial ventures to start a business (Lyons, Young, Hanley & Stolk, 2015). In Porter's framework the concept of the value chain had a strict business application.

A tourism value chain starts with the customer order (Boomsma, 2007). Customers or tourists have some alternatives when they purchase a tourism product. Yılmaz and Bititci (2006b:344) advise that tourists can either arrange their travel plans with the help of tour operators or outbound travel agents (package travel) and that the whole holiday package is professionally planned without the travellers having to make any arrangements themselves. These authors further advise that incoming travel agents can be used to make transfer arrangements from/to the airport (or train station, harbour, etc.) to/from the hotel and for daily excursions and other activities at the destination.

Any mode of transportation (airline, train, cars and boats) between home and destination is also an important part of the tourism value chain, where the package travel model includes the alternatives of either taking the whole holiday package, which is the most popular one, or any part of the travel (e.g. airline ticket only, hotel reservation, car rental at destination or a combination of both).

Alternatively, customers can organise each stage of their travel by themselves, which means that they buy the airline ticket, book the hotel stay, hire a rental car and arrange sightseeing tours or any other activities directly from the supplier without using any middleman. It is very important to understand that the tourism value chain can be used to manage the tourism product as all-in-one products from the beginning to the end.

3.3.4 Tourism marketing

Kolo and Madichie (2013:11) argue that tourism marketing is the advertising and selling facets of the products and services. The authors explain that marketing is the total picture in getting products and services from the producer to the user. In the case of tourism marketing Kolo and Madichie (2013) point out that tourism marketing is a multi-stakeholder, multi-faceted and multi-activity process. Although this study does not address marketing issues, the findings revealed how ICT plays a significant role in the promotion of tourism products and services in Rwanda. These tourism business marketing modes include face-to-face operation, word-of-mouth, Internet, e-commerce business, pamphlets, travel shows, travel agents, visitor information centres, road signs and social media. It is clear that without ICT equipment available in Rwanda, there is no easy way for tourism product and service dissemination to the consumers.

3.4 ICT applications in stakeholders' economic lives in Rwanda

This section discusses the application of ICT in the economic lives of stakeholders within the tourism sector in Rwanda.

According to ITU (2005:19-20), the usage and placement of ICT should seek to create benefits in all aspects of our daily life. ICT applications are potentially important in government operations and services, health care and health information, education and training, employment, job creation, business, agriculture, transport, protection of environment and management of natural resources, disaster prevention, culture, and to promote the eradication of poverty. ICT should also contribute to sustainable production and consumption patterns and reduce traditional barriers and challenges (Buhalis & O'Connor, 2005), providing an opportunity for all to access local and global markets in a more equitable manner.

Applications should be user-friendly, accessible to all, affordable, adapted to local needs in languages and cultures, and support sustainable development. To this effect, local media (Buhalis & Sou Hyu Jun, 2012) and authorities should play a major role in the provision of ICT services for the benefit of their populations. Outlined below are factors approved by participating governments at the World Summit on the Information Society meeting held in Tunis in November 2005 (ITU, 2005:1421):

- The role of governments and all stakeholders in the promotion of ICT applications for development: The government is a stakeholder and promoter of the ICT sector. Since government is positioned to create networks, its crucial role is to permit ICT benefits to all people in all sectors, including the tourism sector (Becton & Graetz, 2001; Lyons *et al.*, 2015).
- Information and communication infrastructure: This is the essential foundation for an inclusive information society. There is no ICT infrastructure created for one categorised economic class. Everyone should feel comfortable in an ICT society and the Internet should be an affordable service and available to all (Cruz & Giles, 2000).
- Access to information and knowledge: Nobody is born skilled or informed. Information and knowledge distribution should overcome inequality between local communities in urban and remote areas. The researcher opines that it is the essence of poverty reduction everywhere in the world.
- Capacity building: No one is presumed to know everything in his field or crosscutting field. There is a need for refresher courses and/or on-the-job-training for everyone in a given society.
- Building confidence and security in the use of ICT: No fear should exist in an ICT society. Every ICT user should be equipped to face any sort of ICT manipulation (Lyons *et al.,* 2015).

- Enabling environment: It should be a friendly environment in which investors and non-investors can participate in ICT promotion and are enabled to exploit ICT opportunities. It should be a zero barrier tolerance.
- ICT applications: This should offer benefits in all walks of life. Nobody is excluded from ICT benefits (Buhalis & O'Connor, 2005).
- Cultural diversity and identity, linguistic diversity and local content: ICT has become a tool to promote the culture of any country where every society should understand the universal language of ICT. ICT promotes global unity.
- Media: Because of ICT there is no 'distance' to overcome; information from around the world is instantly available to anyone. For example, a resident in the Northern Province of Rwanda can receive instant updates on news from anywhere in Rwanda, anywhere on the continent and anywhere in the world (Buhalis & Sou Hyu Jun, 2015).
- Ethical dimensions of the Information Society: There are conventional rules, regulations and policies governing ICT users. For example, using ICT to disrespect the values of human beings is prohibited.
- International and regional co-operation: ICT has no limited distance communication, so there is no reason not to keep abreast of all national, regional and international development-based ICT (ITU, 2005).

Contrary to the aims of the Rwandan Vision 2020 document, there has been a slow adoption and integration of science and technology into the social and economic life of Rwanda over the past decade. National and regional debates held by public and private institutions reached the conclusion that there is a great need to increase technical vocational education and training at all levels.

To achieve this, it is necessary to acquire scientific skills as well as technological innovations, in addition to integrating them into the social and economic development drive. A curriculum for science and technology at secondary and university level must be developed. This will facilitate the creation of high and intermediate technology enterprises and develop access to ICT down to the administrative sector level, in accordance with the national ICT plan (Republic of Rwanda, 2000:19). It is felt that ICT has the potential to alleviate poverty, promote economic and social development and improve the quality of life of people in rural and remote communities. Many developing countries, including Rwanda, have begun initiatives to build the necessary ICT infrastructure in rural areas, including establishing ICT access points known as telecentres. These telecentres are community centres that provide public access to ICT in the form of telephones, computers and the Internet (ESCAP, 2007:1).

Petti and Passiante (2009:2) believe that the function of traditional destination management within the tourism industry has been significantly changed and improved by the use of ICT. These changes can be seen, for instance, in the planning, development, marketing, promotion, delivery, management, co-ordination, and monitoring processes of the destination activities in emerging countries like Rwanda. These authors further stress that ICT has reduced the costs of printing and distribution of promotional material. In addition, the use of ICT contributed to significant savings and reduced the time needed for collection and analysis of tourism data, and the quality of data had improved.

Changes are apparent in new hotels constructed in Kubara and Musaze where the value added to the business is due to the use of ICT applications, enhanced computer reservation management systems, using web-based learning systems for vocational training, ensuring a wider diffusion of knowledge and competencies of the appointed staff (Petti & Passiante, 2009:2). It is therefore apparent that with time, industrial development-based ICT will increase the capability of the tourism sector to attract and retain qualified workers at destinations (Petti & Passiante, 2009:3).

ITU (2005:19-20) argues that ICT will benefit countries whose commitment is to reduce poverty in their communities through economic sector activities, including the tourism industry. Petti and Passiante (2009) explain that in order to seize these benefits there is the need for an extension of the role of destination management organisations (DMOs) beyond the traditional promotion of the destination, the collection and distribution of statistics, and the organisation of tourism activities within the destination. In the Rwandan context, platforms such as co-operatives and local non-profit organisations that promote democracy through a decentralisation system, offer easy entry to ICT use to transform and improve the economic lives of the poor.

According to SIDA (2001:15), the impact of ICT in most rural communities was close to zero and the pressing problems of those communities were solved using ICT, albeit this took at least five to ten years to develop. However, WSIS (2014) reports that the focus of the Rwandan government is on improving the efficiency of the public and private sectors to deliver services and information through the utilisation of appropriate technology. It also aims at broadening public/private partnerships (PPPs), improving accountability and transparency, and citizen participation in governance issues so that ICT applications are of benefit to all players. WSIS (2014) advises that in just four years to 2014 there has been tremendous progress in the implementation of ICT to the benefit of the Rwandan people. The researcher sought to understand the contribution of ICT applications to the economic lives of stakeholders, where WSIS (2014:28-29) explains the following progress in Rwanda:

- From the government perspective, a significant cost reduction was achieved by moving from the traditional 'paper' recording system to an electronic document tracking system called e-Mboni. This improved efficiency, transparency and effectiveness, as well as savings in terms of time and material (paper) costs within local and central government institutions.
- In the Ministry of Finance and related departments, computer software is now being used in financial management tasks such as budget preparation and execution, tax, financial flows, auditing, report processing, public finance management, immigration management and scholarship management.
- The Ministry of Education now utilises various software applications such as the Higher Education Student Loan Department Management, the Education Management Information System, the Rwanda Teacher Management System, the Examination Co-ordination and Management Information System and Learning, and the Teaching Material Management Information System. Also, E-learning is being used by 614 students (nursing and midwifery) for successful videoconferencing, and in five centres countrywide electronic systems are now used to upgrade nurses from A2 (A-level) to A1 (Advanced Diploma) (Cruz & Giles, 2000; Becton & Graetz, 2001; Lyons *et al.,* 2015).
- ICT applications in the Immigration and Emigration Department have greatly improved the system where applications for passports and visas can now be made online and the progress of applications tracked via the Internet. The only time a person has to physically go to the immigration offices is to collect documentation, for example, a passport.
- In the Ministry of Justice, the Electronic Records Management System (ERMS), comprising the Case Management System, is now installed in 22 courts and being used for case management as a pilot phase in all six courts located in Kigali (WSIS, 2014:28). Functions of the ERMS include: digitisation of physical files by scanning and storing files electronically; the Electronic Filing System (EFS) allowing litigants to file their cases online directly to the courts; the Judiciary Blog actively being used by members of the Judiciary and the Bar Association; video conferencing facility (VCF) currently active in seven court rooms. The VCF is noted by the World Summit on the Information Society (WSIS) as a major achievement by the Rwandan Government in the application of ICT applications (WSIS, 2014:29).
- In the RRA, ICT has changed the way traditional timeconsuming administration is done. For instance, a system called Standard Integrated Government Tax Administration System (SIGTAS) has been put in place to solve the problem of queuing at the RRA. Examples include a domestic tax collection system which enables analysis

of taxpayers' data and issuance of a tax clearance certificate within one working day; tax clearance certificates (TCC), software which allows a tax clearance certificate to be downloaded from the Internet; NIDGATEWARE which is an interface which allows the RRA to validate National Identification (NID) for individual taxpayers; and the Rwanda Electronic Single Window which expedites goods clearance online. Paperwork is reduced, time is saved and procedures are simplified. Overall, significant cost-savings are achieved due to the introduction of ICT applications into these entities (WSIS, 2014:29).

- Rwanda has adopted a business strategy to promote international trade, using an E-business model for the stimulation of private sector and public/private partnerships and promoting new applications (Masele, 2015). Through the Rwanda Development Board (RDB), investors and entrepreneurs are now acquainted with the Rwanda E-regulations system. This is an online database designed to provide investors and entrepreneurs with easy access to detailed, complete and current information on investment procedures in Rwanda.
- An online Business Registration system has also been implemented. This system provides for single-point registration where RDB clients interface with a single agency with all information contained in a single consolidated dossier. Also within the RDB, security interests of the inventor and innovator are now protected by a Movable Properties Registration System which allows registration of intellectual property rights, copyrights and patents, and provides a mortgage registration certificate. In the new one-stop centre processes of RDB, online services provide for investment certificate registration, environmental compliance processing and issuance of Environmental Impact Assessments (EIA) certificates, and processing of exemptions on imported goods is provided (Vallabh, 2012).
- ICT has been implemented in banking institutions and Rwandans can now use ATM cards (debit cards and credit cards) which affords everyone ease-of-access to their banking accounts for deposits, withdrawals, transfer of funds and purchases. In the communications environment, most Rwandans use mobile phones, and technological devices in communication and data capture are available. However, the researcher questions the accessibility of these ICT tools for people living in the more remote areas and their use in promoting pro-poor tourism activities.
- The Rwandan Ministry of Health has implemented the Rwanda Health Management Information System (R-HMIS) which is a system that integrates data collection and reporting, for example, receiving monthly reporting forms from health centres, district hospitals, referral hospitals and private health facilities. This information is then used for programmatic decision making.

- WSIS (2014:30) further reports that in the Rwandan healthcare sector various ICT applications are being implemented. The public will benefit from the following:
  - The Data warehouse/dashboard is a 'One-stop shop' for key health sector indicators pulled from multiple systems.
  - A Rapid SMS (RAPIDSMS) system used to save newborn babies and mothers though routine surveillance of health events by Community Health Workers (CHWs).
  - mUBUZIMA is an application that builds on Rwanda's mobile phone infrastructure to support Community Health Workers, and allow them to enter and transmit Community Health Information System (CHIS) indicators in real time even in remote parts of the country using only a mobile phone. The system is also used to facilitate the reporting of MDG indicators directly from the community (village) to the Ministry of Health
  - The Electronic Integrated Diseases Surveillance and Response (EIDSR) is a strategy for co-ordinating and integrating surveillance activities by focusing on the surveillance, laboratory and response functions of the National Disease Surveillance System.
  - The OpenMRS is an open-source Medical Records System that tracks patient level data.
  - TracPlus and TRACnet allow monthly monitoring of infectious diseases including HIV/AIDS, TB, and Malaria.
  - Telemedicine is used to deliver health and healthcare services where patients are treated by experts without moving from their respective district hospitals. The technology has reduced the cost and risk of transport for patients and doctors.
  - A Human Resources system (iHRIS): is used to improve planning, management and registration of human resources across the health system.
- In E-employment, ICT is being used to facilitate communication between job seekers and employers in Rwanda, using online technology. Also in use is the YES Rwanda Job Desk which is an online job search, advertisement and recruitment service aimed at enabling the youth in Rwanda to find the right kind of paying jobs. It is stressed that this system reduces costs for employers as opposed to the more traditional methods of job advertisements and recruitment (WSIS, 2014:31).
- In E-agriculture, the Government of Rwanda now uses the Agricultural Management Information System (AMIS) which is an exchange platform for all stakeholders within the agricultural and livestock sectors. To this end, the E-Soko project has been introduced to empower farmers, enabling them to make better-informed market pricing decisions and ultimately to become more successful farmers (WSIS, 2014:31).

According to WSIS (2014:27), a Rwandan ICT Chamber is expected to support ICT sector development and bring together ICT associations, businesses, groups and individuals into a community where they can share ideas on how to promote and develop Rwanda's

ICT-enabled industries. The ICT sector is not only for the government—the private sector needs to become involved as well.

OECD (2005:9) states that for the African continent to benefit from ICT, Africans need to own the sector. They need to start a new arena of paradigm shifts, of mindset changes, and integrate ICT into their daily economic activities. The African experience shows that ICT use is not in conflict with good practice, rather it has been reported that it is a good system with a good practice attached to ownership and participation. For example, some African economies have been developing their services industries with relative success and are supplying services across Africa and elsewhere. Typical examples of emerging regional services are the financial and banking services industries of Rwanda, where ATM machines are in use and visitors from different corners of the world are using Visa or Master cards to obtain funds from their home banking institutions while they are in Rwanda (CSTD, 2014:3).

3.4.1 ICT contributions to the tourism value chain for pro-poor impacts

ICT contributions to the tourism value chain for pro-poor impacts (Engelen, 2011; Carmody, 2012; Pastakia & Oza, n.d.) should be understood as the common use of ICT to improve the relationship between tourism actors to bring about social and economic transformation to poor people at any given geographical destination.

ICT applications have the potential to enhance the economic status of the poor in Rwanda, in particular from tourism, and just as pro-poor impacts are multidimensional, so too is the role of ICT applications (Foster & Graham, 2014). Sam (2013:127-128) discusses the use of information and communication technology in poverty alleviation in developing countries and particularly in rural communities in the central region of Ghana. He points out that ICT alone cannot solve the poverty problem, whereas others believe that ICT can be a core business to make money. The researcher agrees with both instances in that one regards ICT as an enabler to achieve a certain task, and also that the same tool can be sold by the owner to make money.

According to OECD (2005:11) ICT applications are not an end in themselves but a means or mechanism that can make a significant contribution to the fight for poverty reduction. The precise contribution and the impact of ICT will vary considerably depending on the specific players in the ICT value chain. In the Rwandan context, the government places ICT in the centre of every economic activity, to see quick impacts channelled to both urban and rural residents.

Hansen (2012:9) reports that for the year 2011, the Travel and Tourism Competitiveness Index ranked Rwanda 7th among 30 sub-Saharan African Nations. Compared to Kenya (8th), Tanzania (11th) and Uganda (13th), Rwanda seems to have a competitive advantage, which

may be due to its political stability and an environment conducive to business investments. To this end, Hansen asserts that Rwandan tourism development is quite impressive despite the country's turbulent past. Although progress is still needed in tourism infrastructure, ICT, health and hygiene areas, the author endorses Rwanda for its efforts to boost tourism and for its focus on sustainability, safety and tourism policies. However, some key areas remain open for discussion. For instance, in the report on the tourism value chain analysis for the Nyungwe National Park located in Western Province of Rwanda, the lack of transportation and cold storage facilities were recorded as key constraints (Hansen, 2012:19).

Petti and Passiante (2009:1) explain that ICT can increase tourism receipts at a given destination, to finance and reinforce the social and economic development of local tourism and tourism-related activities and entrepreneurship. For instance, they argue that changes may occur when embarking on developing key tourism products that rely not only on local innovations and people (for example, food, furniture, handicrafts and constructions), but also on supporting campaigns towards commercialisation of local tourism offerings in international trade exhibitions that lessens reliance on big foreign companies, commonly called intermediaries.

The University of Toronto and G8 Research Group (2004:5) point out that the experiences of successful countries and initiatives need to be shared and adapted to local needs. Italy was among the G8, which initiated the digital divide opportunities task force, and its experience gained over the years on the diffusion of ICT into tourism destinations. Petti and Passiante (2009:10) explain that barriers that were confronted were primarily consumption of a particular technology and its applications, and secondly, the feeling of being unready for their introduction and usage, but in the end the challenges were overcome.

The process of determining expected impacts of ICT applications in the tourism value chain requires that the approach itself enables the tourism practitioner to evaluate the actors, as not all actors show the same tendency to innovation and the capability to affect a local tourism supply. Given that the ICT4D movement is still new. Petti and Passiante's view that it is necessary to leverage (influence) on more sensitised and willing actors to create the local experiences, is valued.

3.5 Poverty concepts and the triple problem of poverty

The previous section addressed ICT contributions to the tourism value chain for pro-poor impacts. The research suggests, in support of Ashley and Mitchell (2008), that it would be remiss not to elucidate this section, which deals with poverty concepts and definitions in a globalised world with double standards. The research documents the poverty theory and triple problem of poverty in order to understand poverty and its causes.

3.5.1 Triple problem of poverty

In the documentary movie *The end of poverty?* (Diaz, 2008) there is a paradoxical problem in the debate worldwide on poverty alleviation. Actors in the movie were real people from different continents and their testimonies included the following:

- Poverty cannot be eliminated if poor people cannot say no to natural injustices, whereby the northern hemisphere must forgive freely the international debtors who are predominately poor countries.
- The tax system should change and become taxes on proprietorship instead of on wages.
- Poverty is due to non-agrarian reform in poor countries, so they should demand agrarian reform.
- The privatisation of national resources should be ended. The shared general resources are not to be exploited by a few people or corporations.

The above points apply to every developing country in the world. One speaker in the movie highlighted that poverty will never be eliminated as long as the trade and debt problems, and a monopoly of power, remains ongoing, and it becomes a triple problem system to control poor countries.

For example, sub-Saharan countries are among the poorest countries in the world and they pay US $25 000 per minute to northern hemisphere creditors (Diaz, 2008). This is systematic economic leakage and effectively translates into poor southern hemisphere countries financing the northern hemisphere to the amount of approximately US $200 billion annually. This is the poor financing the rich through a capitalistic system (Diaz, 2008). With unforeseen experience, it is very difficult to believe that eight years ago there could be an encouraging situation in those developing countries because there was no scholarly report indicating clearly where around the continent there was no aid and debt added to existing debt.

3.5.2 Poverty theory

‘Theory’ is not a new word in the English vocabulary. A theory may be described as a hypothesis or idea intended to explain a concept. A theory on the cause of poverty would be the underpinning on which strategies for poverty alleviation may be based. Bradshaw (2006:4) considers a theory as an elucidation that connects more than a few concepts and believes that theories explain poverty by connecting different parameters supposed to cause poverty through distinctive social practices. The researcher argues that if interventions can reduce a cause of poverty in a given country, they should then reduce poverty as a consequence in the country.

Werner (cited by Mzamo, 2013:20) claims that poverty is a concept that is used to define peoples' standard of living and how they deal with the way in which they live, as it tends to be categorised in different ways, be it by level of income, how developed is the community in which one lives, or to which group or race one belongs. However, numerous reports on poverty matters indicate that poverty is the statistical measure expression that has been established by a government as an income per annum needed for a family to survive.

3.5.3 Poverty definitions

Farrington, Carney, Ashley and Turton (1999) considered early applications to poverty alleviation in rural areas, but Bradshaw (2006:4) defines poverty as the lack of necessities. For instance, basic food, shelter, medical care, and safety are generally thought to be necessary based on shared values of human dignity. Nevertheless, 'necessity' is something relative and what is a necessity to one is not necessarily a necessity to another. Needs are based on social definition. To extend the argument, poverty has multi-dimensional definitions. For instance, it may be interpreted as poverty if any deprivation of accessibility to a product and service anywhere at any time because of lack of ability to acquire it, occurs.

According to UNWTO (cited by Mzamo, 2013:20) poverty is the depreciation of basic capabilities and a lack of access to education, health, natural resources, employment, land, political participation, services and infrastructure. Koza and Zola (cited by Mzamo, 2013:20) believe that poverty is a man-made condition and is the result of mismanagement of social affairs. Poverty is viewed by van der Merwe (cited by Mzamo, 2013:20) as a multidimensional condition and a comprehensive description of several facets of the daily living of people; it is a lack and need of material wealth and social inclusion, which often manifests in a lack of dignity. In the view of Gerster and Zimmermann (2003:6) poverty is relative and has been advanced from quantitative interpretation to qualitative perspective. Therefore, their view on poverty is a multi-dimensional point of view. Poverty should be described by the voices of those living in poverty, not by those who are enriched by the poor. Gerster and Zimmermann (2003:6) tackle the gaps existing in the understanding of poverty and identified five aspects:

- *Aspect one.* The authors point out that the income gap rests predominantly in consideration of poverty reduction issues. Mbuyisa and Leonard (2015:8) support Gerster and Zimmermann's argument by statistical evidence that about 1.2 billion people in 2015 lived on less than US$1 a day, while 2.8 billion people lived on less than US$2. World Bank (2015:11) opposes these arguments, stating that nearly 1 billion people lived on less than $1.25 a day from 1999 to 2015. The debate is ongoing on whether extreme poverty can be eradicated by 2030.

- *Aspect two*. The authors concentrated their views on poverty on the lack of assets. This interpretation is translated into the future income that can be obtained by planting the assets in terms of land, infrastructures and services providers. In other words, the availability and lack of assets can reinforce negatively or positively, and the latter argument would mean that the more assets available, the more opportunities there are to create jobs from urban to rural areas. Conversely, the greater the lack of assets the greater the depth of poverty seen in both urban and rural areas since there is a high level of joblessness, ignorance, disease and poor communication. Gerster and Zimmermann (2003) also emphasise their point on ICT uses whereby they clearly explain that the availability of electricity (energy) in general would lead to the creation of an ICT market, such as the utilisation of phone lines, computers and the creation of other markets for IT devices that contribute to the information and knowledge needed by local residents.
- *Aspect three* refers to vulnerability. Gerster and Zimmermann (2003) indicate that external shocks and internal conflicts affect the majority of people because of their low status in society, such as their race, ethnic belonging and disabled status. As these authors mentioned earlier, a wide range of people are affected by economic shocks but in their understanding there are influences other than just economic shocks, like health and natural catastrophies such as floods and earthquakes. Information occupies a big space in business today, where developed countries are far ahead of others because they are able to access information more so than under-developed nations.
- *Aspect four* is powerlessness. Gerster and Zimmermann (2003) view powerlessness as lack of power, energy, knowledge and any kind of talent and gift contributing to the development of the country. If people are not allowed to use their gifted natural power to create their future, and if the poor are not given the space to express themselves on economic and political issues, then the affluent leaders are misleading the population, and this is a crime against humanity. Gerster and Zimmermann (2003:7) point out that:

  > International bodies make decisions which also affect developing countries sometimes having, major implications. At the same time, these bodies do not always consider a developing country's needs and take them into account … Often it is because developing countries, although present at meetings, lack the capacity to analyse issues, prepare positions, and advance their interests.

- *Aspect five* is social exclusion. According to Gerster and Zimmermann (2003), people are excluded because of their social belonging and this includes marginalisation, isolation, alienation and humiliation. This describes the ICT divide, where a country with no emerging ICT is a marginalised country. ICT applications enhance the exchange of information among like-minded people and institutions enormously. On the other hand, some countries are totally isolated from others globally because their people cannot network worldwide with others through the use of ICT.

3.5.4 Causes of poverty

Swarm and Kasim (cited by Mzamo, 2013:21-24) describe the following as causes of poverty, which are equally applicable to the Rwandan situation:

- *Unemployment.* Nobody can deny that the majority of those who claim to be poor are unemployed or under-employed people. A number of governmental states are in possession of strategic plans to reduce or alleviate poverty by creating jobs for the youth and vulnerable people, including women. The researcher concurs with Mzamo that unemployment is a direct cause of poverty, whether in France, China, Italy or Rwanda, since employment is regarded as the foundation of income generation to face economic and social challenges in the daily lives of the community.
- *Education.* In countries with no natural resources, knowledge becomes economy-based knowledge. So education becomes a type of capital in the journey of wealth creation, where there is a direct relationship between the levels of poverty and education in any given country. In reality, the quality of education also matters and in the absence of education, people could embark on a path of destruction because of ignorance (Cruz & Giles, 2000; Vallabh, 2012).
- *Fertility.* Fertility relates to demographic trends. Many poor countries have to deal with the high rate of fertility and childbirth which is not in proportion to the available social and economic resources. If this issue is not addressed, it will have a negative impact on both mothers and children because there would be no future for them.
- *Urbanisation.* This is a worldwide phenomena where people move to where they find life easy, jobs, infrastructure such as water, electricity, education, good housing, recognition, entertainment, and all of these are found in urban areas. Sarrocco (n.d:8) articulates that more than 70% of the world population lives in rural areas where resources are limited. Mzamo (2013) agrees that urbanisation can be a cause of poverty in a situation where the resources are found in one place and are shared by only a few people.
- *Inequalities*. Inequality means there is a group which is more privileged than others, and in the capitalistic system, inequality is a rule. Before the 1994 genocide in Rwanda, there were privileged people while others were discriminated against, having no equal livelihood opportunities. The discriminated group experienced inequality in terms of education, health, job opportunities, life and gender. The researcher believes that the only acceptable inequalities are those caused by competition practices, which means all have an equal right to possess but possession is determined by the work ethic.
- *Corruption.* Most of the poorest countries are poor because corruption has became the culture in every corner of their country. The Department for International Development

(DFID) states that corruption is broadly defined as the abuse of entrusted power for private gain (Republic of Rwanda, 2013b:1). The DFID notes that corruption can cover a wide range of abuses, including the right to possess and the right of getting a deserved service or product at the right place and at the right time. Countries that are supposedly rich are not necessarily so because of corruption but corruption could be associated with other negative factors, such as the poor management of the country

- *Crime.* The researcher is aware that everywhere in the world there is crime, but at different levels. It is obvious that wherever security prevails, people are willing to work hard and the environment is socially and economically attractive for entrepreneurs. Thus, eliminating crime could lead to enhanced development.

Ravallion (2013:154) indicates that there is no one single solution uplift a population from poverty but one country can choose from among the multiple solutions for upliftment, for example, a million people out of poverty and continuing with sustainability of poverty-reduction efforts (Ndivo & Cantoni, 2015). This trajectory is clearly important to this study and the research seems to support Ravallion's argument, which advances that the best sustainable route would naturally vary from country to country. Poverty reduction in developing countries can be trapped by its own leadership and other anti-progress thoughts but in principle poverty problems can be resolved. Miller, Mastuera, Chao and Sadowski (cited by Bradshaw, 2006:15) offer six interdependent elements to help poor people achieve self-sufficiency as a phase of poverty reduction.

3.6 Pro-poor impacts

A pro-poor impact is not a new approach in scholarly writings; individuals, independents and corporate writers wrote about pro-poor issues. For instance, Spenceley and Seif (2003:7) expound on pro-poor impacts as a given economic sector generating income, perhaps through tourism, with the main focus on yielding net benefits channelled to poor people. If the ICT sector is growing in parallel with the tourism sector in Rwanda, and ICT is to enhance the development of tourism, it is understood that this would add value to tourism for benefits to the poor. Thus, pro-poor ICT and pro-poor tourism would be intertwined sectors that would enhance the growth of pro-poor benefits once full integration is realised.

The paradigm shift of the Rwandan Government in believing that ICT could benefit local communities if they integrate ICT into their daily economic activities is real. The benefits from the use of ICT are not abstract, they are very central to the general public because ICT is a catalyst for job creation and establishing industrial innovations. Based on the claimed benefits from ICT in other sectors, the research suggests that the generation of pro-poor

benefits is a fundamental goal in the process of integrating ICT applications into the tourism value chain.

3.7 Summary

Tourism development planning in Rwanda has been a matter of urgent strategic intervention post- the genocide of 1994. This is to overcome challenges that hinder the full maximisation of the tourism contribution to the country's economy. In terms of social and economic development, tourism is considered as one of the most significant phenomena of our generation.

More importantly, tourism constitutes the world's largest industry. Multinational organisations, donor agencies and NGOs have long identified tourism as a sector that could effectively promote economic and human development by contributing to sustainable development and the eradication of poverty.

Tourism development planning is crucial for sustainable tourism development and could bring about socioeconomic transformation of a country. For example, an American visitor can book a visit to Rwanda for ten days and with a single visa can also visit the entire east African region, including Burundi, Uganda, Kenya, and Tanzania. These developments in the tourism industry influenced governments to shape the tourism development plan into a smart tourism master plan by adopting the integration model of ICT applications and community participation to increase positive impacts on residents at destinations to be visited.

Tourism demand has widened and it can be satisfied by a tourism supply chain. These changes have affected citizens at both local and global levels in such a way that they became responsible for tourism destination management. Rwanda is an example, where the government adopted a strategy to share the tourism revenue to mitigate poaching and biodiversity destruction impacts on wildlife and flora in the three national parks.

In the hope of poverty alleviation, all efforts are being mobilised to strengthen globalisation and ICT integration into the social and economic lives of people globally. Poverty is a universal issue and the poverty debate is ongoing at country and individual level. Poverty is complex and has different meanings to different people, and is experienced in different contexts around the world.

Another important aspect to note is that national dialogue, continental summits, and global meetings of heads of states urge leaders to become more concerned about social inequalities due to undistributed wealth accumulated by a few people, and to become the first to break this social and economic divide by empowering citizens to exploit all ICT opportunities to their maximum. Foster and Graham (2014:30) indicate that ICT integration into economic sectors, such as tourism, combined with the value chain development

approach, would work for the poor and result in poverty reduction. For example, the World Bank (2015:11) reports that poverty decreased from 2.8 billion people living on less than US$2 to nearly 1 billion people now living on less than $1.25 a day in just 15 years, and debates are still ongoing on whether extreme poverty can be eradicated by 2030.

It is critical therefore to establish that the current Rwandan tourism industry policy, with respect to ICT integration, does allow local communities to understand how the ICT and tourism sectors contribute towards social and economic transformation, given that there is a visible gap between the central and local governments in terms of the implementation of policies for each of the ICT and tourism sectors.

The speed and depth of transformation is more visible in Kigali than in the provinces and districts. However, researchers, policy makers and multi-level tourism value chain actors assume that local institutions and local communities possess the scientific and industrial knowledge to understand ICT integration into economic sectors such as tourism, in terms of impacts caused by integrating ICT into the social and economic life of every citizen in a given destination. Further research at a grass-roots level will assess if indeed pro-poor benefits are trickling down to the poor, given changes in governance processes of economic sectors.

Having raised these concerns, stakeholders, community-based organisations and leaders in the four provinces of Rwanda plus the capital of Kigali, in the tourism industry should take cognisance of community social and economic needs. There are clear alliances of tourism stakeholders in Rwanda, which leaves little room for local people to assert claims in terms of active participation in tourism development planning and ICT uses for their livelihoods.

The following chapter, Chapter Four, discusses the methodology used to address the research problem, answer the research questions and meet the aims and objectives of this study.

CHAPTER FOUR
RESEARCH DESIGN

4.1 Introduction

The previous chapter, Chapter Three, discussed aspects of tourism demand, its value chain, and how it could be used to alleviate poverty. It also expounded on ICT capabilities as a means to strengthen rural-based tourism to address poverty, in the context of Rwanda. This chapter describes the research design used for the study, sources of information and the systematic approach used to answer the research questions and meet the research objectives. The qualitative component of the research used the interview guide technique to investigate the contribution of ICT to the tourism value chain for pro-poor benefits. In particular, in Rwanda as an analysis of stakeholder-interests in ICT, pro-poor tourism and tourism value chains was sought (Denscombe, 2007). Interviews were conducted within the five study areas and were largely unstructured in nature, using prepared guides as a compass to gain an understanding from provincial leaders in decision-making positions. In addition, the unstructured method of interviewing allowed for unique and spontaneous comments from interviewees, which comments were noted and analysed to form themes.

The quantitative component employed the survey questionnaire technique to determine the number of people accessing and using ICT facilities, and the frequency of usage (Denscombe, 2007; 2010). This allowed as many respondents as possible to be reached, principally those who could not be interviewed during the data collection period. The questionnaire used semi-structured questions, which was appropriate because apart from obtaining fixed responses, the researcher was interested in the opinions of the participants who were not necessarily small business owners. The survey data obtained were analysed using the Statistical Package for Social Sciences (SPSS).

4.2 Pilot survey

In an attempt to validate the data collection techniques, check comprehensibility and establish whether the answers would contain comprehensive information, a pilot survey (see Table 4.1 below) was done in January 2013, in the two main cities of the Western and Northern Provinces of Rwanda, aimed at 20 units.

The sampling procedure used to pre-test the three questionnaires was judgmental or purposive sampling. Initially, the intent was to administer self-completed questionnaires and collect them the same day in the presence of the researcher. The other alternative used allowed the respondent to complete the questionnaire electronically and return it to the researcher.

Table 4.1: Pilot survey

Northern/10	Western/10	Total
5 SMEs	5 SMEs	10 SMEs
4 Households	1 Household	5 Households
1 Focus group	1 Focus group	2 Focus groups
2 Interviews	1 Interview	3 Interviews
Total: 10 Questionnaires + 2 Interviews	Total: 7 Questionnaires + 1 Interview	Total: 17 Questionnaires + 3 Interviews

Source: Researcher's construct from survey data

This was cheaper than personal interviews and would allow wider coverage. However, of the 20 questionnaires (5 x 2 provinces for SMEs and 5 x 2 for residents) in both provinces, only 15 were collected. The remaining questionnaires were not completed for reasons such as absence of the respondent and/or lack of time.

The research also used a focus group questionnaire and interviews. Of two focus groups with approximately eight members in each group, one in each province, all were collected. Three face-to-face interviews, two from local government and one in central government, were also used in the pilot study.

Some closed-ended and open-ended questions were found to be irrelevant or too complex for some respondents to be explored satisfactorily without an interviewer to explain, prompt and ensure complete coverage.

Cooper and Schindler (2003:431) and Wong, Hsu and Steele (2005:11) both believe that pilot-testing a questionnaire is important so that inherent problems and unimportant questions in the design, as well as factors that may impact the results, are removed as far as possible.

Having discussed the study with a Rwanda Development Board staff member (Rudasingwa, 2012), further questions needed to be answered by other stakeholders in the tourism sector in consideration of the nature of the study, which are crosscutting issues, such as ICT applications in the tourism sector. Since the study is triangulated, data underwent both quantitative and qualitative analysis.

4.3 Survey techniques

This study employed questionnaires, focus group discussions and interviews.

4.3.1 Questionnaire design

To avoid drawing conclusions from one transitory collection of data, this research used a questionnaire. An advantage of a questionnaire is to elicit information by requiring respondents to answer objective questions (Brace, 2004:9). The designed questionnaire was divided into two sections: 1) demographic information and 2) content-based questions. Demographic information comprised variables such as gender, age, education and dependents, whereas content-based questions focused on understanding the contribution of ICT to the economic lives of tourism stakeholders in the two regions with a flourishing tourism sector, being the Northern and Western Provinces of Rwanda.

The resulting instrument (see Appendix B for questionnaire) used in this research consisted of five sections: demographics of the respondents, information related to ICT applications, TVC for pro-poor impacts, ICT and Internet integration in tourism businesses in Rwanda, and open-ended questions to encourage respondents to share their experiences in an honest, forthright and open manner.

The majority of the questions were multiple-choice questions. During the pilot test it was discovered that respondents experienced difficulties in answering due to language and literacy barriers, so the multiple-choice question format made it easier for respondents to answer. Finally, it allowed the respondents to respond objectively when they shared their perceptions and also helped simplify the complexity of collecting subjective responses.

4.3.2 Focus group

The focus group method was used in this study as Brace (2004:5) argues that respondents may have useful information that is not forthcoming from the questions in a questionnaire. The participants were selected from a variety of tourism actors grouped in co-operatives in different chains. The focus group discussions were helpful in collecting information such as perceptions, feelings and attitudes of people who share the same interests in so-called co-operatives. Ten co-operatives were invited to attend focus group discussions, to gain a broader understanding of the research problem. The content of the focus group discussion is contained in Appendix C. According to McDaniel and Gates (2004:69) the idea behind focus groups is that a response from one person could become a stimulus for another person, thereby generating interplay of responses, which yield more information than if the same number of people had contributed independently.

4.3.3 Interviews

These are one-on-one interviews that probe and elicit detailed answers to questions, often using non-directive techniques to uncover hidden motivations (McDaniel & Gates, 2004:85). The interviews certainly complemented the questionnaire technique, as advanced by

Mathiyazhagan and Nandan (2010:40) that respondents may have supplementary information about their personal characteristics and environment which is not covered in a questionnaire but which can be elicited during interviews.

4.4 Ethical considerations

According to Welman, Kruger & Mitchell (2005:181) ethical considerations in any research that relates to human activity, collection and presentation of accurate information are crucial. Welman *et al.* (2005:201) further state that researchers should be aware of the following four ethical considerations when conducting interviews:

- The researcher must obtain consent from the participants to agree to participate in the study and be fully informed about the nature of the research.
- Respondents should be guaranteed that their rights to confidentiality, privacy and anonymity will be respected.
- Respondents must be assured of indemnity against any form of harm.
- Respondents should be treated with respect during interviews and the researcher must not manipulate them.

The Faculty of Business and Management Sciences Research Committee of the Cape Peninsula University of Technology (CPUT) granted ethical approval for the study (see Appendix F).

Permission from the Rwandan Development Board (RDB) to undertake the study was also obtained (see Appendix E).

In the questionnaire-covering letter of consent respondents were fully informed of the nature of the research. They were assured that all information and primary data gathered would be treated with the utmost confidentiality. Respondents were further assured of complete anonymity (see Appendix A).

4.5 Strategy for data collection

In this study both primary and secondary data were collected to address the research problem. Primary data were collected using techniques such as questionnaires, interviews and observations. Secondary data were obtained from reviewing existing literature on relevant topics. It is important to indicate that primary data were gathered directly by the researcher for the study while secondary data were obtained from existing sources of information.

4.6 Research design

The research design incorporates the research methodology and techniques and shows that a research problem has been clearly formulated and understood.

The research problem in this study can be summarised as:
The local communities in the study areas, specifically the Northern and Western Provinces do not benefit sufficiently from tourism, and particularly from the TVC. Secondly, Rwandan tourism statistics over five years to 2015 indicate that there is sufficient evidence that tourism is growing rapidly, in parallel with IT in Rwanda. In terms of the goals of employing ICT as a driving force in the tourism-sector for economic development, it is still unknown whether the contribution of IT is understood by tourism stakeholders with regard to pro-poor impacts, despite the country having established ICT plans to alter an agrarian society into a sophisticated, knowledge-based economy.

4.6.1 Research planning/implementation

According to Denscombe (2010:99) and Nayga (n.d.), questions such as what is the overall plan for the research project, how do the components of the research link together, and how does the researcher know the research design will work, should be covered in the process of research design. In Denscombe's view (2010:99), a good research design is based on respect of research ethics such as reliability and validity related to the aims of research. Cooper and Schindler (2003:146) and Inusa (2006:55) support the above views and state that research design is the logical organisation of the collection, measurement, and analysis of data to obtain answers to research questions.

This study used a triangulation design to investigate the five study areas. The first step was to conduct initial visits to two flourishing tourism destinations and the Musanze and Rubavu districts were selected. These areas were visited to interact with tourism stakeholders and two focus groups to gain insight into the dynamics of these destinations. These early visits provided important information needed for the survey questionnaire development, focus group discussions, and interview guide. Bridging the gap between theory and practice is necessary for sustainable tourism, so employing a grounded method allows for new theory to be applied to tourism phenomena (Stumpf *et al*., 2016). Johnson and Onwuegbuzie (2004) and Williams (2007:69) state that the combined methods approach to research is an extension of the quantitative and qualitative approaches to research. Johnson and Onwuegbuzie (2004:15) further maintain that the goal for researchers using the mixed methods approach is to draw from the strengths and minimise the weaknesses of quantitative and qualitative research by providing an exhaustive way to address the research questions. Additionally, Muzeza (2013:205) mentions that the core premise to using the

combined approach is to provide a better understanding of research problems than by using either approach alone.

A total of 720 tourism stakeholder questionnaires were distributed and 615 were returned completed by selected participants in the five study areas, accounting for 85.41% of the total sample target of 720. Through focus group discussions with community-based organisations and formal and informal interviews with officials in the five study areas, a volume of information was obtained. A combination of these techniques helped to triangulate the field and literature data.

4.6.2 Research methodology

Research methodology is defined by Leedy and Ormrod (2001) and Williams (2007:66) as a common approach to conduct a research project. However, there are different approaches to conducting research.

4.6.3 Quantitative research methodology

Bless, Higson-Smith and Kagee (2006:43) explain that quantitative research relies on measurement to compare and analyse different variables and uses various scales. In this study, numbers express a coding system by which different cases and different variables are the subject of comparison. Venkateshi, Brown and Bala (2012-2013:3) confirm Denscombe's (2007:254) argument where they stipulate that quantitative data can be used very effectively without the need of complex statistical analysis.

4.6.4 Mixed methodology

The reviews of Trochim (2002), Tashakkori and Teddlie (2003) and Williams (2007:69) reveal that mixed methodology is not popular in research, and that it only began to be used in the mid- to late-1900s. Johnson and Onwuegbuzie (2004:14) are of the opinion that both quantitative and qualitative approaches should not be combined in one study because they are incompatible in the same study. However, Tashakkori and Teddlie (2003) point out that a mixed method approach allows researchers to integrate methods of collecting or analysing data from the quantitative and qualitative research approaches in a single research study.

The adoption of both qualitative and quantitative methods is based on the research consideration of the interactive and interdisciplinary nature of this study that made it critical to adopt the combined approach (Hennink, Hutter & Bailey, 2011:16). It was essential to avoid biased data, hence, the two approaches addressed those weaknesses to gain valuable insight into the stakeholders involved in the study on contributions of ICT to the tourism value chain for pro-poor benefits in Rwanda, and the need to tackle new theories to ensure grounded data (Stumpf *et al.*, 2016). Transforming those measurements into statistical terms produce numerical values for computing the views of tourism stakeholders,

community-based organisations and officials into percentages, to show how ICT contributed to community lives. The interdisciplinary nature of this study determined the need to use the mixed approach, which Reiter, Stewart and Bruce (2010:4) maintain facilitates the eventual goal of research—to lead to conclusions from a body of data and discover what was unknown.

The main strength of the qualitative method is that it allows one to gain an in-depth understanding of the research problem (Babbie & Mouton, 2001:309; Welman *et al.*, 2005:180), while it interprets results easily and discovers new ideas. However, a disadvantage of qualitative research is that the research results are dependent on the interpretation of the researcher and thus prone to bias, which implies the results may be more subjective than objective and makes it difficult for findings to be generalised (Babbie & Mouton, 2001:309).

4.6.5 Mixed method approach: advantages and disadvantages

The mixed method approach has many advantages, and can be fairly intuitive for participants (Howe, 1988:13; Driscoll, Yeboah, Salib & Rupert, 2007:21; Williams, 2007:13). In this study, apart from the self-administered survey, the Google Drive survey format was also used. It is user-friendly and the open-ended response fields were unlimited, so many respondents took advantage of this to post extensive comments (Driscoll *et al.*, 2007:22).

A primary disadvantage of this strategy is the time needed to design and administer separate research instruments for each key informant. For example, in this study a batch of surveys was designed for tourism stakeholders, interview guides for officials, and focus group discussions for community-based organisations. A second complicating factor is the lack of open linkages between structured and unstructured responses, compared to the synchronised design (Driscoll *et al.*, 2007:22).

4.7 Population and sampling

The study was conducted in Rwanda, a country with a population of approximately 12 million. Barreiro and Albandoz (2001:3) state that for economic reasons it would be convenient to interview a certain part of the population, a sample, chosen in an appropriate way so that conclusions may be generalised to the whole population. In support of this, Goddard and Melville (2001:34) define a research population as any group that is a subject of research interest. The subset of the whole population which is actually investigated, and whose characteristics will be generalised to the whole population, is called a sample.

What this means is that the data collected from the study area was obtained from a representative population sample such as households and individuals who work in tourism businesses comprising accommodation establishments, farmers, traders (tour operators,

travel agencies, shops and curios), and entertainment, people who work in the public sector and non-government organisations (Jackson, 2009:20). However, this method has the disadvantage of not knowing whether the group of people who participate (the sample) in the study is representative of all of the people (the population) about whom the study is meant to generalise (Jackson, 2009:17). He asserts that this concern can usually be overcome through sampling.

4.7.1 Sampling

Cooper and Schindler (2003, cited by Inusa, 2006:71) explain that in any research it is impossible to reach the whole population for a study, nonetheless, Neuman (2000:195) points out that through an appropriate sampling technique a researcher can draw a representative conclusion about the study problem.

Purposive sampling was preferred in the selection of officials and community-based organisations from the study area for interviews and focus group discussions. Latham (2007:9) articulates that this method is useful if a researcher wants to study a small subset of a larger population. The sampling technique used in drawing samples could be either probability or non-probability (Miller & Brewer, 2003:269). The second sampling technique used was convenience, which involved approaching individuals, based on their availability for the study, who are either involved or working in tourism businesses or the ICT sector in the respective provinces and districts to obtain their insight.

The segmentation of the country into provinces, districts, sectors, cells and villages made it possible to determine the number of respondents. Latham (2007:13) indicates that using a sample is a convenient way for the researcher since he is not attempting to force any respondent who may have sensitivities to the questions being asked and may not want to answer those questions honestly. The purposive sampling strategy therefore ensured that respondents from the study area were people who were resident in the area and could be stakeholders involved in both the ICT and tourism sector.

According to Altinay and Paraskevas (2008:87) and Cooper and Greenaway (2015:3), the difference between non-probability and probability sampling is that non-probability sampling does not involve random selection and probability sampling does. The question arises whether Cooper and Greenaway (2015) meant that non-probability samples are not representative of the population. Not necessarily, but they point out that it does mean that non-probability samples cannot depend upon the rationale of probability theory. They refer to the case where the probability of including each element of the population in a sample is unknown. It is used when one wants to say something about a disconnected phenomenon, a few select cases—people, places, objects, or when one wants to answer the ‘how’ and ‘why’ questions.

Convenience sampling was deemed suitable by the researcher for the purposes of this study, due to the concentration of tourism activities and geographical position of the sites to be surveyed. According to Statistics Canada (2013), although it is difficult to determine the extent to which non-probability samples are representative of the population, they do have some practical advantages:

- When the necessary population lists are not available, non-probability sampling remains a possibility for a researcher.
- Non-probability sampling is cheaper, faster and quite adequate for homogenous populations. However, some disadvantages are associated with non-probability sampling, for instance, non-probability sampling can be reduced by enlarging the sample and it is frequently used in the social sciences.

4.8 Data collection

The fieldwork started in January 2013 and ended in November 2015. Because the fieldwork involved travelling to the study areas, the researcher was assisted by local graduate students, known as research assistants, residing in the study areas. This was helpful in containing expenses. An average of two to five days was given to respondents to complete the questionnaires, which were then collected.

4.8.1 In-depth interviews

According to McDaniel & Gates (2004:85), in-depth interviews are one-on-one interviews that investigate and stimulate detailed responses to questions, often using indirect methods or techniques to discover hidden motivations existing in a given situation.

The following questions needed to be answered:

- What was the economic contribution of ICT for tourism stakeholders?
- Have local communities benefited from the implementation of the TVC, even though the process was designed to benefit all the linkages in the value-chain, and particularly those communities that should benefit from the tourism business sector in terms of employment, income generation and support?
- How does ICT with TVC work together for pro-poor benefits in the Western and Northern Provinces of Rwanda?

(a Structured/unstructured interview

Subscribing to the opinion of McDaniel and Gates (2004:18), the study utilised field research, conducted among value chain actors in the five study areas. Allowing interviewees to speak their mind is a better way of discovering things about complex issues and generally, semi-structured and unstructured

interviews have as their aim discovery rather than checking (Denscombe, 2007:176).

The semi-structured interview was flexible in terms of the order in which the topics were considered, and allowed the interviewee to develop ideas and speak more widely on the issues raised. The answers were open-ended and there was emphasis on the interviewee elaborating on points of interest (Denscombe, 2007:176).

(b) Interview content

The interview questions created for this study targeted three different categories of interviewees: Ministry officials, officers who operate at provincial level and officers who operate at district level. According to Welman *et al.* (2005:188) in using this technique, a researcher simply suggests the theme of discussion and poses questions as they emerge from the interaction. These authors further mention that the technique can facilitate in-depth probing of interviewees. In this study, an interview guide was used, but it was not a structured script for each interview. The guide contained a set of general issues to be addressed by the interviewees within the context of the project (see Appendix D).

Typically, interviewees were asked about the usefulness of ICT integration in tourism for pro-poor benefits. Further, they were asked whether they have policies enabling the local communities from those two sectors to benefit, and if presently there are ICT villages for tourism villages as a matter of local government development.

(c) Interview process

The method used for the interviews was face-to-face meetings at the different offices of the interviewees. The interviews lasted from 10 to 15 minutes and key responses and comments were noted. An accurate interpretation of the interview session was recorded. Interviews were conducted in a relaxed and exclusive environment. However, some interviewees, being extremely busy people, were interrupted during the sessions. Some interviewees had difficulty in clearly expressing themselves in English because their first language is French. To overcome this hurdle the wording of the questions and the manner of questioning was simplified.

Regarding the interviews with officials, Creswell (cited by Turner, 2010:757) states that selecting the appropriate candidates for interviews is a prerequisite to ensure reliable and valid information. In this study, those interviewed included mayors, deputy mayors and directors of key departments at provincial and

district levels. The interviews complemented the questionnaire technique to elicit information not covered in the questionnaire. Views were recorded and qualitative information was noted. As pointed out by Phellas, Bloch and Seale (2011:183), it is very important to note that the use of the interview has a number of critical advantages and disadvantages applicable to this study, including convenience, length of the process and the use of visual aids, but allowing for costs and interview bias.

4.8.2 Questionnaires

The survey instrument for this study was a questionnaire, which was developed after the pilot study, was conducted in two of the study areas. The outcome of the preliminary visits informed the design of the questionnaire to enable the collection of data, such as demographic data, income range and personal experience, while answering Likert-type scale questions. This could not be obtained during the interview process. It was necessary to reach as many of the involved participants/tourism stakeholders as possible and the survey questionnaire was important for this reason.

To gain the confidence of the respondents, and for ethical reasons, a confidentiality statement appeared in the covering letter, which accompanied the questionnaire. It clearly explained that responses would be used only for the purposes of this research and that the identities of respondents would not be disclosed. This was important to ensure that respondents answered the questions honestly and candidly. It was also stated that a respondent could withdraw at any time if he/she felt uncomfortable to continue.

4.8.3 Focus groups

Participants in the focus group discussions were from local community-based tourism organisations operating in the research sites. Firstly, permission was obtained from the local leader to conduct an interview with him and later he assisted in finding the platform for the focus group discussion. In most cases, the identification of the platforms for focus group discussions was done by the researcher with the help of business and co-operative officers in charge of development.

The role of these officers was to avail the existing platforms list and introduce the researcher to the selected platforms. A group was composed of 6 to 12 people who shared a common interest. In this case, officials with whom interviews were done were different from those in charge of community tourism organisations. Given the nature of the study and its context, not all co-operatives and their members countrywide were meant to be in the discussion session since the research needed specific information from knowledgeable participants in a specific area.

During the process of focus group discussions the researcher was the moderator of the discussion and the purpose was to collect data to balance the information gathered during other surveys. The platform president was informed by the business and co-operative development officer about the research needs, and the platform president then had to nominate people he thought would make good participants, given the nature of topic. These nominees were known for their ability to share their opinions and were willing to devote about 30 to 60 minutes of their time. In total, ten focus groups for the study areas were convened, during which discussions the researcher made recordings and took notes pertaining to the topics of discussion. Table 4.2 below depicts focus group discussions per province and per activity.

Table 4.2: Focus group in the study area

S/N	Local community organisations	Location	Occupation	Gender	
				Male	Female
1	Modern pottery	Kigali	Potter	22	28
2	AASM (Association des artisans et scripteurs de Muhima	Kigali	Arts and scripts	20	0
3	Urugero Co-operative Nyagatovu	Eastern Province	Business of agriproduce and travel	13	100
4	Twiyubake Family (TF)	Eastern Province	Handcraft/ handmade objects/accommodation	10	10
5	Urukundo/Urwibutso Sina Gérard	Northern Province	Agriculture and farming	2	19
6	Amizero co-operative/Dufatanye twese	Northern Province	Agri-tourism	3	20
7	COKAR (Co-operative Kinini des Agriculteurs de Riz	Southern Province	Agriculture/tourism	158	392
8	COPABU-Inganzo yacu	Southern Province	Scriptors, handcraft, pottery/tourism	101	249
9	Unama Okore Gisenyi	Western Province	Business (travel)	1	114
10	Terimbere Fish Co-operative	Western Province	Fishing co-operative	18	3
Total				348	935

Source: Researcher's construct from survey data (2015)

4.9 Reliability and validity

Njomo (2011:152) states that the principles of validity and reliability are fundamental cornerstones of every research project. Together they are the core of what is accepted as scientific proof by scientists and philosophers alike.

4.9.1 Reliability

Njomo (2011:152) concurs with Babbie and Mouton (2001) who expound that reliability in research is an action of being consistent in a manner that when the same study is being carried out in another place, at the same time, under the same conditions, with the same unit of analysis, the results will be the same. This will make the findings authentic and acceptable to the wider range of the scientific community and refers to the collection and analysis of existing written, published and unpublished information and assisted in defining the problem, background, objectives, conceptual and theoretical underpinnings of the study (Njomo, 2011:152).

4.9.2 Validity

Riffe, Lacy and Fico (2014:123) explain that the social science notion of validity relates rigorously to procedures to obtain information so that appropriate inferences and interpretations may be made. Therefore, in order to ensure reliability and validity of the instruments that were used in this study, the questionnaire, focus group and interview guides were adapted and modified after the pilot study in respect of the comments on the instruments presented to participants. Also, modification and development was done after reviewing current studies such as the role of ICT in the tourism industry (Bethapudi, 2013) and the study on ICT for the large number of people who live in rural areas. In addition, verification of the questionnaire, focus group and interview guides were done by a CPUT statistician and the CPUT Ethics Committee before starting the fieldwork to confirm the validity of the instrument. Sirard and Russell (2001:440) state that validity determines the extent to which an instrument measures what it is supposed to measure. Consequently, the response rate of the survey questionnaires distributed showed that a 95% confidence level for reliability and validity was achieved in both the Western and Northern Provinces of Rwanda.

4.10 Summary

This chapter described the methodology used to gather the information needed for the study. It was a rational choice of the mixed method since it allowed integrated methods of collecting and analysing of data from qualitative and quantitative research approaches in a single research study, and was simply adopted to exploit the strengths of qualitative and quantitative methodologies in different research contexts, and minimising the weaknesses of those approaches. Survey questionnaires containing closed-ended and open-ended questions designed to collect both quantitative and qualitative information were also used. In the process of data collection, focus group discussions, and interviews were used to supplement the information obtained from the survey questionnaires.

Regarding population sampling, this chapter highlighted the selection process. The population selection was based on purposive and convenience techniques due to financial constraints. The non-probability sampling method was predominantly used to select the sample with the support of purposive sampling techniques to determine which respondents were eligible for the survey questionnaire.

Ethical considerations were applied in this study. The CPUT research committee granted ethical approval for the study; permission from the RDB was obtained to undertake the study; and a signed letter of informed consent was obtained from each respondent.

This chapter also presented the techniques used to select the participants for the focus groups and interviews. These included simple random sampling and purposive sampling techniques. Data validation ensured a response rate of more than 95% in the study areas, whereas focus group discussions and interview responses amounted to 100%. Primary data gathering and the secondary data grounded theory were used to build a comprehensive analysis of the contribution of ICT to the tourism value chain for pro-poor benefits in Rwanda, with the emphasis on the Western and Northern Provinces of Rwanda.

Chapter Five presents the research findings and analysis of data.

CHAPTER FIVE
RESEARCH FINDINGS AND DATA ANALYSIS

5.1 Introduction

In Chapter Four, the research design used in this study was discussed. Chapter Five presents the findings from the questionnaires, interviews and focus group discussions that provided the basis for the establishment of the social and economic structures, focusing on two destinations, the Western and Northern Provinces of Rwanda. Furthermore, this chapter presents and discusses the data on field-based research carried out over 18 months in the study area, to explore the contribution of ICT to tourism activities that involve individuals and communities. Critical as they may be, the study findings appear to provoke a possible paradigm shift among tourism value chain influencers and other ordinary players. The arguments featured in sections 5.2 to 5.8 are based on the data obtained from the questionnaire surveys in the study areas. Sections 5.9 and 5.10 analyse the interviews with government officials and focus groups.

5.2 Demographic information

The aim of this section of the questionnaire on the demographic information of tourism stakeholders was to introduce evidence of reliability and validity of the information garnered in the study. The findings pertaining to demographics include items such as nationality, gender, age group, education level, occupation, type of workplace, work experience duration in the area of data collection, and estimated income per annum. The respondents comprised 615 employees, with nearly 50% of responses covering the Western and Northern Provinces' tourism businesses, private persons, NGOs and the public sector in Rwanda. Gender information revealed that 69% of respondents were male and 31% were females. Data on type of workplace indicated that 69.1% represented the private sector. Data on age and nationality informed that 95% of the respondents were Rwandans, with 83% being between 21 and 40 years of age.

In Chapter Four, it was noted that purposive and convenience samplings were used to distribute the questionnaires, as this allowed the researcher to draw a simple sample from each tourism stakeholder group. This has possibly contributed to the age and gender divisions.

5.3 The contribution of ICT to the economic lives of tourism stakeholders

Research objective and question one: What would be the contribution of ICT to the tourism stakeholders in their economic lives? Respondents' views on the question suggest their general understanding of ICT applications in business and in the daily activities of

participants. Their views were given in the form of statements (S) which were analysed and discussed.

S1. The use of ICT in my province has resulted in easy accessibility for our business growth.

Interpretation of the statement is based on the question asked of participants in the survey. The research intention was to investigate the benefits of ICT in the respective provinces. From the total sample of 720 questionnaires, only 615 were returned completed, were usable and captured. Although there were some neutral and negative responses to the statement, the majority of 76.1% of respondents agreed or strongly agreed. The Western and Northern Provinces provided 306 (84%) of the participants who agreed with the statement. This could mean that the deployment of an ICT society in Rwanda is not stagnant, a statement supported by Lyons *et al.* (2015) who noted that the tourism industry had low barriers to entry and unrestricted entrepreneurial potential, and Peters *et al.* (2009) who discussed the problems and remedies to start and manage a business. Vallabh (2012) proposed that tourism business promoted service-quality to become significant players in a country's economy.

S2. The use of ICT has enabled my province to position its tourism potential in the country, the region and overseas

With this statement the research wanted to establish the views of respondents on whether the use of ICT had enabled their provinces to position their tourism potential nationally, regionally and at international levels in line with Alzouma's (2005) suggestion of using digital technology to boost economic development in Africa. The results show that respondents support the statements at 63.6% nationally, 66.4% regionally and 62.9% internationally. More specifically, the Western and Northern Province respondents agreed with the statements at 68.7% nationally, 77.9% regionally and 73.3% internationally. This could substantiate why the most-visited destinations of the country are located in the Western and Northern Provinces and indicates that participants are aware of the existence of online resources where the country sells its tourism products, of which the unique 'Republic of Gorillas' is the leading attraction.

However, the findings support the argument of Foster and Graham (2014:12) and Musahara *et al.* (2014) that the country needs to improve its online content because there is more than just viewing gorillas that could be sold online, such as cultural and natural resources, and a business investment climate.

S3. The use of ICT in the province has resulted in useful information for our business growth.

The contribution of ICT was found in the availability of useful information in growing businesses, and follows the arguments of Murphy *et al.* (2014) of using ICT in a global

information economy. Of the 615 respondents countrywide, 71% agreed that the use of ICT in the province had resulted in useful information being available for their business growth. The same view extended to the Western and Northern Province participants where 75.9% supported the statement. This means that the growth of their businesses is in direct proportion to the availability of information they need for expansion.

S4. The use of ICT in my province has enabled local communities to understand the role of tourism in their area.

Mazimhaka (2007) discussed the role of tourism in diversifying Rwanda's economy, and the results of this study question appear to support this sentiment. Of the total respondents countrywide, 62% agreed with the statement, 30% were undecided and 8% disagreed. In the Western and Northern Provinces, the results showed that 72.5% were aware of the contribution of ICT in the sensitisation of the role of tourism in their provinces. This could be a very significant result as the central government used the experience from elsewhere on the continent and beyond to establish a variety of ICT community telecentres in that part of the country, striving to bring some of the benefits of ICT to rural communities (Buhigiro, 2012:11).

S5. The use of ICT in my province has contributed to the growth of educated people.

Of the total respondents countrywide, 67% agreed with this statement, whereas close to 75% of Western and Northern Province respondents affirmed that the use of ICT contributed to the growth of educated people in their provinces.

S6. The use of ICT in my province has contributed to a decrease in waste products in the agriculture sector

Forty-nine point two percent (49.2%) of respondents countrywide agreed with this statement, 37.4% were undecided and 13.4% did not agree with the statement. In the Western and Northern Provinces, 61.2% of the respondents agreed that the use of ICT in their province had contributed to a decrease in waste products in the agriculture sector, while 23.5% were neutral and 15.3% disagreed. With their local innovative technology the Amizero Co-operative managed to make a compost fertiliser to increase agricultural production. However, it is not clear to what extent the technology used to make this compost fertiliser is known to the rest of the country, or eastern African countries. This means that at a grassroots level some good initiatives exist, especially in farming industries but lack of marketing and gaining knowledge of new technologies to improve their initiatives remains a challenge. In the researcher's opinion this is an opportunity for community development, like civil societies, independent local capacity-builders, or those who work with local governments in improving social wellbeing, the ICT society and the private sector, to give input towards local community upliftment.

S7. The use of ICT in my province has reduced the number of poor people.

Fifty one point one percent (51.1%) of respondents countrywide agreed with the statement, 32.3% were undecided and 13.6% did not agree. In the Western and Northern Provinces, 64.2% agreed with the statement, 19% are undecided and 16.8% disagreed with the statement, supporting the arguments of Hameed (2007) and Uwamariya *et al.* (2015) for socioeconomic development in Rwanda incorporating ICT, especially through tourism. Besides ICT deployment, other factors could have contributed to reducing the number of poor people countrywide and provincially. According to African Economic Outlook (2012:13), poverty rates remain low in Kigali City and high in rural areas. African Economic Outlook further indicated that more than one factor contributed to the reduction in poverty, including a renewed policy focus on poverty reduction under the EDPRS, improved remuneration for non-farm employees and increased agricultural production and commercialisation because of ICT integration, which led to increased revenue.

For example in Japan, Gooneratne (2002:3-4) articulates on the uses of ICT for community benefits, where the research findings indicate that of the 391 households surveyed in the village of Yamada, nearly 90% owned personal computers, and 66% reported using them for tourism promotion and the sale of local products. This means that deployment of ICT beyond the major cities and towns could create new lifestyles and broaden the interests of people. In time, some Rwandans might prefer to return to their villages in search of potential opportunities and business partners and to work at home, rather than move to urban areas to seek work opportunities. Gooneratne (2002:4) states that promoting interest and awareness of the impacts of ICT can lead to other technological developments and can create off-farm jobs and positions for villagers who adopted e-village initiatives.

This means that the success of e-business at a village level, such as ‘e-farm‘ projects under patronage of the local agricultural industry, could attract urban residents.

S8. The use of ICT in this province has provided employment opportunities in tourism and hospitality.

Fifty-eight point nine percent (58.9%) of the respondents countrywide agreed that employment opportunities had been created using ICT in Rwanda, 32.6% were undecided, whereas 8.5% disagreed with the statement. In the Western and Northern Provinces, 67.4% of the respondents agreed with the statement, 19.4% were neutral and 13.3% disagreed. These data appear to support Becton and Graetz’s (2001) plea for a needs analysis and skills-training in the tourism and hospitality sectors. The results could promote a general claim that poverty had declined in Rwanda due to the deployment of ICT. The same evidence suggests an increase in the creation of job opportunities in the tourism and hospitality industry after ICT had been deployed in the provinces. This suggests also that

those in the 58.9% and 67.4% groups who agreed with the claim understood that integration of ICT in the tourism and hospitality industry is a contributing factor to improving socioeconomic livelihood.

S9. The use of ICT in my province has increased the number of people who are computer-literate in the province

Sixty six point four percent (66.4%) of the respondents countrywide agreed with the statement that the number of computer literate people in the province has increased due to the use of ICT, 26.1% were undecided, whereas 7.5% disagreed with the statement. Buhalis and O'Connor (2005) and Buhalis and Sou Hyu Jun (2012) noted the challenges which could be met through ICT chances in a tourism industry, and the use of the Internet in education and training. Buhigiro (2012:16) indicates that telecentres are used to upgrade the community ICT literacy level through basic ICT training, and provide access to information via the Internet or other ICT-based services. In the Western and Northern Provinces, 77.7% of the respondents agreed with the statement, 18.2% were neutral and 10.1% disagreed. The findings indicate that the increased number of computer literate people in the country, and specifically in the Western and Northern Provinces, can be attributed to the deployment of OLPC in primary schools in various part of the country, the establishment of tertiary schools where ICT subjects are taught, or an ICT training school. If the notion of one personal computer per responsible household was adopted, an ICT culture across the country would be developed.

S10. The use of ICT in my province has led to professionalism in tourism and hospitality.

Of the respondents countrywide, 60.6% supported the statement that professionalism in the tourism and hospitality sector is a result of the use of ICT, 31.7% were undecided, whereas 7.8% disagreed with the statement. In the Western and Northern Provinces, 67.1% of the respondents agreed with the statement, 20.7% were neutral and 12.1% of the respondents disagreed. This result could be justified by the implementation of the Education Sector Strategic Programmes between 2010 and 2015, and ICT (and tourism and hospitality) was the key focus to meet labour market needs (African Economic Outlook, 2012:15). The critical point here is that over 42% of youth are either unemployed or under-employed in subsistence agriculture, and urgent measures are required to redress youth unemployment holistically through skills development and job creation (African Economic Outlook, 2012:15). This means that either those 42% unemployed youth are not qualified, or they are qualified but not professional in their approach to work.

S11. The use of ICT in my province has led to updated education policies/training in the tourism and hospitality sector.

Sixty-four point four percent (64.4%) of respondents countrywide agreed that the use of ICT led to updated education policies/training in the tourism and hospitality sector in Rwanda, while 27.9% were undecided and 7.8% did not support the statement. In the Western and Northern Provinces, 71.8% of the respondents agreed with the statement, 16.8% were neutral and 10.4% disagreed, and could refer to the number of technical education and training centres have been deployed in provinces and districts throughout the country, supporting Peters *et al.* (2009) argument on the importance of entrepreneurship and life-long learning in the tourism industry. This resulted from education reforms, which aimed to increase the quality of education with the support of ICT. Once the shortage/lack of knowledge aligned to job-market demands had been identified, the Ministry of Education adopted policies to update the curricula of certain study areas, such as tourism and hospitality, and ICT (African Economic Outlook, 2012:13).

Although the results of the Ministry of Education reforms are apparent, the establishment of the free 9-year basic education programmes and the free 12-year basic education programmes have not as yet resolved the issue of job market demands, and implies that more is needed to be done to ensure that TVET curricula allow school-leavers to be competitive in the job market, nationally, regionally and internationally.

S12. The use of ICT in my province has led to an increase of infrastructure needed to exceed tourists' expectations.

Sixty four percent (64%) of respondents' countrywide agreed that the use of ICT has led to an increase of infrastructure needed to exceed tourists' expectations, 27.9% were undecided while 8.2% disagreed with the statement. In the Western and Northern Provinces, 69.3% of respondents agreed that the use of ICT has led to an increase in infrastructure needed to exceed tourists' expectations in the Provinces, 18.9% were neutral and 11.8% disagreed. It was indicated that in government endeavours to achieve the country's Vision 2020, ICT infrastructure deployment countrywide is a key factor (African Economic Outlook, 2012:5). Respondents who agreed with the above statement might have referred to Internet availability in their areas, with increased energy sources and electronic items for communication, and those who disagreed with the statement might have referred to problems high-speed broadband connectivity, or even a lack of traveller facilities, such as hotel accommodation, guest houses, or restaurants in their locality.

S13. The use of ICT in my province has led to freedom of multi-mediality (number of media).

This question used Bhasin's (2012) views on the integration of ICT in enhancing learning, and Nadkarni's (2008) promotion of ICT4D, especially in the war of poverty. Sixty-three point four percent (63.4%) of the respondents countrywide agreed that the freedom of multi-mediality is a result of the use of ICT, 28.9% of the respondents were undecided, whereas

7.7% disagreed with the statement. In the Western and Northern Provinces, 68.5% of respondents agreed that the freedom of multi-mediality is a result of the use of ICT, 20.4% were neutral and 11.1% did not agree with the statement.

The 63.4% of countrywide respondents who supported this statement could have been considering the existence of public and private television, public and private radio stations, and newspapers. However, the 68.5% of supportive respondents at a provincial level probably referred to the community radio stations that are deployed in every province, whereas other types of media exist only in Kigali City. It is debatable whether the changes in Rwanda over the past 21 years are attributable to multimedia.

S14. The use of ICT in my province has made markets more available to farmers.

Sixty-three point eight percent (63.8%) of respondents countrywide agreed that there had been a gradual increase in market access to farmers due to the use of ICT in the provinces, 29.2% of the respondents were undecided and 7% did not agree with the statement. In the Western and Northern Provinces, 73.2% of respondents agreed with this statement, 17.5% remained neutral and 9.3% of respondents disagreed.

The contribution of ICT to local farmers has been enhanced by the deployment of telecentres and the use of ICT has positively influenced famers' livelihoods (Buhigiro, 2012:110). For example, the E-Soko project designed and developed across African countries, including but not limited to Ghana and Rwanda, has improved the transaction chains and facilitated market access to all stakeholders in the agricultural value chain (UNDP, 2010:5). In the case of Rwanda, the project played a significant role in improving social or economic development in communities. The E-Soko project won the UNDP 2011 award and is recognised by Technology in Government in Africa (TIGA) as a model innovative project in Africa, allowing Rwandan farmers to access market prices. It is important to note that the farmers are concentrated mostly in the Western and Northern Provinces, and the website of www.esoko.gov.rw has been very useful for local communities to access market price information (Buhigiro, 2012:110). This development speaks to the possible influence of ICT on tourism development.

S15. The use of ICT in this province has led to mobility of businesses.

Sixty six point six percent (66.6%) of the respondents countrywide agreed that the mobility of business has become a reality because of using ICT in Rwanda, 26.8% of the respondents were undecided, whereas 6.6% disagreed with the statement. At a provincial level, in the Western and Northern Provinces, 73.1% of the respondents agreed that the mobility of business had become a reality as a result of using ICT, 16.1% of the respondents were neutral, whereas 10.8% of the respondents did not agree. There is a clear indication that the

use of ICT has changed the way business is conducted in Rwanda, and particularly in the Western and Northern Provinces, supporting Buhalis and O'Connor's (2005) identification of ICT for economic change, especially in a tourism industry. Business people and local companies are able to access the Internet to communicate with other business partners in the country and abroad through e-mail, We-chat, Facebook, and Twitter. These services have made businesses more efficient and effective, offer faster means of communication, and services at low costs (Buhigiro, 2012:111). The research findings are supported by Mulozi (cited by Buhigiro, 2012) who states that deployment of typical ICT, such as telecentres, allowed local businesses to access and link with urban markets and are able to expand their businesses.

S16. The use of ICT in my province has led to high Internet connectivity in all tourism businesses

Sixty two point eight percent (62.8%) of the respondents countrywide agreed that high Internet connectivity in all tourism businesses resulted from use of ICT in Rwanda, 29.4% of the respondents were undecided, while 7.7% disagreed with the statement. In the Western and Northern Provinces, 69.6% of the respondents agreed that high Internet connectivity in all tourism businesses resulted from using ICT in the provinces, 17.1% were neutral and 13.2% did not agree. These findings are supported by African Economic Outlook (2012:5), that building core ICT infrastructure for high-speed broadband connectivity could solve the issues of connectivity in Rwanda and catalyse private-sector growth and further expansion in tourism businesses. Moreover, the supplemented data were collected through qualitative information where a majority indicated that they have challenges with connectivity, which was also reported in similar research by Foster and Graham (2014:10).

S17. The use of ICT in my province has led to an increase in telecentres.

Sixty-two point six percent (62.6%) of the respondents countrywide agreed that the use of ICT resulted in an increase in telecentres in Rwanda, 30.0% were undecided and 7.4% of respondents did not agree. In the Western and Northern Provinces, 66.1% of the respondents agreed that the use of ICT had led to an increase of telecentres, 20.4% were undecided and 13.5% did not agree. These findings suggest that the majority of people are aware of the increasing numbers of telecentres in their regions and aligns with Castell's 1999 proposals for IT to support social development. The research sought to establish whether the advancement in technology had prompted advanced telecentres to be used for services such as: library services; distance-learning courses; Internet; voicemail; repair of IT equipment; advertising; health information and tele-medicine; e-governance; assistance and facilities for production of trade; and community information in a Rwandan context. Buhigiro (2012:33) explains that the existing telecentres are still too few in number to meet the demands for information access at the provincial level. He elucidates that they are currently used as

business development centres (BDC) but are not limited to entrepreneurial development services, business registration, business advice and counselling, IT services, business information services, export development services for tourism information, tax advisory services, and environment compliance such as web-page development and hosting, and the production of radio and video programmes (Buhigiro, 2012:33). This means that it is not sufficient to deploy a large number of telecentres only, it is also essential to evaluate the effectiveness and usefulness of the infrastructure online of social and/or economic transformation of the beneficiaries.

S18. The use of ICT in my province has led to an increase in the number of youth development centres.

Of the respondents countrywide, 61.9% agreed that the use of ICT resulted in an increase in the number of youth development centres in Rwanda, 28.7% of the respondents were neutral and 9.4% did not agree. In the Western and Northern Provinces, 68.2% of the respondents agreed with this statement, 16.1% were neutral and 15.7% disagreed.

In the Youth Sector Strategic Plan it is confirmed by Philbert Nsengiyumva, Minister of Youth and ICT, that effective utilisation of ICT for youth empowerment and transformation in Rwanda is still low (MyICT, 2013:12). The Ministry's argument could prompt anyone to question the research findings that in two years nothing had been done countrywide and at provincial level. However, there is a clear indication that the majority of participants might not have understood the difference between telecentres and youth development centres. In consideration of the Ministry's explanation, the deployment of youth development centres is an ongoing initiative to enable the youth to become more productive. Deployment of youth development centres started in Kigali City, but in the provinces what is better known is the telecentres. Strategically, it is expected to establish a strong operational and decentralised network of youth centres with the aim of transforming the lives of the youth (MyICT, 2013:18). From the research it is important to note that 68% of the youth countrywide do not know if Internet service facilities exist; in the Western Province 65.9% and in the Northern Province 68.2% are uninformed about telecentres, implying that more work needs to be done in the youth sector (MyICT, 2013:13).

S19. The number of youth development centres is a result of the growth of ICT in my province.

Sixty five point seven percent (65.7%) of the respondents countrywide agreed that the use of ICT resulted in an increase in the number of youth development centres in Rwanda, 27% were neutral and 7.6% of respondents did not agree. In the Western and Northern Provinces, 74.3% agreed with this statement, 13.2% were neutral and 12.5% disagreed. Clearly, the existence of ICT in Rwanda in general has had a positive impact on the youth sector and the deployment of an ICT society would promote programmes to empower the youth sector.

Further to the research findings, the youth sector needs to be identified, and with existing ICT this would help the establishment of decentralised youth operational centres, aiming to produce equipped and skilled youth generation with a prosperous future, at provincial and district level.

S20. The use of ICT in the province has led to an increase in numbers of online visitors.

Sixty four point eight percent (64.8%) of the respondents countrywide agreed that the increase in the number of online visitors is a result of the use of ICT in Rwanda, 28.1% were neutral and 7.1% did not agree. In the Western and Northern Provinces 68.8% of the respondents agreed with this statement, 19.7% were neutral and 11.5% did not agree. In reality, ICT has penetrated the tourism and hospitality industry in the country and the research findings are supported by Bethapudi (2013:70) who states that the availability of ICT has reduced people's transportation and communication costs. He continues, saying demanding travellers are being exposed to several tourism products, destinations, experiences and they rely heavily on electronic media to obtain information about destinations. Travellers are also able to communicate their needs and wishes to suppliers rapidly. Stanford and Guiver (2016) wrote on the sustainable travel to national parks. Therefore, the research findings suggest that connectivity, ownership of an online resource, and having computer skills should be promoted for social and economic transformation, since these could act as a start-up of a tourism business.

S21. The use of ICT in the province has caused the increase in the number of mobile phone users.

Carmody (2012) argued for mobile phones in the 'informationalisation' of poverty in Africa, 71.5% of the respondents countrywide agreed that the increase in the number of mobile phone users is attributable to the use of ICT in Rwanda, 23.3% of the respondents were undecided and 5.2% disagreed with the statement. In the Western and Northern Provinces, 75.7% of the respondents agreed with the above statement, 15% were neutral and 9.3% did not agree.

The research findings are supported by RURA (2014:37) where national reports indicate that mobile subscribers increased from 6 415 343 recorded at the end of 2013, to 7 214 385 by June 2014. This represents an increased mobile penetration rate to 68.1% from 60.9%. Internet subscriptions increased from 1 282 389, recorded at the end of 2013, to 2 585 117 by June 2014, which represents an increase of the Internet penetration rate from 12.2% to 25% (RURA, 2014:37), confirming the gap between mobile users and Internet users provincially and countrywide.

The study conducted by RURA (2014:45) indicates that of the total Internet users, 55% access the Internet with mobile devices, 32% individuals access the Internet in cyber cafés and telecentres, and 10% are individuals who access the Internet at their work/study institutions. Only 3% of Internet users access the Internet at household level. However, the increase in the number of mobile phone users could justify the qualitative information portrayed by the majority of participants, that their economic costs had generally declined because of geographical distances, death, and instant business deals.

S22. The use of ICT in the province has led to the removal of barriers to *communication.*

Sixty-nine point seven percent (69.7%) of the respondents countrywide agreed that the removal of barriers to communication was due to the use of ICT in Rwanda, 24.6% of the respondents were undecided and 5.7% of respondents disagreed with the statement. In the Western and Northern Provinces, 72.9% of the respondents agreed with this statement, 17.5% were undecided and 9.6% did not agree.

The research findings are supported by Lyons *et al.* (2015) who stated that tourism usually experienced low barriers to entry and entrepreneurship, and RURA (2014:54) which asserts that the success in communication barrier-removal is due to the existence of multi-media freedom; 15 digital television stations were licensed to provide services in Rwanda, followed by 30 broadcasting radio stations, Internet media (2) and print media companies (7). It is important to note that most are concentrated in the City of Kigali, except for radio stations, where every province has a community radio station. It may be argued whether the removal of communication barriers resulted in economic successes. However, the research suggests that the broadcasting institutions are ICT based-infrastructures and have created jobs for certain residents.

S23. The use of ICT in my province has followed availability of electrical power.

Sixty-two point six percent (62.6%) of the respondents countrywide agreed that the use of ICT in Rwanda is directly related to the availability of electrical power (energy), 27.8% were undecided on the statement and 9.6% disagreed. In the Western and Northern Provinces, 73.6% of the respondents agreed with the above statement,

15.4% were undecided and 11% disagreed with the statement. The research suggests that the availability of ICT in the provinces in Rwanda is in direct proportion to the availability of energy. Richard Kagabo, Advisor to the Governor in the Eastern Province, states that a lack of energy in certain parts of the Eastern Province hinders ICT deployment (Kagabo, 2015). This statement is supported by Justus Kanwagye, Mayor of the District of Rulindo in the Northern Province and Janvier Murenzi, Vice-Mayor of Finance and Administration of the

Rubavu District in the Western Province, when they indicated that the scarcity of energy was a barrier to ICT advancement (Kanwagye, 2015; Murenzi, 2015). Furthermore, the Ministry of Education indicates that primary and secondary school users of ICT can function where electricity is available, thus access to the Internet would be increased to support the use of ICT in the education sector (MINEDUC, 2013:37-38).

S24. The use of ICT in my province has resulted in computerised management systems, enhancing data capturing for future use.

Set (2014) explored internet adoptability to tourism SMMEs, while Musahara *et al.* (2014) considered capacity-building interventions and the promotion of SMEs in the Rwandan tourism sector. Of respondents countrywide, 64.8% agreed that the availability of software-enhancing databases resulted from the growing ICT culture in Rwanda, 28.1% of respondents were undecided and 7.1% disagreed with the statement. In the Western and Northern Provinces, 74.7% of the respondents agreed with the above statement, 14.2% were undecided and 11.19% disagreed.

ICT plays a very significant role in accommodation establishments and the tourism business overall. These findings are supported by Bethapudi (2013:70) who reports that the accommodation industry is the least-automated segment of the international travel industry. PMS were introduced to facilitate front office, sales, and planning and operational functions. The Western and Northern Provinces are the most-visited parts of Rwanda, suggesting that facilities exist to host the visitors. The majority of respondents agreed that PMS had overcome challenges to business management through administering a database that contained all reservations, rates, occupancy and cancellations. The PMS thus assisted hotel management to improve inventory management, communication with consumers and reduced some operational costs. This is supported by Foster and Graham (2014:13) who state that changing connectivity can play a key role in improving business functions, which allows businesses to operate more efficiently and to reduce costs. They include examples of information system facilities that allow tracking and monitoring of room (or resource) availability. Computer reservation systems (CRS) and global distribution systems, according to Bahalis and Sou Hyu Jun (2012) assist in travel planning, improved ease of booking of accommodation, airline bookings and payment systems, simultaneously improving the co-ordination of all aspects of travel logistics in global distribution systems. The adoption of website systems for online travel agents has improved functionality and services to meet the needs of all customers.

S25. The use of ICT in the provinces has caused a decrease in education costs.

Fifty three point three percent (53.3%) of the respondents countrywide agreed that the decrease in education costs in Rwanda was due to the use of ICT, 30.6% of the respondents

were undecided and 16.1% of respondents did not agree with this statement. In the Western and Northern Provinces, 68.6%% of the respondents agreed that the decrease in education costs in Rwanda was due to the use of ICT in the provinces, 17.8% of the respondents were undecided, while 13.6% disagreed.

The high number of respondents in the Western and Northern Provinces, who agreed with the statement above, indicated that ICT alone cannot solve community problems. There are other aspects to be considered, such as increased income levels, to improve community challenges. In some cases this may be true if, for example, in the Western and Northern Provinces there are high numbers of ICT literates. They may enrol for tertiary or online studies and this may explain the role of ICT in reducing the cost of education to some extent. In contrasting cases, students in the lowest income groups, who experience difficulty in accessing the Internet, may not agree that the use of ICT in their province has resulted in a decrease of education costs, but Tsegay and Maekele (2016) argued ICT access and inclusion for all in sub-Saharan Africa. It is important to understand that a decrease in educational costs to meet specific needs is also a further step to economic freedom.

S26. The use of ICT has resulted in education for all in the province.

Fifty two point eight percent (52.8%) of the respondents countrywide agreed that education for all in Rwanda is a result of using ICT, 30.0% were undecided on the statement and 17.2% of respondents disagreed. In the Western and Northern Provinces, 69.4% of respondents agreed with the above statement, 15.5% were undecided and 15.1% disagreed with the statement.

The findings suggest that the perceptions of the Western and Northern Provinces differ from the countrywide results. This may be due to inequality of income distribution, and that education for all may only be true if all have access ICT.

There are cases where youth, with a lack of knowledge and skills, do not know if the Internet exists for education. The research findings are supported by Cruz and Giles (2000) for community in-service learning, and MyICT (2013:10) who argue that only 3% of Rwandans (aged 14 to 35 years) are confident about using a computer. They affirm that the number is highest in Kigali (13%), and that Rwanda is at risk of supporting a significant percentage of youth who are idle. The lack of productivity within the youth sector is a loss for the country. Rwanda aims to become an ICT hub for the EAC and with the youth forming a large percentage of Rwanda's population (39%), concerted efforts and intervention are required to increase the 3% of ICT-confident youth.

S27. All tourism businesses should be contained in a decentralised database.

Alzouma (2005) discussed the myths of ICT in Africa and advocated global media and communication, which argument is supported by 73.6% of respondents countrywide agreeing that having all tourism businesses in a decentralised database could generate more accurate tourism data for future forecasting, 17.8% of the respondents were undecided and 8.6% of respondents disagreed with the statement. In the Western and Northern Provinces, 78.8% of the respondents agreed that having all tourism businesses in a decentralised database could generate more accurate tourism data for future forecasting, 7.2% were undecided and 14% of the respondents disagreed with the statement.

A decentralised system of governance does exist in Rwanda, but in reality the extent to which local governments are enabled to promote and develop the tourism potential is critical. The fact that the majority of the respondents at national and provincial levels agreed that there is a need for effective decentralisation of a tourism business database confirms the sensitivity of the issue. Currently, official tourist arrivals and receipts can be tracked from the central government agency in charge of tourism development and promotion, called the Rwanda Development Board (RDB). The processes of deploying its services to local government are still ongoing, and could be effectively achieved with full deployment of ICT as tools to improve the services in question. The critical part of decentralised tourism businesses in Rwanda in general, and particularly in the provinces of focus, is the lack of a practical enthusiastic task of marketing and promoting their own regions. This resulted in some doubt as to where to obtain reliable tourist data, and required follow-up at the RDB.

It is therefore important to note that strengthening local governments in creating and marketing of promotion strategies and programmes could greatly improve domestic tourism, instead of relying only on international tourism. The research data are supported by Rule, Struwig, Langa, Viljoen and Bouare (2001:16) who aver that considering and realigning the strengths, weaknesses, opportunities and threats of the flourishing provinces could play a critical role in reforming the current structures and informing national and provincial marketing campaigns to create a solid domestic tourism base.

S28. Informal tourism businesses should be trained by LCBs to use IT in their daily transactions.

Of the respondents countrywide 74.6% agreed that informal tourism businesses need local capacity building (LCB) to equip them to use IT in daily transactions, 21.3% of the respondents were undecided and 4.1% did not agree with the statement. In the Western and Northern Provinces, 78.1% of the respondents agreed with this statement, 14% were undecided and 7.9% disagreed.

Local capacity builders, in Rwanda in general and particularly at provincial level, need to foster the informal tourism business' aim to become formal tourism businesses, in line with

Becton and Graetz (2001) promotion of training. The opportunities exist, such as using ICT in society integration, business development, and local willingness to become financially independent in accordance with the country's Vision 2020.

The statement is relevant to the contribution of ICT to the economic lives of tourism stakeholders in Rwanda and the respondents shared their views on how ICT can improve their economic lives based on the capitalisation of numbers.

S29. The establishment of tourism information centres in each district could assist to establish accurate tourism receipts at all levels of national tourism.

Seventy four percent (74.0%) of the respondents countrywide agreed that the establishment of tourism information centres in each district could assist to provide accurate tourism receipts at all levels of national tourism, 22.7% of the respondents were undecided and 3.3% of respondents disagreed with the statement. In the Western and Northern Provinces, 77.3% of the respondents agreed with this statement, 16.2% were undecided and 6.5% disagreed.

There is hope that the domestic tourism sector could grow if the ongoing initiative of decentralising the central government tourism marketing and promotional programmes is professionalised. This could happen if tourism information centres in each district were implemented, and the creation of niche tourism developed at every level. Every tourist would be counted and the purpose of their visit recorded, creating a valuable database of information for use by the district to promote and market the area to potential visitors.

S30. The computerised records of all informal and formal tourism businesses could help to address the issues of inaccurate data records.

Seventy-one point nine percent (71.9%) of the respondents countrywide agreed that computerised records of all informal and formal tourism businesses could remedy the issue of inaccurate records, 24.6% were undecided and 3.5% did not agree with the statement. In the Western and Northern Provinces, 77% of the respondents agreed with this statement, 17.6% were undecided and 5.4% disagreed.

Although Rwanda does not have a satellite the country has purchased computers and is therefore not lagging in the ICT movement (Buhalis & Deimezi, 2003; Buhalis & O'Connor, 2005:7-16). What is needed, however, is the promotion and development of a culture of computerising records of both informal and formal tourism businesses, and using this data to correct inaccurate records that result in poor planning and development of the tourism and hospitality sectors. This means that the informatisation in Rwanda can be improved by adopting inclusive computer skills at a village level. For example, one computer per household is one project that could be undertaken by government and promoters of ICT.

S31. The creation of tourism and ICT villages could enhance social/economic transformation, such as a mindset transformation, high profile of residents, and lifestyle changes.

Seventy-four point one percent (74.1%) of the respondents countrywide agreed that the social and economic transformation, such as a mindset transformation, high profile of residents and lifestyle changes, could occur due to the creation of tourism ICT villages, 21.6% were undecided and 4.3% of respondents disagreed with this statement. In the Western and Northern Provinces, 82% of the respondents agreed with this statement, 10.4% were undecided and 7.6% of respondents rejected the statement.

Besides the findings from the empirical survey, the research offered a strong impression that the ten community-based organisations confirmed the need to create both an ICT and tourism village for transforming social and economic lives in Rwanda, and these data are in line with the writings of notable authors on socioeconomic development and addressing poverty issues (Chen & Ravallion, 2008; Engelen, 2011; Darracq & Daragh, 2014). As a result, mindset, high profile standing and lifestyle changes would not be as critical as they are generally today. During the focus group discussion session one of the co-operatives, Urwibutso Enterprise in the Northern Province, indicated that:

> Having the tourism village and ICT village has a visible impact on real people. In their case, they are experiencing an increase of the income, security improvement, environment protection, access to development like saving in the banks established within the community, mindset changed, high productivity, schools with them, mutual credit funds opportunity, prolonged life span , market creation for their produces. In fact, the existence of those villages has promoted the destination, created business centre where there are no idle people. All people are at work.

In supporting the initiative of Sina Gérard the research examined the experience of the Yamada Village in Japan where it was revealed that the adoption of village informatisation through computerisation could meet the needs of the information environment for community development. The role of all stakeholders in that regard is to promote the development of computer skills among the households by providing computer loans to those who cannot afford to buy these tools (Gooneratne, 2002:5).

S32. Promoting local farming by means of ICT could lead to high levels of economic linkages in the province.

In response to this statement, 74.6% of the respondents countrywide agreed that promoting local farming using ICT could lead to high levels of economic linkages, 21.2% were undecided and 4.2% of respondents disagreed. In the Western and Northern Provinces, 82.4% of the respondents agreed with this statement, 11.5% of the respondents were indecisive and 6.1% disagreed with the statement.

The research data suggests that improvement in the present and future economic status of Rwandans requires positive co-ordination of residents' activities, and aligning them with

modernised developmental approaches. This will be achieved by the integration of ICT into farming practices and the promotion of multi-level provincial production based on standardisation principles of the products. The researcher is aware of the achievements in local community development post- the 1994 genocide by the Hutus against the Tutsis but in reality there is still much to be done before farmers are liberated from economic leakages. Farmers need to be willing to look for information, practise patriotism and be aware of changes in the traditional settings of the farming industry.

The research findings are supported by MINOLOC (2013:12-13) which states that:

> Besides the role of the central and local government of planning for the community development, there is a strict recommendation to citizen(s) to become active participant(s) to a real implementation, otherwise the results won't happen at provincial level.

This means that the farmer's satisfaction depends on his level of engagement in developmental programmes and policies implementation, first at an individual level and then collectively. Further interpretation of this statement means that agri-tourism could be another niche form of tourism in flourishing tourism destinations, due to quality land for farming activities.

S33. Promoting a culture of a customer care service industry at provincial level is one way to the promote country internally and externally.

In response to this statement, 72.2% of the respondents countrywide agreed that promoting a culture of a customer care service industry at provincial level is one way to promote the country, 25.2% of the respondents were uncertain and only 2.6% disagreed with this statement. In the Western and Northern Provinces, 79.1% of the respondents agreed with the statement, 16.9% were uncertain and 4% disagreed.

Despite service industry stakeholders' efforts to improve the customer service culture, it is still not enough. This is a concern that has drawn the public and private sectors and NGOs to a round table-discussion, but initiatives are still ongoing to try to resolve the customer care service problem. These stakeholders include accommodation, health care centres, financial institutions and shopping and tourism businesses.

The research findings suggest that the lack of a customer care service culture in Rwanda in general is critical but believes that the issue will be resolved if the SERVQUAL model for service delivery is implemented in service industries. The theory of a top-down campaign against poor customer service should be motivated to promote a culture of customer service at all levels of Rwandan society.

S34. Forming, coaching and mentoring tourism co-operatives to enable them to create jobs could have positive impacts on my area.

Seventy-seven point three percent (77.3%) of the respondents countrywide agreed that developmental programmes, such as forming, coaching and mentorship of community-based organisations (namely co-operatives), could enable job creation and thus have a positive impact on the area. Of the balance of respondents, 20.5% were neutral and 2.2% disagreed. In the Western and Northern Provinces, 83.8% of the respondents agreed with this statement, 12.3% neutral and 3.9% disagreed.

There are a number of positive initiatives in Rwanda that are aimed at transformational and transactional results. Among these are industrial policies and programmes emanating from co-operatives that have been formed as a result of these initiatives. However, because these established co-operatives do not have mentorships and coaching programmes, they are not productive and do not grow.

Mentorship and coaching are not new concepts around the world. However, they are new in some countries because of a lack of information about how useful they are to produce positive results. Mentorship is commonly found in the private sector, in civil society and in mechanisms for leadership development (Deans, Oakley, James & Wrigley, 2006:4). According to McKimm, Jollie and Hatter (2007:1), a mentor is someone who helps another person through an important transition, such as coping with a new situation like a new job or a major change in personal circumstances, or in career development or personal growth. In the research context, there is no age limit that prevents the learning of new lessons if opportunities are offered. For example, a co-operative could become a ‘‘tomorrow venture’’, or a hospitality corporate could employ a majority of the local community if mentorship programmes are available and properly deployed.

Deans *et al.* (2006:5) articulate that coaching is initially a short-term intervention aimed at performance improvement or developing a particular competence. It is a process that enables learning and development to occur and thus performance to improve. Many definitions indicate similar principles between coaching and mentoring, though coaching is primarily focused on performance within the current job and emphasises development tools, while mentoring focuses on long-term goals and developing capability (Deans *et al.*, 2006:5-6). Therefore the choice depends on the type of co-operatives and existing programmes, whether coaching or mentoring is employed.

5.4 Local communities benefit from TVC implementation

Why have local communities not benefited from TVC implementation?

This question was asked to establish the expectations of both service providers of tourism businesses and local communities in Rwanda with specific reference to the destination that is successfully attracting tourists to the area, where IT is integrated into the Tourism Value

Chain Development (TVCD). Two co-existing statements assisted the researcher to establish the reason why local communities have not benefited from TVC implementation.

- Firstly, the assumption that integrating local participant-perceptions and technology into the process of planning and developing tourism for pro-poor impacts could enhance the effectiveness of TVC, and
- Secondly, that facilitating tourism studies for those stakeholders involved in local community-based tourism development in countries where TVC had worked for the poor, would speed up changes.

It was established from the respondents that most, if not all, local communities are not benefiting from TVC implementation because they are not regarded as active players in the value chains. The researcher investigated countrywide perceptions to establish whether local participants are aware of an ICT society and TVC for getting involved in the process of tourism development planning for their benefit (pro-poor impacts).

Seventy seven point seven percent (77.7%) of respondents in the Western and Northern Provinces agreed that the effectiveness of the TVC to benefit the poor could be enhanced by taking into account local participants' perceptions and technology in the process of planning and developing tourism for pro-poor impacts, in line with the arguments of Spenceley and Meyer (2012). Of the balance of respondents, 16.2% were undecided about the statement and 6.1% rejected the statement (Table 5.1 below). In support of Apleni (2012:5), these findings suggest that it is necessary to allow local communities to voice their perceptions and feelings on how economic activities, such as tourism and ICT, can benefit them. The researcher believes that creating positive and lasting relationships with local communities in the Western and Northern Provinces is a key component to discover local potential and enhance the effectiveness of TVC that works for the poor.

Table 5.1: Integrating participants' perceptions/technology into tourism development planning

Perceptions	Frequency	Valid Percent
Strongly Agree	67	24.1%
Agree	149	53.6%
Undecided	45	16.2%
Disagree	17	6.1%
Total	278	100%
Missing system	28	
Total	306	

Table 5.2 below illustrates that 80.2% of the respondents agreed that any form of psychological development (including formal and informal training) for stakeholders who are involved in local community-based tourism development in the provinces where TVC has worked for the poor, would speed up changes, according to Ndivo and Cantoni (2015), who advocated the pro-poor- and tourism value chain approaches in poverty alleviation. Of the remaining respondents, 14% were neutral toward the statement and 5.8% disagreed. These findings suggest that respondents are desperately looking for change in their provinces. TVC in Rwanda is still an uncommon developmental approach that has been borrowed from developed countries. Very few tourism stakeholders sufficiently understand this approach, with few practices in tourism and other economic-related activities, like agriculture/farming, being advanced on this approach for upliftment of the poor.

Table 5.2: Tourism studies for stakeholders in local community-based tourism development

Perceptions	Frequency	Valid Percent
Strongly Agree	73	26.2%
Agree	150	54%
Undecided	39	14%
Disagree	15	5.4%
Strongly disagree	1	0.4%
Total	278	100%
Missing system	28	
Total	306	

The research findings in this regard are supported by Foster and Graham (2014:33) who state that promoting shared knowledge groups through hotel and tour associations, and visits to places for best practices, might inspire improvement for lagging firms. Implementing tour studies would see innovation and human capital for real local change.

5.5 Main obstacles/opportunities for tourism businesses in online procurement

What are the main obstacles and opportunities for owners of tourism businesses when undertaking procurement online?

This question was asked to determine the requirements of businesses so that they may take advantage of opportunities for bargain purchases. Of respondents countrywide, 57.3%, versus 65% in the Western and Northern Provinces, found it easy to purchase ICT equipment, whereas 42.7% countrywide versus 35% in the Western and Northern

Provinces, found it difficult. All answers led the researcher to identify the procurement areas, available ICT devices, connectivity status of those devices, devices used for business transactions, time spent on the Internet on a daily basis, and what obstacles and opportunities exist for ICT equipment in tourism businesses.

Figure 5.1 indicates countrywide responses, that 56% of ICT equipment is supplied from Kigali City, the capital of Rwanda, 36% is supplied within a province, 6% is supplied from neighbouring countries (Uganda, Kenya, Tanzania), and 2% is purchased from overseas.

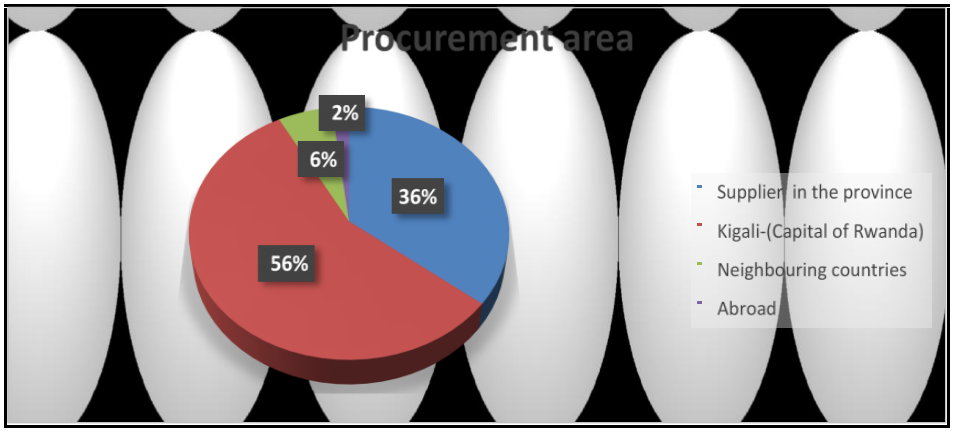

Figure 5.1: Procurement areas countrywide (Researcher's construct from research data)

Figure 5.2 below indicates responses from the Western and Northern Provinces, that 47.9% of ICT equipment is supplied from Kigali City, 46.8% supplied within a province, 6.3% is supplied from neighbouring countries (Uganda, Kenya, Tanzania), and only 0.5% is purchased from overseas.

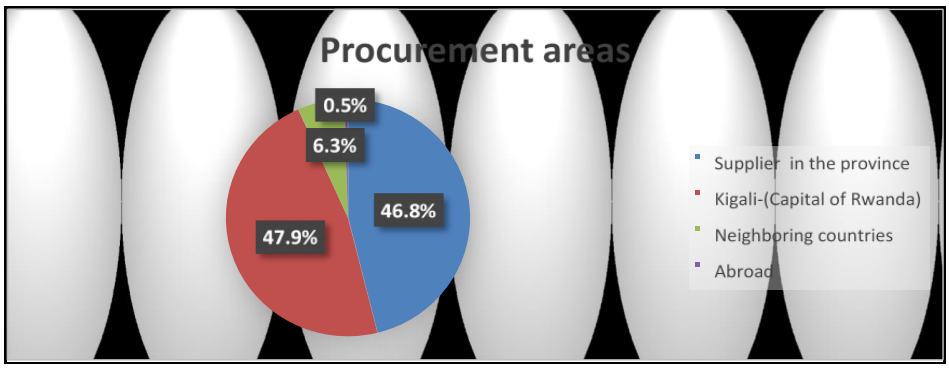

Figure 5.2: Procurement areas - Western/Northern Provinces (Researcher's construct from research data)

The differences between Figures 5.1 and 5.2 highlight the mobility of the ICT business in Rwanda. It is very important to note that consumerism is a predominant culture and this is illustrated by the existence of ICT equipment in Rwanda, rather than production thereof.

Therefore, the amalgamation of both national and neighbouring country supplies could constitute a financial leakage phenomenon for these countries because none of them has an established ICT equipment manufacturing industry.

The ICT equipment identified includes devices such as computers, laptops, cell phones, iPADs and tablets. Table 5.3 below indicates that of the devices available in businesses that participated in this study, 21.3% are PCs, 27.2% are laptops, 49.0% are cell phones, whereas only 0.03% are Personal Data Assistants (PDAs).

Table 5.3: Devices used in businesses in Western and Northern Provinces of Rwanda

ICT tools	Frequency	Valid Percent
PC	61	21.3%
Laptop	78	27.2%
Cell phone	139	49%
PDA/iPAD	8	0.03%
Total	286	100%
Missing system	28	
Total	306	

The social and economic disparity in the provinces is underlined, particularly where benefits fail to trickle down to local people with entrepreneurship skills. ICT usability and accessibility is concentrated in cell phones because of affordability but it is important to determine whether those who use PCs or laptops at the workplace also have their own devices at home. This translates directly to a social and economic implication of non-affordability of ICT devices, even for those who are employed and is simply limited purchasing power, whereby one can only rely on company facilities. This point was supported in focus group discussions where the participants revealed their need for ICT equipment beyond ordinary cell phones.

Concerning connectivity of the devices mentioned above, 60% of those who use a PC are connected, 88% of laptops are connected, 91.5% of cell phones are connected and 31.6% of iPAD/tablets are connected. Table 5.4 below summarises the accessibility, availability and connectivity of devices.

From the research data and Carmody's (2012) argument for mobile phones in economic progress, the presence of these devices and their connection status is a pre-requisite for new business developments to bring about socioeconomic transformation in Rwanda. The majority of respondents reported that PC and PDA devices were not easy to access, whereas laptops and cell phone devices were easily accessible. However, it is not clearly indicated why those with the capacity to buy laptops could not afford to purchase PCs as

well. With reference to PDAs, it is clear that they are difficult to obtain because they are expensive.

Table 5.4: Device accessibility, availability and connectivity

ICT devices	Availability	Connectivity	Accessibility		
PC	21.9%	60%	21.6% (Easy/very easy)	8% (Not easy)	70.5% (Somewhat difficult-very difficult)
Lap tops	28.1%	88%	50.3% (Easy/very easy)	15.2% (Not easy)	34.6% (Somewhat difficult-very difficult)
Cell phones	50%	91.5%	72.7% (Easy/very easy)	15.7% (Not easy)	1.6%(Somewhat difficult-very difficult)
PDA/iPAD	0.03%	31.6%	4.9% (Easy/very easy)	12.2% (Not easy)	82.9% (Somewhat difficult-very difficult)

Table 5.5 below indicates the type of businesses where these devices can be found. The question pertaining to the number of devices and users could form the basis for a further study.

Table 5.5: Type of business

Company	Frequency	Valid Percent
Government	122	21.2%
NGO	41	7.1%
Self-employed	215	37.3%
Private company	183	31.8%
Other	15	2.6%
Total	576	100%
Missing system	39	
Total	615	

Table 5.6 below reveals that in 16.7% of business transactions a PC is used all of the time and in 6.1% of business transactions a PC is used most of the time. Despite Alzouma's (2005) plea for a digital revolution in Africa, an alarming 62.8% of transactions are done not using a PC at all. Despite the recent launch of an electronic billing machine by the RRA, this data confirms that the archaic methods of manual journal or ledger book entries are still used for business transactions in Rwanda.

Table 5.6: PC time-use for business transaction purposes

	Frequency	Valid Percent
All the time	30	16.7%
Most of the time	11	6.1%
Sometimes	8	4.4%
Seldom	18	10%
Never	113	62.8%
Total	180	100%

Table 5.7 below illustrates that 56.6% of respondents use laptops for business transactions all the time, while 23.7% never use laptops for business, 12.6% use laptops some of the time and 7.2% rarely use laptops for business.

Table 5.7: Laptop time-use for business transaction purposes

	Frequency	Valid Percent
All the time	62	30%
Most of the time	55	26.6%
Sometimes	26	12.6%
Seldom	15	7.2%
Never	49	23.7%
Total	207	100%
Missing System	99	
Total	306	

Using a cell phone for business transactions is considerably different from other devices used for business transactions. Table 5.8 reveals that 70.3% of respondents use cell phones to conduct business transactions, 18.7% use cell phones sometimes, 6.9% rarely use cell phones for business transactions, while 4.1% never use cell phones for business. PDAs are difficult to locate because they are expensive and therefore the majority of people never use them.

Table 5.9 and Table 5.8 read together indicate that there is no relationship between having ICT devices that are connected to the Internet and the hours spent on the Internet for

business purposes: there is no clear indication whether the 70.3% (Table 5.8) of cell phone users for business transactions use the Internet.

Table 5.8: Cell phone time-use for business transaction purposes

	Frequency	Valid Percent
All the time	94	38.2%
Most of the time	79	32.1%
Sometimes	46	18.7%
Seldom	17	6.9%
Never	10	4.1%
Total	246	100%

Table 5.9 below informs the researcher that there is a problem of connectivity and accessibility (see also list below and data in Table 5.10) and the maximum hours spent daily on the Internet for business purposes is 11-15 hours (5.2%). The minimum hours spent daily on the Internet for business is less than an hour (22.1%), while only 29.9% spend between 1 and 3 hours daily on the Internet conducting business.

Table 5.9: Daily hours spent on the Internet for business purposes

Time	Frequency	Valid percent
Less than 1 hour	60	22.1%
1-3 hours	81	29.9%
4-5 hours	38	14%
6-8 hours	27	10%
9-10 hours	8	3%
11-15 hours	14	5.2%
Not Applicable	43	15.9%
Total	271	100%

Regarding the main obstacles and opportunities identified in the study data faced by owners of tourism businesses when undertaking procurement online, and explained by Buhalis (1998) and Buhalis and Licata (2002), ICT access is more limited, or comes with limitations imposed by a reliable power supply, or by political and economic barriers (ILO, 2010:42).

The research data considered the major challenges based on the information gathered from the officials who were interviewed. Their views on the question under discussion are

summarised in Table 5.10 below. The researcher motivates that online procurement (in this study) entails the purchase of ICT equipment (lighting, cooking, ventilation, refrigeration, office equipment, space heating, cooling, hot water) and other items that are not produced locally and are needed in the tourism and hospitality industry.

Table 5.10: Major challenges to ICT contributions in the Rwandan tourism sector

Challenges
Lack of knowledge and awareness of ICT
Lack of adequate IT infrastructure and skills in using existing ICT
Internet access is expensive
ICT tools are not accessible to all
Connection problem; they do not have telecentres; lack of awareness in the community
No infrastructure with standards; no exploited sites visited; limited finances; no domestic tourism in Rwandan culture
Connectivity issues - some districts are not connected; electricity problem; poor network; low level of ICT literacy; resistance to change; shortage of equipment; low level of ICT information dissemination; weakness in advocacy
Energy deficiency, but there are initiatives to keep activities moving
Tourism itself is still underdeveloped; there are still unknowns but website exists; e-payment facility; in general ICT is not developed; note that ICT is a tool enabling what we are doing; maximising income; it is used to market our country
Lack of infrastructure, underdeveloped infrastructure; for example, energy is a problem and connectivity as well; community is not aware about ICT; no smart phone; we need to sensitise the local community to ICT-based opportunities
No challenges, rather contribute to the move forward of economic sector; example: increased tourists/arrivals from time to time because of ICT
Poor IT infrastructure, especially lack of sufficient energy resources

The data suggests that unique opportunities available for online procurement are created by the willingness of tourism businesses and the government, which has the power, to put in place ICT policies and regulations pertaining to national, regional and international business. These views are supported by a number of studies, including Lewis (1992), Castells (1999), Buhalis and Licata (2002), Buhalis and Deimezi (2003), GMSA (2011), Bhasin (2012), and Murphy *et al.* (2014). Hence government can influence ICT and tourism stakeholders to a paradigm shift towards modernisation of businesses, fighting online crimes such as cyber coffee crimes, outsource updated ICT information related to economic sectors, and promote local innovation.

5.6 Consumer records improvement in TVC linkages

How are consumer records captured (including type of products/services, spend, origin and special requests)?

The survey was used to determine what is needed to improve integration between all linkages in the TVC, and is aligned to the 2005 study of Buhalis and O'Connor where the authors investigated key ICT challenges facing tourism industries. This question started with tag questions, where the researcher was informed that 50.9% maintain records of their clients, 47.2% do not capture any records, and 2.0% thought that it did not apply to them (Table 5.11).

Table 5.11: Consumer records capturing

Do you keep records of your business consumers?	Frequency	Valid Percent
Yes	259	50.9%
No	240	47.2%
Not Applicable	10	2%
Total	509	100%

At the same time, respondents were asked what type of records they captured and Table 5.12 revealed the following:

Table 5.12: Type of records captured

	Frequency	Valid Percent
Type of products	91	38.9%
Services	79	33.8%
Spend	7	3%
Origin	9	3.8%
Special requests	14	6%
Other	11	4.7%
Clients profile details	23	9.8%
Total	234	100%

From the findings shown in Table 5.12 above the research data established whether tourism businesses valued their clients, as expressed by Niininen, Buhalis and March (n.d.:6). These authors point out that consumers' are the centre of a tourism business so they have to be studied. Consumer Centric Marketing is appropriate and is a mechanism of capturing and interpreting consumer insights to enhance marketing effectiveness to better serve those consumers who are brand conscious (Niininen *et al.*, n.d.:6). Table 5.12 indicates that 38.9% captured records of products and 33.8% captured service records, so some effort is being made to service customers.

Considering the results above, it is clear that a high number of businesses in Rwanda in general do not have a culture of capturing customer records. In support of the findings, Niininen *et al.* (n.d.:6) state that the stability and continuity of a business is directly related to the collection and arrangement of information and data on individual customers, utilisation of that information to more effectively target existing customers, and allowing the customer to customise and personalise the service to match their own needs and preferences. In addition, it was revealed that those who captured customer records were enabled by ICT devices such as computers, and those who did not capture customer records do not have these important tools. ICT *is* an essential tool used to improve integration between all linkages in the TVC (Engelen, 2011; Pastakia & Oza, n.d.).

5.7 Current understandings of ICT

How many staff members are able to use IT equipment in the work environment?

This study quantified the information to draw specific recommendations and conclusions. The reason for this research question being asked was to establish the current understanding of ICT contribution to the economic lives of tourism stakeholders. The findings show that an average of 54.5% of staff from different institutions which participated in the survey, are able to use ICT, whereas 52.9% of staff from different institutions in the Western and Northern Provinces are able to use ICT.

The data were not sufficient to persuade the research that the respondents comprehensively understood of the meaning of ICT. Consequently, a combination of quantitative and qualitative answers induced the researcher to conclude that there is probably a direct relationship between the number of ICT users and the current understanding of ICT, by ICT and tourism business stakeholders. This statement is supported by the ten most important and revealing statements of ICT users:

- We don’t know what ICT means
- ICT means a tool to increase production in order to meet the market demand
- In agriculture for example, the respondents referred to machines needed to fertilise
- Tool of communication such as telephones or computers
- Media tools such as television, broadcasting radio
- ICT acts as a tool to create market in online business
- Electronics to obtain money in the consumer market
- Important tool enabling the creation of information
- Tool used in processing, storing and sharing through the different users
- Tool to improve quality service delivery with cost effectiveness.

Although some respondents admitted to their limited understanding of ICT, others indicated that ICT could mean a tool to increase production to meet the market demand. In agriculture, for example, the respondents referred to machines needed to fertilise, cultivate, irrigate, harvest and package products. For a majority, their understanding is limited to a tool of communication such as telephones or computers, but also other versions were offered to media tools, such as television, broadcasting radio and electronics to obtain money in the consumer market. Depending on the stakeholders, ICT was understood as an important tool enabling the creation of information, processing, storing and sharing through different users, to improve quality service delivery, which is cost-effective.

From the summary of the qualitative answers pertaining to the meaning of ICT, it can be concluded that ICT is a multidimensional sector, as was described in the grounding literature review of this study. The information confirms that there is no definitive meaning of ICT; instead, its meaning depends on the industry or activities. For example, those from primary industries, such as agriculture-farming and fishing, would define ICT as a tool enabling productivity and permitting effective communication.

5.8 Implications of ICT industry standards, development, legislation, online learning accessibility and usability.

What are the implications of IT industry-standard developments (e.g. Web Accessibility Initiative) and legislation for online learning accessibility and usability?

The research acknowledges Buhalis and Deimezi (2003), Alzouma (2005), UNCTAD (2008:50), and Vallabh (2012) whose writings indicates that technological progress (such as the beginning of mobile telephony) and liberalisation around the world have transformed telecommunications, to the extent that providers and investors need not experience monopolies or be immobile any more. Yet, the effects of the IT industry standard developments on online learning accessibility and usability have become issues of debate. Considered in a Rwandan context, this research embarked on this survey to answer the research question to establish the relationship between a tourism marketing strategy and IT, thereby making the TVC more effective at a destination, thereby acknowledging Buhalis and O'Connor's 2005 research.

In addition to the research findings, the relationship between a tourism marketing strategy and IT to make TVC more effective, would create a strong trust between value chain actors and enhance equal benefit opportunities (Engelen, 2011; Ndivo & Cantoni, 2015; Pastakia & Oza, n.d.). In fact, Table 5.15 indicates that a majority of the tourism stakeholders use face-to-face operations (47.6%) as a mode of advertisement, followed by the Internet at 11.8%. Very few of the tourism stakeholders (3%) took advantage of opportunities to do e-commerce

business activities. Moving forward, different business modes of advertisement presented in Figure 5.3 are substantial components of a marketing strategy that aims to improve the visibility of the products and services at a given destination.

These findings are supported by Foster and Graham (2014:24) who state that hotels and tour operators could market directly to customers as a way to increase their sales through the website, e-mail signatures, websites newsletters, and social media such as Facebook, Twitter, Whatsapp, and WeChat. The research used these authors' arguments about the Internet and the changing face of tourism in Rwanda, where they indicate that changing connectivity can also play a key role in improving so-called 'business functions', which allows businesses to operate more efficiently and reduce costs (Foster & Graham, 2014:13).

In this respect the findings in Table 5.13 show that 58.2% of the survey participants agreed that their costs have declined due to the use of ICT in different aspects in their economic lives, However, 41.8% disagreed. This includes but is not limited to, benefitting Internet society services, banking systems, education, telecommunication, money business transactions, transportation and surfing the World Wide Web to be updated on daily events.

Table 5.13: Cost reductions due to the use of ICT in the last three years

	Frequency	Valid Percent
Yes	326	58.2%
No	234	41.8%
Total	560	100%
Missing System	55	
Total	615	

Having discussed these findings and the adoption of successful cases of online service usage in tourism, such as online travel agents, the feedback on sites was found to be low. Foster and Graham (2014:32) point out that Rwandan accommodation establishments and tour operators have been slow to provide for, or integrate into, the growing number of services that are being provided in the tourism sector. For example, they indicate that simple hotel availability information and natural park-permit booking is nearly always done manually.

Issues of connection and weak networks were raised by most respondents in this study, but such low use and adoption of services in these facilities does not appear to come from a lack of or weak connectivity (Foster & Graham, 2014:32). Other critical issues that became apparent from the research findings need to be addressed. These include a shortage of skills and low knowledge levels of how to integrate services-based Internet within the country because most tourist facilities have some form of Internet access.

Compared to upmarket hotels, the smaller establishments lack the prerequisites for service integration around the need for coherent management and information systems, while most benefits have been to large international chains in Kigali, where business customers can now book directly. Value for money and time management is of prime importance to a customer.

However, Table 5.14 below shows that ICT has improved the lifestyle of Rwandans with 61.4% of survey participants in agreement with this statement, while 38.6% of participants felt that their individual experience in different life contexts had not improved.

Table 5.14: Lifestyle improvement due to the use of ICT over the last three years

	Frequency	Valid Percent
Yes	337	61.4%
No	212	38.6%
Total	549	100%
Missing System	66	
Total	615	

Data gathered from the interaction between the research and survey participants, and interviews, indicates that costs have decreased and lifestyle improvements have come about over the last three years in Rwanda due to the presence of ICT.

Referring back to Internet penetration in the TVC, it is important to note that much remains to be done to make Rwanda more competitive compared to other countries, where the Internet society has proved that consumers are now better off through improved connectivity and accessibility to ICT.

In a Rwandan context Foster and Graham's (2014:14) argue that the idea of growing flexibility, in the way tourism business is being done, highlights the potential of the Internet to improve integration of tourism services. In addition to that, a mixed set of actors, and thus integration, is crucial to ensure a more dynamic production of tourism for many beneficiaries.

As presented in Table 5.14 above, the significant percentage of people (61.4%) who are using the internet is encouraging and one may believe that smaller firms are ready to compete with larger ones. This is supported by Foster and Graham (2014:14) and Buhalis and Licata (n.d.) who suggest that the growth of online systems could permit smaller firms to better compete with larger ones through improved integration. The effects of ICT sector standard development and legislation on online learning accessibility and usability is directly related to the developments of a company's online system, and the volume of businesses involved in the value chain development, which would justify the gap between developing and developed cities in Rwanda. The multinational and larger companies are based in Kigali

City where a strong ICT infrastructure exists and they benefit greatly from online business, compared to smaller hotels and business, which are located outside of the city and experience lesser benefits.

Another development discussion in this section is based on the fact that the majority of tourism businesses are critically not using online systems to market their products and services (see Figure 5.3 and Table 5.15).

Table 5.15: Business advert modes

Advert mode	Frequency	Valid Percent
Face to face operation	223	47.6%
Word of mouth	38	8.1%
Internet	55	11.8%
e-commerce business	14	3%
Pamphlets	32	6.8%
Travel shows	7	1.5%
Travel agents	9	1.9%
Visitor Info centres	1	0.2%
Road signs	27	5.8%
Other (exhibition at the front door)	8	1.7%
Not Applicable	63	13.5%
Total	468	100%
Missing System	147	
Total	615	

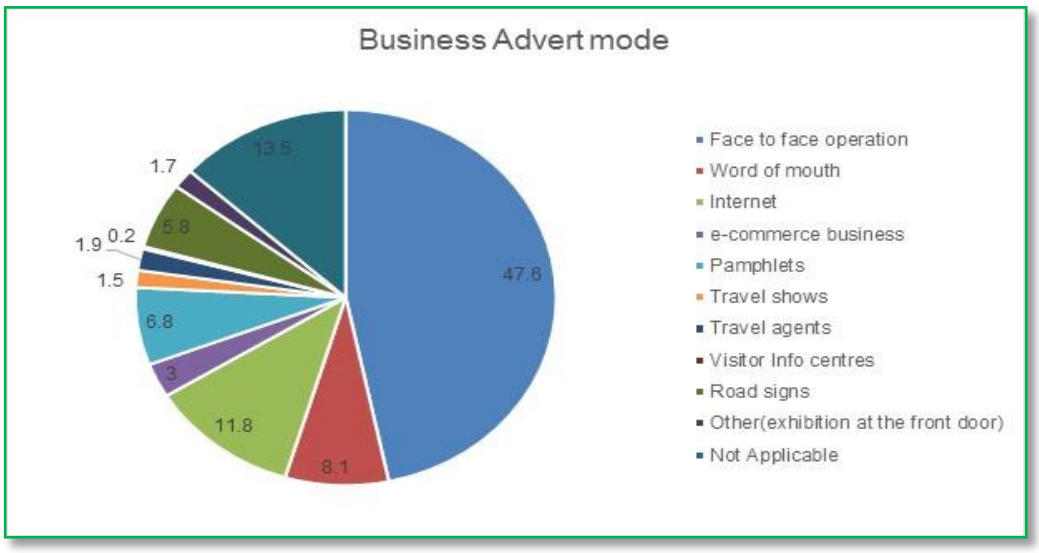

Figure 5.3: Business advert modes (Researcher's construct from survey data - 2015)

The research findings are supported by Foster and Graham (2014:16) who state that the Internet plays a key role in large and small Rwandan firms, such as hotels, tour operators and travel agents and tour guides and attractions. However, the challenge remains the high cost of the strong bandwidth that prevents retail businesses and some of the TVC actors from benefiting from Internet use. As a consequence, they prefer to use inexpensive ways of selling products and services, such as word-of-mouth, front door exhibitions, flyers, local television and broadcasting radios.

Even large firms are dissatisfied with ever-increasing Internet prices and this could explain the shortcomings in quality service-delivery in businesses like e-tourism, e-hospitality, e-tour operations and e-travel agencies in developing countries like Rwanda, while Masele (2015) argued the use of E-commerce in pro-poor tourism development in Tanzania. A further implication of online service system integration with TVC actors, such as tour guides who could become the tour operators of tomorrow, is to allow entry into practical tourism business entrepreneurship with fewer funds and less space. What is needed is merely having a personal device connected and to build networks domestically and internationally.

5.9 Accessibility and user-friendliness of ICT for dissemination of tourism products/services

How accessible and user-friendly is IT for disseminating tourism products and services to consumers?

Shanker (2008:55) asserts that it is essential that usability studies and research is conducted to examine ICT integration into tourism and its impact. Usability is the measure of the quality of a user's experience while using ICT tools. With regards to this study, it could be, but not limited to, a product or service of a system, website, software application, mobile technology,

or even related technology, free of negative impacts in the country or region, or a group of people, such as a community. The above question was posed to tourism and ICT stakeholders for a Tourism Village Model in Rwanda.

Shanker (2008:51) further states that ICT and tourism are interdependent sectors and the research findings are validated through interviews with officials who all confirmed that a direct link exists between ICT and tourism. These officials suggested that ICT is less time-consuming and offers ease of access to information for business and tourism, especially access to information by tourists. Where there is an ICT plan there is a common understanding of the tourism industry and the Internet helps to market products, so the Northern and Western Provinces can create an awareness of existing developments in the ICT sector of social media products such as Twitter and Facebook.

Regarding product and service distribution to consumers, Foster and Graham (2014:32) suggest that online visibility and accessibility offers the potential for Rwandan companies to directly reach customers, support references and market their products or services. However, it is important to note that besides connectivity issues, a number of dynamics still limit the ability of firms to reach customers directly, including low capacities around skills to exploit online resources, issues around finance, time management to interact with customers, brand names, logistic quality, and power and networking.

Accessibility and usability of IT for tourism dissemination of products and services to consumers is offered by Shanker (2008:51), Buhalis and O'Connor 2005 and Masele (2015) who consider ICT and tourism as complementary sectors. In light of the opinions noted above, it is apparent that ICT is a positive tourism factor, at the same level as other attractions at a given destination. This argument is supported also by the data gathered from interviews with officials, 100% of whom believed that a direct link existed between ICT and tourism. Table 5.16 summarises the reasons why the ten officials interviewed believe that ICT would be a positive factor in a given destination.

Based on the research data versus survey responses, it is clear that deployment of ICT at a given destination can be a catalyst to form a tourism village.

Table 5.16: ICT being a positive factor to attract tourists in the area

Q 5.2 Do you think ICT could be a positive factor to attract tourists in the area? Please motivate your answer	
Yes	ICT is less time-consuming, ease of quick information to business and tourism.
Yes	Of course because it may increase the access of information to tourists.
Yes	Where there is an ICT plan there is common understanding of the tourism industry.

Yes	Because all developments go with ICT so tourism is not left behind. Thus it is better placed for it.
Yes	If we had ICT that is working effectively, it can attract investors.
Yes	Because of dissemination of information.
Yes	Internet helped to market our products, so our province needs to create awareness of existing development in the ICT sector like social media products such as Twitter, Facebook, WeChat, Whatsapp, BBM.
Yes	It is a positive factor but we do not have an ICT village.
Yes	Without ICT, no contact, example email, Facebook, Whatsapp. Without the ICT facilitation, no communication, no marketing and products and services are known.
Yes	Yes it could be a factor. Because like other basic needs, the Internet has become a part of life. So if tourists could get ICT especially Internet connectivity, this could be an added value to our tourism.

The research findings are reinforced by Shanker (2008:51) who indicated that the role of ICT in tourism is a crucial driving force because it provides new tools and enables new distribution channels, thus creating a new business environment. Becton and Graetz (2001) and Vallabh (2012) further assert that ICT tools have facilitated business transactions in the tourism industry by networking with trading partners, distribution of product services, and providing information to consumers across the globe. From the consumer's perspective, it is an opportunity to use online systems to obtain information and plan their travel trips (Buhalis & O'Connor, 2005; Buhalis & Sou Hyu Jun, 2012).

With respect to the research findings, again it is important to note that connectivity, website development, social media, broadcasting radio and television (Lewis, 1992; Alzouma, 2005; Murphy *et al.*, 2014) and deployment of other ICT infrastructure in meeting the daily needs of the community, such as water, energy (power), machinery, transportation, and marketing, would justify the belief that activities centred around tourism destinations, such as in the Western and Northern Provinces, are prominent. Such technologies would appear user-friendly if they did not discriminate against any of the communities surrounding the attractions while supporting innovation, sustainable development and environmental friendliness.

Regarding ICT for a tourism village in rural areas, the research data confirmed Shanker's (2008:51) argument that tourism is a combination of various inter-related industries and trade, like the food and transport industries. Deployment of ICT into a full range of tourism activities can create a tourism village where all questions related to ICT and tourism could be answered through Internet-based value chains to solve issues related to unemployment. For example, nationally Rwanda's rural tourism could be promoted through ICT applications and rural tourism could be a major economic activity crucial for agri-business and rural

development. This would create an opportunity for farmers to benefit from tourism directly and also generate new markets for agri-tourism products in the region (Shanker, 2008:57).

In summary, the research data acknowledges Foster and Graham's (2014:32) arguments on online visibility and associated communications in a Rwandan context. The authors note that online visibility and accessibility offer an opportunity for Rwandan companies to more directly reach customers, support references and market their goods. However, this occurred only with a few tour companies who could afford to use Internet resources such as websites and social networks, while some large upmarket hotels had integrated services and attracted customers. With regards to smaller companies, Foster and Graham (2014:32) maintain that online visibility has the ability to support and improve accessibility features, which would enable small companies to increase their customer-base. Therefore, small tourism businesses which enter the tourism market should aspire to online visibility (Buhalis, 1998). This would ensure the company is visible across all online channels to very many consumers, creating awareness of their products and services, thereby bolstering their chances of future success.

5.10 The future of ICT as an enabling tool for tourism sector development in local government

What is the future of ICT as an enabling tool for tourism sector development in the local government?

This is an inclusive enquiry where the research needed to determine what is required to create an awareness of the tourism sector's needs for development planning in local governments, through the use of ICT, linking to the writings of Nadkarni (2008) and Uwamariya *et al.* (2015).

To predict the future, perceptions of making ICT an enabling tool for tourism sector development in local government goes hand-in–hand with the prediction of the same perceptions on the entire country, as a world class destination. The discussion on this theme engages the need of inclusive combinations of ICT for Development (ICT4D – Nadkarni, 2008), knowledge of the environment, governance, visitors, destination management, connectivity, doing business, ICT tools, and community development. In this age of ICT some governments are already reaping the benefits from decisions to extend ICT into daily business activities. The findings agree with UNWTO (2011:10) which maintains that continuous changes and different ways of doing business urgently require that all tourism stakeholders become innovative.

In a Rwandan context, there are success stories that should convince the reader of the possible change at the individual-to-collective level in all economic sectors, as has been

discussed in Section 3.4 of Chapter Three. What is important to clarify is that the adoption of travel, tourism and technology has become a hot debate, and it is reported that technology will serve the needs of travellers, companies and destinations (UNWTO, 2011:10).

The contribution of ICT for Rwandans is no longer a dream but a reality, which is supported by research findings (Castells, 1999; Buhalis & O'Connor, 2005; Buhalis & Sou Hyu Jun, 2012; Murphy *et al.*, 2014; Set, 2014; Tsegay & Maekele, 2016). However, the research revealed that the opportunities offered by technologies had not yet been fully exploited due to the newness of the Rwandan ICT sector. Nevertheless Rwandans, like any other developing nation, should continue to incorporate new technologies into the daily management of tourism businesses and destinations, because these technologies would help to improve the operation of existing facilities (such as hotels, restaurants, bars and museums) and destinations (UNWTO, 2011:10). The research findings clearly indicate that lack of knowledge and skills in ICT is a cause for poor customer service delivery.

The majority of the officials interviewed indicated that at local government level they had a plan to integrate ICT into the tourism sector for better pro-poor benefits, while 40% had no such plan. All of the officials interviewed on the next step of ICT integration into tourism planning agreed that the implementation of ICT could enhance pro-poor benefits in their locality. The researcher believes that Rwandans have benefited from ICT in various economic sectors, including ICT itself, tourism, agriculture, mining and husbandry.

During the interviews with the local government officials it emerged that "current ICT offerings in their local governments included the use of websites, mobile money transferring, Internet, cellular phones and telecentres for public use".

On the aspect of future development, the same officials offered the following information, which is appropriate to this study on Rwanda:

- Improvement of tourism and hospitality services, increase of ICT literacy, training disadvantaged people on use of social media, information knowledge sharing improvement due to ICT integration, information distribution for work, market, skills improvement and knowledge improvement.
- Publicity of the information related to electronic payment, tourist information on improved websites, advertisement-based ICT, increasing digitalisation-based ICT needs to be strategised so as to reach poor people.
- Affordability of the Internet price, strengthening local communities involved in tourism activities such as biodiversity conservation clubs, increase in the number of visitors, job creation opportunity, more communication cost-effectiveness and new ICT

development deployed in the local governments would attract more visitors, and more visitors means more income to diversified beneficiaries, including poor people.

The standpoints of local government officials interviewed on ICT integration by local governments in the tourism sector for pro-poor benefits are summarised in Table 5.17 below.

Table 5.17: Summary of responses on ICT integration by local governments

Do you have any provincial plans to integrate ICT in the tourism sector for better pro-poor benefits?		**Do you think the integration of ICT in tourism plans could enhance pro-poor benefits?**	
	Explanation		**Explanation**
No	Because we don't have it.	Yes	Tourist service and fund support the development of the community in general and it can be enhanced by ICT Integration in the sector. For example, training of pro poor people on use of social media
Yes	Website integration in tourism	Yes	
Yes	District plan the sophisticated cellular phone easy connectable to the Internet, giving loan of phones to local government, increasing skills	Yes	Because when ICT industry is enhanced there is any advanced common sharing of information
Yes	Indirect and direct benefits exist, e.g. in tourism, people will visit and pay money for infrastructures (indirect), Direct, tourists can visit the sector and spread the information and money	Yes	Information distribution for work, market, skills improvement and knowledge improvement
Yes	At District level, we still under preparation from Kamonyi corridor to Nyamagabe	Yes	There exist indirect benefit and direct benefits. Example in tourism, people will visit and pay money for infrastructures(Indirect), Direct, tourists can visit the sector and spread the information and money
No		Yes	Advertisement-based ICT, increasing digitalisation-based ICT needs to be strategised to reach the poor
Yes	Telecentres, mass training, interface to access tourists, poor people to use telecentres(public use)	Yes	Cost-effective and communication cost-effective
No	It is upon decision makers but ICT is not yet integrated, although it is used for marketing purpose and media	Yes	Tourists will increase. The current scenario, 5% of the tourism income is distributed to Community-based tourism organisations (CBTOs) around the parks; this prevents poaching and boosts the community development. What is unknown is whether 5% is sufficient and what about other places other than National parks surroundings! ICT will enhance and boost number of visitors

Yes	We have National one, and we have a district one comprising key development component, although it is not specific with specific reference to ICT per se.	Yes	Our district is a tourist destination and if focused on poor people by using ICT there is a way to create jobs. For example, Kivu Nile belt engaging people to generate income through Kivu Nil belt.
Yes	Don't know	Yes	Yes it could. tourists will gather information they need easily and will communicate easily
	But could be because at the district level, we follow the same system format	Yes	ICT well-structured can attract more visitors and more visitors mean more income to diversified beneficiaries including poor peoples. ICT can also enhance different economic sectors to attract visitors and create more benefits

The research findings point out that the officials' perceptions on making ICT an enabling tool for tourism sector development in local government, was offered in response to the qualitative question: "How can ICT be an enabling tool to the tourism business development?"

5.11 Summary

In this chapter a number of themes in direct relation to the research objectives were addressed and they are summarised as follows:

5.11.1 The contribution of ICT to the economic lives of tourism stakeholders

Almost half of the respondents indicated that the use of ICT in their province had enabled local communities to understand the role of tourism in their area, and half of the participants agreed that the use of ICT in their provinces had contributed to the growth of educated people. Many agreed that the use of ICT in their provinces had contributed to a decrease in waste products in the agriculture sector.

More than half of the participants agreed that the use of ICT in their provinces had caused a decrease in education costs, while more than half of the participants noted that the use of ICT had opened education for all.

A significant number of participants stated that ICT had contributed to useful information and business growth, caused an increase in the number of mobile phone-users, and resulted in easy access to businesses and participants believe that ICT has enabled provinces to position the tourism potential in the country, region and internationally, and had reduced the number of poor people, providing employment opportunities in tourism and hospitality, and increased computer literacy. This had contributed to professionalism in the tourism and hospitality industry, and updated educational policies and training leading to an increase in the infrastructure needed to exceed tourist's expectations, and mobility of businesses. The use of ICT in the provinces has led to high Internet connectivity in tourism businesses, to an

increase in telecentres and youth development centres. ICT usage has led to an increase in the numbers of online visitors, the removal of barriers to communication, and computerised management systems, which enhanced data capture for future use.

On the other hand respondents agreed that the use of the TVC developmental approach would yield benefits for the poor (pro-poor impacts), through integrating local participants' perceptions and technology in the process of planning and developing tourism for pro-poor impacts, and enhance the effectiveness of the TVC. This would require that tourism businesses be contained in a decentralised database, that staff should be trained to use IT in daily transactions by the Local Capacity Builders, and the establishment of tourism information centres in each district to assist in generating accurate tourism receipts.

The creation of tourism and ICT villages could bring about social and/or economic transformation, mindset transformation, high profiles of residents, lifestyle changes, and ensure the forming, coaching and mentoring of tourism co-operatives to enable them to create jobs.

5.11.2 Local communities benefit from TVC implementation

Respondents countrywide, and in the Western and Northern Provinces, agreed that local participant perceptions and the use of technology in the process of planning and developing tourism for pro-poor impacts could enhance the effectiveness of the TVC to benefit the poor. During the study period it was established that most local communities were not benefiting from TVC implementation because they are not regarded as active players in the value chains.

Respondents countrywide, and in the Western and Northern Provinces, accepted that orchestrating any form of psychological development (formal and informal training) for stakeholders involved in local community-based tourism development where TVC had worked for the poor, would speed up changes. In this respect it was found that promoting shared knowledge groups through hotel and tour associations and visits to places of best practice might inspire improvement in tourism firms and community organisations, as suggested during the focus group discussions.

5.11.3 Main obstacles when tourism businesses undertake online ICT purchases

Many respondents find it easy to purchase ICT equipment, devices, connectivity of these devices, devices used for business transactions, and Internet time used on a daily basis.

However, during the interview stages, various obstacles to procurement arose:

- lack of sufficient IT knowledge and infrastructure and the skills to use what is in place
- expensive Internet access

- connectivity issues
- electricity supply problems
- low levels of ICT literacy
- some resistance to change
- tourism itself still under development.

5.11.4 Consumers records-management in TVC linkages

The findings reveal that participants managed their products and services. Considering other particulars, the data revealed that a high number of businesses in Rwanda in general do not have a culture of managing customer records. This must impact on success because of the lack of relevant statistics.

The research supported Niininen *et al.* (n.d.:6) who note that the stability and continuity of a business is in direct relationship with the collection and arrangement of information on individual customers, utilisation of that information to more effectively target those existing customers, and allowing customers to customise and personalise services to match their own needs and preferences.

The data revealed that those businesses that managed customer records were enabled by ICT devices, such as computers, which is the management of the TVC in operation, while businesses that do not capture customer records do not make use of important tools.

From the summary of the qualitative answers to the study pertaining to the meaning of ICT, it can be concluded that ICT is a multidimensional sector as was described in the grounding literature review of this study. Indeed, the information confirms that there is no definitive meaning of ICT; instead, its meaning depends on the industry or activities.

5.11.5 Implications of ICT industry-standards development, legislation, online learning accessibility and usability

The research considered a number of sources, including similar studies and grassroots information in this study:

- The findings show that many of the survey-participants agreed that their transaction costs had decreased due to the use of ICT in different aspects of their economic lives over the past three years.
- A majority agreed that ICT had improved their lifestyle.

The effects of ICT industry-standards development, legislation, online learning accessibility and usability were developed and cross-linked with tourism and hospitality firms in Rwanda. Different economic activities were considered to identify those implications, including

benefiting Internet society services, banking systems, education, telecommunication, money business transactions, transportation and surfing the World Wide Web. The data revealed that online services in tourism, such as online travel agents and feedback sites, and Rwandan accommodation establishments and tour operators, had been slow to integrate into the growing number of services that are being provided in the tourism sector (Foster & Graham, 2014:32).

The survey results suggest that the situation is better for upmarket tourism and hospitality companies due to easier access to funds and ICT infrastructure, than smaller firms.

5.11.6 Accessibility and user-friendly ICT for tourism products/services dissemination

Shanker (2008:51) proposed that ICT and tourism are interdependent sectors. In supporting Shanker's (2008) argument, the research data avers that ICT has become a positive tourism factor at the same level as other attractions at a given destination. This sentiment is supported by data derived from interviews with officials who all maintained that there was a direct link between ICT and tourism. These officials suggested that ICT is less time-consuming and offers ease of access to information for business and tourism, especially access to information by tourists. Where there is an ICT plan there is a common understanding of the tourism industry, and the Internet helps to market products, so the Northern and Western Provinces could create an awareness of existing developments in the ICT sector, such as social media products, including Twitter and Facebook.

Regarding product and service distribution to consumers, Foster and Graham (2014:32) suggest that online visibility and accessibility offers the potential for Rwandan companies to directly reach customers, support references and market their products or services. However, it is important to note that besides connectivity issues, a number of dynamics still limit the ability of firms to reach customers directly, including low capacities around skills to exploit online resources, issues around finance, time management to interact with customers, brand names, logistic quality, and power and networking.

5.11.7 Future of ICT as an enabling tool for tourism sector development in local government

The findings reveal that most of the officials interviewed indicated that at local government level there was a plan to integrate ICT in the tourism sector for improved pro-poor benefits. All of the officials interviewed on the next step of ICT integration into tourism planning agreed that the implementation of ICT could enhance pro-poor benefits in their locality.

This research position is supported by UNWTO (2011:10); Rwandans, like any other sub-Saharan country, should incorporate new technologies into the daily management of tourism

firms and destinations because these technologies could help to improve the operation of emerging and existing facilities, such as hotels, restaurants, bars, museums and attractions.

Cases for ICT contribution need to be revisited to further understand the dynamics of ICT integration into economic sectors like tourism for pro-poor benefits and how this can become more effective in all parts of Rwanda. The researcher learned from this study that there is a need to apply ICT integration in all economic sectors to realise the real effective social and economic transformation of people. It is, however, noted that such integration is not likely to be useful if the focus remains only on the Internet society and neglects other components of ICT, such as infrastructures in multi-sectors that enable, especially, economic progress. For instance, the data suggests that in the finance sector, most of the electronic payments occur in the capital of Kigali.

Based on the research findings the electronic movement should be extended throughout Rwanda and this should become easy when banking systems and energy facilities are fully established. The adoption of new technologies would help strengthen institutions, improve customer service delivery, and resolve issues relating to cost, time management, communication and transportation.

Finally, a particular sector strategy with theoretical underpinning is the structural programmes of the World Bank (2012:3) which show commitment to supporting developing countries in their initiatives for poverty reduction through ICT. In the research findings, it is the current poverty reduction policy structures that could deliver the necessary impacts (Republic of Rwanda, 2013a:21-23). The theoretical arguments for this justification maintain the need for policy implementation, monitoring and evaluation, and in this respect the researcher suggests other interventions for pro-poor benefits.

5.11.8 ICT village to tourism village - Northern and Western Provinces

Respondents' countrywide agreed that the creation of tourism villages and ICT villages could enhance social and economic transformation, such as mindset transformation, high profile of residents and lifestyle changes (Engelen, 2011).

In addition to the survey findings, the qualitative information gathered during focus group discussions revealed that the introduction of ICT for a tourism village would benefit tourism growth in Rwanda in general and particularly in the Western and Northern Provinces. Other industries would not be isolated because of the capitalisation of crosscutting sectors: ICT and tourism. For example, it was reported that ICT would influence local community lives in the provinces in the following ways:

- produce many entrepreneurs
- business creation

- bring reliable infrastructures
- make use of the telecentres
- create jobs to fight poverty
- boost other sectors such as agriculture and telecommunication, and
- improve the banking system through digitalisation so as to resolve the problem of customer care services in the financial institutions, in both central and local government.

In Chapter Six, the model for the contribution of ICT to the TVC for pro-poor benefits is presented and discussed. This model is developed from the data gathered during the surveys, the situation with agricultural value chains and existing value chains from selected international experiences. The actors in the Rwandan tourism industry exist. However, they mostly work in isolation, which emphasises the urgent need for a co-ordinated tourism value chain.

CHAPTER SIX
A MODEL FOR THE CONTRIBUTION OF ICT TO THE TOURISM VALUE CHAIN FOR PRO-POOR BENEFITS IN RWANDA

6.1 Introduction

This chapter focuses on the development of a model for the contribution of ICT to the tourism value chain for pro-poor benefits in Rwanda. The research aim was to develop a model that could contribute to ICT and tourism sector governance, community participation and rural livelihoods. The proposed model is presented in diagrammatic form (Figure 6.2) supported by discussions of the key components of the model, based on the findings and literature which was reviewed appropriate to the functions of stakeholders, participants, communities and government in this model. The most significant findings of this study occurred in themes linked to the study objectives, including:

1. A contribution of ICT to tourism stakeholders in their economic structures, local community benefits from TVC implementation;
2. The main obstacles when tourism businesses undertake online ICT purchases;
3. Consumer-records management in TVC linkages;
4. Legislation, online learning accessibility and usability;
5. Accessibility and user-friendly ICT for tourism products and services; and
6. Future perspectives of ICT as an enabling tool for tourism sector development in local government.

This section depicts five interdependent components of the proposed model that are explained in detail in section 6.2. It is very important to indicate that the model (Figure 6.2) under discussion is a research construct (2016), which is the result of the research findings, combined with other pre-existing models related to the topic.

Although Singh (2012) asserts that the “community of practices” should be improved into reflexive networks, the research data tends to disagree because Singh refers to the real people who subconsciously should be linked to each other without conscious efforts to do so to solve their problems. The strategy to which Singh refers is still in a theoretical framework while the contribution of communities to practices answers the question of how this model solves the real problems of real people, it would contribute to ICT and tourism sector governance, community participation, and rural livelihoods after thorough presentation and discussion of the findings of the study.

The research findings support Goldfarb and Ratner (2008:92) who note that a model means a system of functions and conditions that yield formal results and the model could be either a partial or potential description of the conditions and mechanisms giving rise to X, where X is

"some real-world phenomena." In this study the proposed model is conceptually oriented, since the study itself is an interdisciplinary study, called a two-sector model (Goldfarb & Ratner, 2008:101). A thorough understanding of a model offers the independence to design the proposed model derived from the study findings and depicts also the realities achieved by intellectualising concepts from a given situation, and depicting the relationship between the various concepts.

Figure 6.2 is a simple representation of the key stakeholders who can influence all social and economic transformation through the suggested model.

6.2 Components of the proposed model

Before presenting the proposed model, three relevant examples of models related to the study topic, namely The Yamada Village e-project in Japan, the ICT Village project in Madagascar, and the Model Village: A Concept in India, were examined.

6.2.1 Yamada ICT Village model: e-project in Japan

According to Gooneratne (2002:1-2) the ICT village model in Yamada is an e-project initiated to improve the overall presence of ICT in the community, in households, in schools, for local business operations, and to serve the needs of the rapidly increasing elderly population, which is a key area of concern in Japan. It was anticipated that the outcomes would reach more than 90% of computer-owners and 66% of them were users of computers on a daily basis. This suggested that high levels of ICT literacy resulted from the establishment of the model, which was established for rapid information dissemination in the village, increased awareness of social and/or economic activities, regeneration of local industries and improvements in local administration. The project has been operational for more than a decade and the benefits to the communities are very impressive. It is important to understand that this model was successful because of joint actions of local and central government, where households in respective villages were given opportunities to access computers on a loan basis and villages responded to the call. This meant that villages were components of the model designed for them.

An important observation of the model is that the Yamada Village authorities were empowered, through the public information centre, to effectively plan and develop a network within the village to incorporate IT into the daily lives of villagers. The purpose of establishing the model was to facilitate dissemination of information and increase exchange between outsiders and the village business information such as tourism details, events information and online sale of local products. As a result, villagers developed a database of the village life and industry information and residents were able to transmit personal information such as recreational ideas and share information on the Internet using multimedia equipment at the

information centre. Regarding inclusive education, the village model was set to promote active usage of computers and improve IT skills through training at the information centre, where the centre offered various forms of training using the latest multimedia equipment, provided new ideas for better communication, enabled villagers to improve their web site content and gave villagers a way to promote their businesses (Gooneratne, 2002:2), including the provision of ICT.

According to Gooneratne (2002:2), when considering healthcare promotion, the elderly were not ignored. ICT was made available to the elderly at home with communication facilities and medical hardware, such as blood pressure and heart rate monitors. As a result, the movement of elderly people to the local public hospital for services such as monitoring body temperature and weight was reduced because the ICT facilities allowed instant transmission of information to the local public hospital and close monitoring of health conditions of the elderly from a distant location. Positive impacts from the implementation of the model were reported and the list includes the rising of the Yamada Village to a national level, which in turn promoted tourism and the sale of local products. ICT contributions also led to a decrease in depopulation of outlying villages through its impact on reviving confidence in village potential.

Socially, the morale of people improved and there was nothing that induced them to leave villages for an urban life. Conversely, people returned to the villages in search of potential opportunities, partners and to work from home, and students also showed less interest in leaving their villages. By promoting increased benefits and awareness of the impacts of ICT, the e-village initiative led to other technological developments in Yamada, for example, an ‘e-farm‘ project to boost the local agricultural industry by attracting urban residents to engage in farming, or to come to the village to purchase produce.

6.2.2 ICT village project in Madagascar

UNESCO (1997:1-5) explains that the ICT Village was an approach aimed at creating a model of sustainable development that fought poverty at the community level through the wise use of ICT and other new technologies such as alternative clean energy, safe water and community renewal. The implementation of the model at Sambaina village in Madagascar sought to use ICT as an instrument to fight poverty and promote development through the deployment of services such as e-learning, telemedicine, and e-governance. The model was positively received by the local population and the government immediately intervened to create a digital classroom that served more than 600 students of the community.

According to UNESCO (1997:2):

> All the buildings where the project is going to be implemented (elementary school, health presidium, community access centre) have been refurbished. Computers have been provided to the community and basic digital alphabetisation activities have started.

Unlike the Yamada Village project in Japan, the ICT village in Sambaina was a joint effort between the government of Madagascar and a multi-dimensional intervention, including representatives from other stakeholders: universities (University of Oklahoma, Politecnico di Milano, Università Cattolica del Sacro Cuore), companies (Microsoft, Siemens, Telespazio, Pianeta, Water B2B), and the civil society of the community of Sambaina, which had been fully involved in the whole process (UNESCO, 1997:2). It is very important to clarify that without establishing a business incubation centre, the project under discussion would have remained a dream. Although it was reported that the ICT village in Sambaina experienced no major obstacles during the project implementation, the researcher found it difficult to recommend the project because all stakeholders pursued their own stake in the project; also, it was not defined how the socioeconomic and psychological freedom (UNESCO, 1997:2-3) of grassroots residents had improved.

UNESCO (1997) reports that positive outcomes would be experienced if the project was made available to communities. Success could be recorded once the model, and approval to progressively place specific competencies online in the different sectors (telemedicine, e-learning, e-work, ecommerce, e-government), permitted communities to experience concrete opportunities for development. Once the project was fully implemented, it is projected that the village would provide new experiences, enrich knowledge, increase awareness of cultural and social identity, and give real value to agricultural and craft products. It is hoped that the community would develop new techniques of trade and become structured in administrative devices, as applications of e-government. As a result, business opportunities could be offered to local communities with initiatives such as ICT appliance maintenance, cyber cafes and data elaboration (UNESCO, 1997:5).

6.2.3 Adarsh Gram (model village): a concept in India

Another reference model is found in India where the rural and urban divide is very apparent. According to Swaniti Initiative (n.d.:2), the Adarsh Gram model of an ICT village was adopted to meet the following objectives:

- Firstly, putting an ICT village in place would prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages, due to the lack of opportunities and facilities in rural villages that guarantees a decent standard of living.
- Secondly, an ICT village is regarded as a 'hub' that could attract resources for the development of other villages in its vicinity.
- Thirdly, it could provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

- Fourthly, it is conceived to contribute towards social empowerment by engaging all sections of the community in the task of village development, and
- Lastly, it could create and sustain a culture of co-operative living for inclusive and rapid development.

Figure 6.1 below illustrates the four broad focus areas of the Adarsh Gram model and the important elements within each area. These four themes explain the workings of the model in real life in India: sustainability, technology, community involvement and connectivity.

These four focus areas are linked. For example, improved technology would ensure the quality and delivery of other services such as health and education, which in turn would contribute to sustainable development; renewable energy, apart from meeting energy needs, could contribute towards environmental sustainability; environmental sustainability would be improved with communities being encouraged to plant trees - this would prevent soil erosion, promote agriculture, conserve water and contribute to the aesthetics of the village.

According to Swaniti Initiative (n.d.:2):

> The urgent need is to bring about a convergence of all such initiatives, for which two things would be essential – a) grassroots level planning; and b) mobilisation of resources.

Sustainability: the model village best practices include the provision of better healthcare with special focus on maternal and child health; practical and smart education; housing and livelihood; capacity-building of all stakeholders; clean drinking water; sanitation and environmental sustainability.

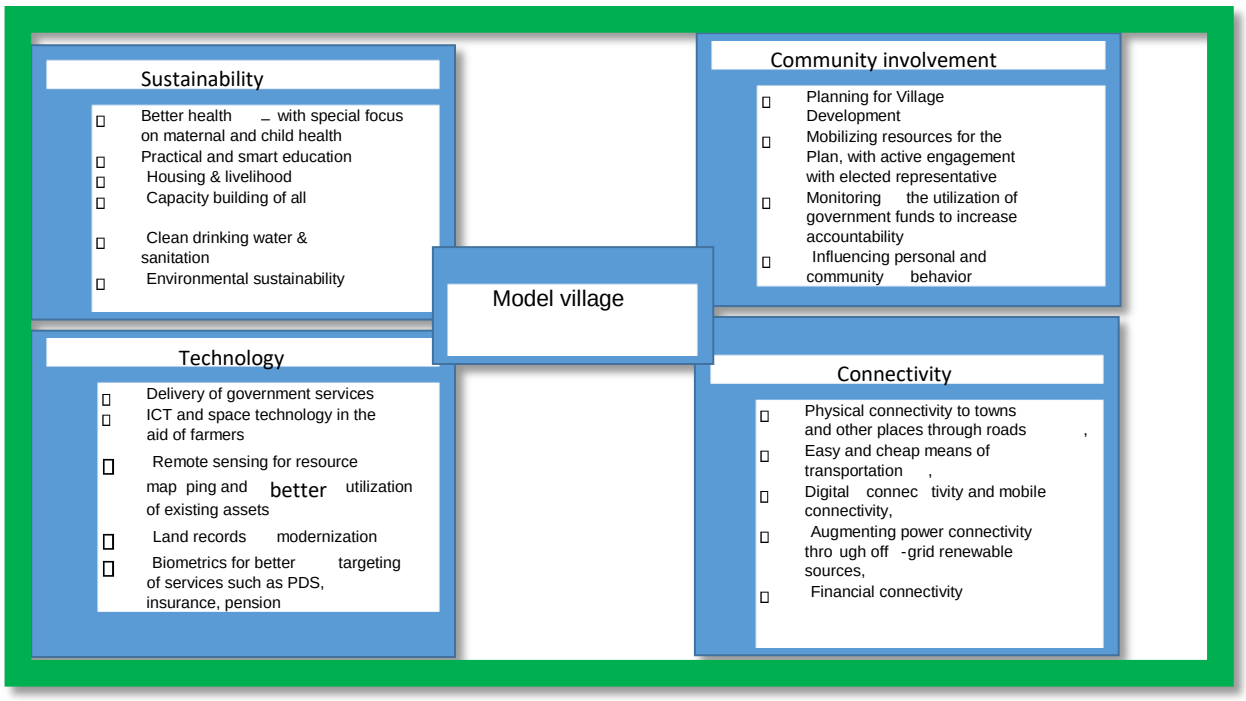

Figure 6.1: Adarsh Gram model village (Swaniti Initiative, n.d.:2)

Technology: there is a high expectation of quality government service delivery, and deployment of ICT and space technology at farm sites that would increase their productivity. Similarly, launching remote sensing for resource mapping and better utilisation of existing assets would contribute to land records modernisation. Application of biometrics could better harness services, such as Property Distribution System (PDS), insurance and pensions.

Community involvement: the community is the key stakeholder in better planning for village development, mobilising resources for better planning, with active engagement in elected steering committees to represent their fellow-community members. Involving local communities in the concept contributes also to monitoring the utilisation of government funds and increases accountability between public servants and communities, and the action would help nurture personal and community behaviour.

Connectivity: the village model would help physical connectivity to towns and other rural parts of the country. The preference for green and clean energy would improve the quality of connectivity in general but particularly in transportation, telecommunication and the banking sector. The price of transport would decrease due to differentiation of the means of transport and thus would become affordable. Quality connectivity would also add value to becoming more digitalised in telecommunication and creating easy access to financial services.

According to Swaniti Initiative (n.d.:3), the model village is a very important approach to monitor and evaluate the real function of every ministry and it is emphasised that the village is considered as a model for community-led, multi-sectoral growth in rural parts of India. In other words, the country's plans are the synthesis of extended plans from different villages in which communities have been mobilised to share their opinions in favour of a particular initiative, and implementing the initiative in a transparent and timeous manner. The model village adoption has to answer the question of village boundaries where, according to Swaniti Initiative (n.d.:3), choosing a village close to an urban centre might facilitate access to physical and financial resources and also help to establish improved connectivity between the village and the urban town.

A model village could become an extension of the urban centre and have facilities that could virtually be in partnership with the urban centre. It is also believed in India that the village concept would be the best sphere of innovation and for local residents to pilot new technology. These technologies may include the use of solar power for irrigation, bio-gas for domestic lighting/heating and agricultural innovations based on soil suitability and climate. Ultimately, the adoption of a village model offers an easy demonstration of a real success of any initiative implemented for the real people, by people, and through people with diverse demographics living together to achieve a common goal (Swaniti Initiative, n.d.:6).

6.2.4 ICT adoption for rural tourism for Rwanda

In his thesis, Pulengtsephe (2013:70) proposes support for ICT for tourism villages in developing countries like Rwanda, as a holistic view reported by community-based organisations (CBOs) and tourism stakeholders countrywide and in particular in the Western and Northern Provinces of Rwanda. The ICT model adoption items include the use of video cameras, laptops, radios, cell phones, iPads, the Internet, and television for promoting local produce and rural tourism experiences.

6.3 Proposed model for ICT implementation of tourism village approach to pro-poor benefits

The need for a model to address pro-poor benefits is based largely on the writings of Ashley *et al.* (2000), Hameed (2007), Chen and Ravallion (2008), Wroughton (2008), Spenceley and Meyer (2012) and Uwamariya *et al.* (2015) who proposed economic development and poverty alleviation through tourism development. Figure 6.2 below depicts the five components of the proposed model developed from this study, namely local communities, the public sector (government), the private sector, the ICT society and civil society. All these components are presumed to be community development-orientated, pending what is happening in reality. In the figure the components are referred to as stakeholders in the proposed model.

Stakeholders in the proposed model are role-players in poverty eradication and are a person, a group, or an institution that performs a certain task. In this proposed model a stakeholder could be a business incubation centre established in a village with a function to co-ordinate all initiatives and innovations based on ICT, a utility supplier of a green energy, a tour guide company or a youth development centre (Swanepoel & de Beer, 2012:21).

The research data analysed in Chapter Five proposes that contributions of ICT to tourism value chains for pro-poor benefits in Rwanda are possible, despite persistent inequalities between rich and poor value chain actors. As noted in Chapter Five, the use of ICT in general had reduced the number of poor people and the role of education is crucial. Consequently, the researcher argues that technical knowledge and understanding of the role of ICT in the tourism sector to promote the social or economic transformation of Rwandan citizens, has to be addressed by institutions of higher education in terms of:

- Update ICT training programmes to equip learners to be competitive in the market place or implement ICT entrepreneurship skills (Becton & Graetz, 2001; Bhasin, 2012).
- The Ministry of Education must use an integrative approach, but also ICT should be a mandatory subject in all fields of study. ICT literacy should be a requirement to approve

any civil organisation whose aim is community development in the rural areas Peters *et al.*, 2009).

- ICT and development in all economic sectors, such as tourism, agriculture, entertainment, communications and the media, business, handcrafts, mining and engineering are interdependent and a crosscutting mobilisation driven by the Ministry of Education, in partnership with leaders of the different sectors (Sen, 1999; Okpaku, 2006; Musahara *et al.*, 2014).
- ICT awareness and literacy campaigns are needed to increase ICT penetration at all levels and priority should be given to youth, illiterate adults and vulnerable peoples who are already in the marketplace (Peters *et al.*, 2009).
- Regular assessment of programmes deployed for youth development, such as public laboratories, telecentres or youth development centres, where skills and talents may be explored through re-engineering and re-adaptation of the ICT tools (Masele, 2015).

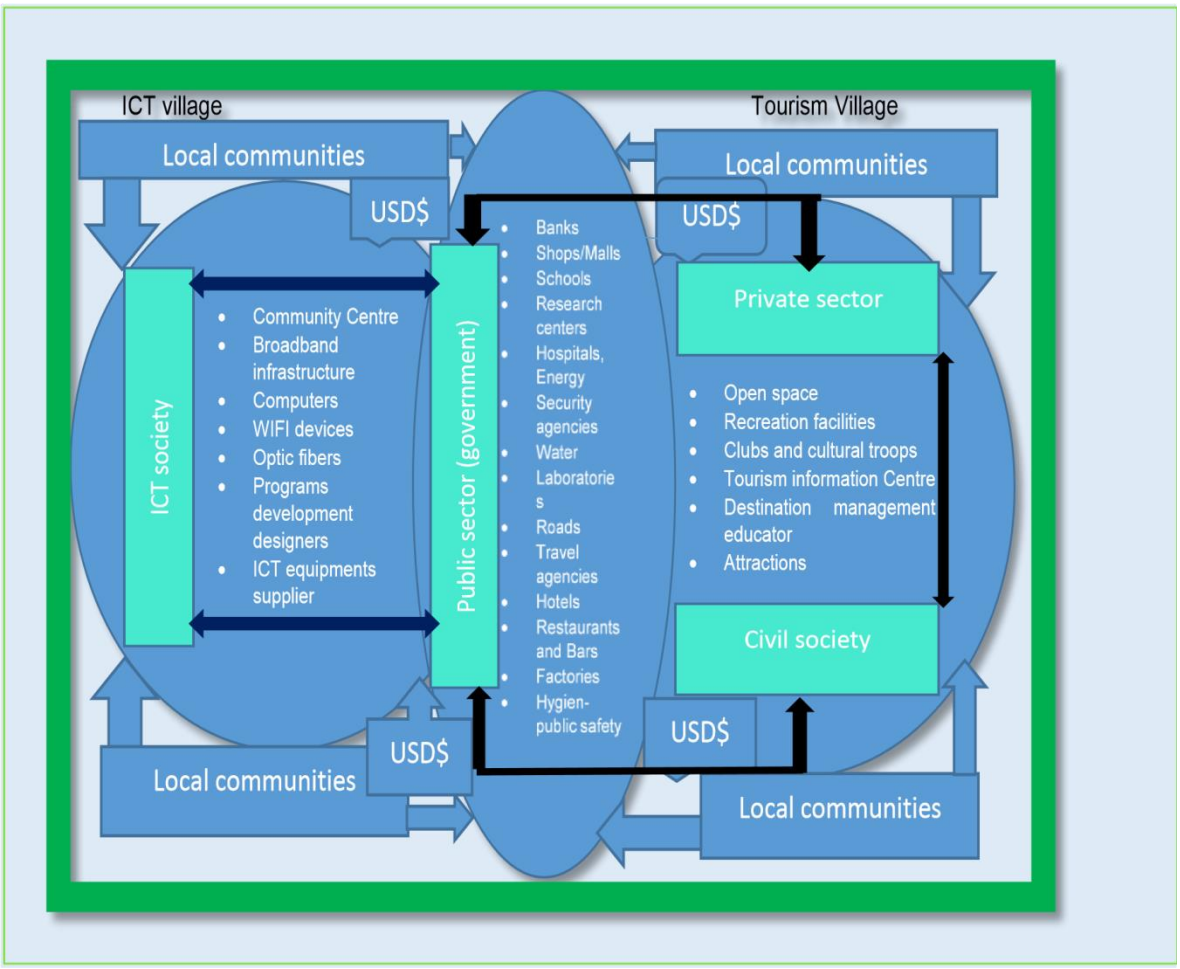

Figure 6.2: Proposed ICT model for tourism village approach to pro-poor benefits (Researcher construct)

The researcher deemed the US Dollar the most suitable currency to explain this model as it is widely used internationally for monetary transactions.

6.3.1 The public sector (government)

It is very important to understand that the public sector consists of national, provincial, and local government organised according to functional areas with ministries and departments dealing with issues such as good governance, justice, social development, land affairs management, environment affairs, water and energy, forestry, agriculture, commerce, industries, arts, co-operatives and tourism (Swanepoel & de Beer, 2012:21). The empirical survey findings revealed that 21.2% of participants represent the public sector. The combination of findings has several implications for policies related to the integration of ICT in all economic sectors of Rwandan society. Local authorities are required to work with an innovative and inclusive spirit to identify a win-win position between ICT suppliers and end-users, bearing in mind the affordability of smart device mobiles that should be managed in partnership with the private sector and ICT suppliers.

Effort is required to produce professionals and innovators in both the ICT and the tourism sectors, through technical vocational education, training schools and incubation centres, to strengthen and sensitise those with intellectual properties about their rights to protection while merchandising products. Thus in the current situation it is necessary that the relevant authorities, in partnership with private and civil society in Rwanda, must make a paradigm shift towards encouraging local skills and innovation to make efforts to re-engineer imported equipment either before or after the expiry period. Public institutions, with relevant government agencies that are in charge of ICT procurement, should focus on quality rather than price.

6.3.2 Civil society (non-governmental organisations)

Civil society includes community-based organisations, village associations, environmental groups, women's rights groups, farmers' associations, faith-based organisations, labour unions, co-operatives, professional associations, chambers of commerce, independent research institutes and not-for-profit media. The data revealed that civil societies comprise 7% of participants in the study. The research supports the OECD (2012:7) which defines civil society as groups outside of a family who organise themselves to pursue shared interests in the public domain, including tourism stakeholders who are Internet users in their daily activities.

As influencers in different domains, civil society needs quality ICT equipment to be available and accessible, particularly from the developed world, to share updated ICT information and equipment with all stakeholders.

Partnerships with public and private institutions could contribute to shaping practical policy and harnessing the neglected actors in both the ICT and tourism sectors. For example, sharing support of different ICT infrastructures and devices could encourage local ICT users and aspirant users to develop a clear understanding of the power of ICT in social and/or economic transformation of citizens and ICT equipment in daily life.

6.3.3 The private sector

The private sector in the proposed model is an important stakeholder. It comprises groups active in commerce, industry and mining. Swanepoel and de Beer (2012:22) envisage factories manufacturing consumer goods, commerce consisting of shops, banks and services like accommodation, and small, medium and multinational enterprises functioning to fight poverty at the destination

In the empirical survey of this study, Table 5.5 reveals that 69.1% of participants represented private sector interests, and the role of the private sector in the deployment of ICT equipment and devices was critically noted. The findings showed that the majority of businesses and self-employed people in ICT are concentrated in Kigali, including retailers representing international wholesalers who own the mother company.

Kramer *et al.* (2007:4) emphasise that the government has a responsibility to create and expand the existing economic opportunities for citizens. However, the researcher refutes the absolute belief that government should carry the burden of uplifting even those who themselves have the capacity to improve the wellbeing of citizens. The impact of the government driving business will not affect people who would rather be self-employed business owners and investors.

The majority of private sector participants appear committed to financing big ICT projects, human capacity development, development of regulations, content development, consumer protection and cyber security. This justifies the role of the private sector with regards to specific issues such as interconnectivity, standards, and pricing. In addition, there is a need to increase the awareness of potential customers of the benefits offered by broadband technologies, affordable connectivity, and devices and quality of broadband services. By improving ICT accessibility, the problem of networking would be solved by businesses in the telecommunications industry but cheap ICT equipment should not be purchased.

6.3.4 Local communities

Edwards and Jones (cited by Swanepoel & de Beer, 2012:61), define a community as:

> …a grouping of people who reside in a specific locality and who exercise some degree of local autonomy in organising their social life in such a way that they can, from that locality base, satisfy the full range of their daily needs.

In Figure 6.2 these local communities are essential stakeholders to advance the proposed model and without them the model is not inclusive. The local communities here include organisations founded and run by individuals or groups within the communities. Examples of CBOs are fishing, farming and handcraft co-operatives, and cultural groups, which have the potential to attract tourists.

The Japanese Yamada ICT village model was successful because local people at a village level were engaged in the project and a partnership was entered into with the government. Although the context factor plays a key role, the principle remains the same in any community development programme.

Figure 6.2 indicates the required synergy between stakeholders of both ICT and tourism villages. This synergistic interaction will benefit all within the destination and improve lifestyle to a developed urban position.

Swanepoel and de Beer (2012:61) assert that this transformative approach makes the following groupings of people significant and effective key actors in poverty reduction:

- rural village or urban informal settlement;
- usually seen as poor, deprived or disadvantaged, described as receivers or non-receivers of services; and,
- targets for development and as beneficiaries.

It is important to note the Rwandan phenomenon of the social enterprise sector, an underdeveloped process to unify business principles with social ventures for the development of society at large (Swanepoel & de Beer, 2012:22).

6.3.5 The ICT society

The research used the quantitative and qualitative data to recommend that the ICT society, regardless of geographic context, include sophisticated technology, infrastructure, equipment, devices and programmes that will contribute to the upliftment of individuals and improve socioeconomic livelihoods in Rwanda.

In this context, the ICT society stakeholders comprise the suppliers and the consumers who far outnumber the suppliers. They will either consume even what they do not understand, or refuse completely to consume, to their detriment.

The proposed model is based on a combination of other models discussed, some initiated but not yet implemented, others initiated and implemented but not in an integrative manner, as in the research's proposed model. The proposed model outlines a process of community involvement and participation to improve the livelihoods of villagers within the community.

Secondly, the proposed model encourages knowledge-creation leading to an innovative attitude, thereby enhancing decision making towards personal development in a vision to attract and retain visitors. The model is an open, dynamic model that will constantly develop. Rwandan institutions vary in size and category and communities are complex. The researcher acknowledges that the integration of every variable in the design will not always be possible.

6.4 Summary

The themes addressed in this chapter have implications for future research, as well as for policy planning for community development. While the themes emerged from the empirical data in this study, the discussions considered a broader range of issues than just the research area under study or the specific questions posed in this chapter.

Firstly, why and how should ICT and tourism innovation be studied? ICT and tourism innovation should be conceptualised within sustainable development studies of ICT. A tourism village that contributes to a country's development requires greater attention. If ICT for a tourism village is to contribute to community development, the localised ICT innovation to create tourism attractions for massive job creation must be further researched.

This chapter argued that the contribution of ICT to the tourism value chain for pro-poor benefits remains underdeveloped and that further studies on the relationship between ICT innovator-users and tourism stakeholders in destination management, will be beneficial, particularly if the focus is on the interdependent relationship, which allows them to fulfil their individual core goals in harmony. Further investigations into the relationship between innovation in ICT firms and/or public institutions and tourism firms' innovation, including culture heritage and destination management offerings, would help to extend the understanding of interdependence between both tourism and ICT sectors beyond their role in the country's economy, particularly in remote areas which are dependent on agrarian resources.

Secondly, research on mentoring and coaching programmes for existing and future small firms and community-based organisations would provide new insight into knowledge-transfer in off-farm economic sectors, like tourism, hospitality and ICT. The income-generating activities within such programmes, and the local capacity builders which run them, could be a role model for local innovation in action. Most significantly, there may be unexploited potential among local persons with some experience related to tourism or ICT innovation but it remains under-capitalised.

Thirdly, the agri-tourism sector is a new research niche but a burning issue is defining who local stakeholders are and how seriously they take the maximisation of benefits. The

question for policy makers in agri-business expansion is how they deal with outsider groups who need, for example, the produced commodity from the initial raw materials, and what is the plan to resolve the ICT infrastructure for food production needs. This could be addressed both in terms of local and non-local tourism stakeholders, and also between food production standard agencies and the food input suppliers as players in food and beverage value chains who support the accommodation and restaurant industry.

Fourthly, independent or funded assessment on social or economic inequality of poverty issues opens the research agenda to local government development planning. It also allows a central government evaluation of the potential to uplift Rwandan living standards in the region. The IMF (2013:11) notes that poverty alleviation struggles continue to be addressed, and the Rwandan government is poised to assist its citizens through a poverty alleviation strategy. However, it is not known how the theoretical strategy matches with real implementation, so the downside would reveal the truth for real, ongoing social or economic transformation.

Lastly, and in consideration of the proposed model, there exists an opportunity for research to be involved in scholarly work to understand the intricacies of ICT contribution to economic sectors for poverty alleviation. Harmonisation of residents, especially the young generation across the country, understanding of the integration of ICT in their economic lives, from theory to practice, is one of the critical issues that needs attention in Rwanda.

The chapter explained in brief the theory of the model as a concept and offered examples of existing models within the scope of ICT and tourism. The proposed model (Figure 6.2) is based on the Indian model that achieves planned change within a village as a territory setting. The change recorded is a result of an implemented model within a village led by innovative local officials who capitalise on the local community benefits from the establishment of the ICT village for the tourism village.

In the final chapter of this study recommendations are made for fundamental ICT integration into tourism policy processes and inclusive decision making processes for poverty reduction.

CHAPTER SEVEN
CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter discusses recommendations on the main themes in the research findings. The recommendations are followed by an overview of the thesis and are organised into five components of the proposed model:

1. Public sector/government
2. Private sector
3. Local communities
4. Civil society/NGOs
5. ICT societies

This chapter presents a summary of the components of the proposed model that was developed by the researcher. It is important to highlight that this chapter also includes conclusive links to the objectives and research problem, a synthesis of the recommendations directed to different stakeholders of the proposed model, and concluding remarks:

7.1.1 Public sector/government

According to Swanepoel and de Beer (2012:22), the public sector consists of national, provincial and local governments organised in a ministerial and departmental manner to deal with issues such as economic and social development, land affairs, environmental affairs, water affairs, energy, forestry and agriculture, and information distribution for the country's growth.

7.1.2 Private sector

Swanepoel and de Beer (2012:22) advance that the private sector consists of groups active in commerce, industry and mining. The researcher visualises factories, manufacture of consumer goods, commerce consisting of shops, banks and services like accommodation, and small, medium and multinational enterprises functioning to fight poverty at the destination. The private sector is a very important stakeholder to promote the proposed model.

7.1.3 Civil society

According to Swanepoel and de Beer (2012:22), civil society is a sector that comprises organisations that are not in any way dependent on or responsible to the public or private sectors. Their contribution is to address specific problems, for example health, education or housing.

7.1.4 Local communities

These are the residents who do not need spoon-feeding to organise their daily routine but need rather a planning-partnership approach to ensure positive change. In Figure 6.2 these local communities are essential stakeholders to advance the proposed model and without them the model would be static with exclusive beneficiaries.

7.1.5 ICT society

In this context ICT society stakeholders comprise supplier and consumer societies. The results confirmed that ICT contribution to tourism value chains for pro-poor benefits in Rwanda is possible despite the persistent inequalities between rich and poor value chains actors.

7.2 Recommendations for institutions of higher learning

Based on the findings presented in Chapter Five, issues of technical knowledge and understanding the role of both ICT and the tourism sector in the social transformation of the Rwandan citizens must be addressed by institutions of higher learning to ensure that school-leavers have the necessary skills to meet the needs of the marketplace (Cruz & Giles, 2000; Peters *et al.*, 2009; Buhalis & Licata, n.d.).

The following should therefore be taken into consideration:

i) The higher learning institutions, in partnership with the Rwanda Education Board Technical Departments and Work Development Agency, should update the ICT training programmes to equip learners with skills to compete in the job marketplace or implement ICT entrepreneurship ventures.

ii) In the process of harmonising the Rwandan education system, the researcher considered the grassroots information discussed in this study. Therefore, it is recommended that the Ministry of Education use an integrative approach to successful systems elsewhere on the continent or internationally in order to improve the Rwandan education system and give it a competitive edge in the region and in the continent. ICT should be a mandatory subject in all fields of study and ICT literacy should be a criterion to approve any civil organisation whose aim is community development in rural areas.

iii) ICT and economic sectors, such as tourism, agriculture, entertainment, communication and media, business, handcrafts, mining, and engineering, are interdependent, thus it should be a crosscutting mobilisation championed by the Ministry of Education in partnership with the leaders of different economic sectors. The fear of knowledge sharing of ICT would be dispelled if integrative approaches were sensitised at all levels of the country's management and at all levels of training.

iv) ICT awareness and literacy campaigns are needed and priority should be given to the youth and vulnerable people who are already in the marketplace in Rwanda's territories. Steering committees should be set up to monitor the progress of these campaigns. Collaboration is required by the Ministry of Education, Ministry of Youth and ICT (MyICT) and local government to champion the campaigns in partnership with districts to secure budgets for ICT awareness, literacy campaigns and ICT equipment.

v) Mentorship programmes and coaching should be facilitated to serve the community and to contribute to mindset changes through the multidimensional use of ICT in Rwanda. This initiative should be tailored by the Ministry of Education in partnership with the MyICT, Ministry of Infrastructure and local government because they are the ministries that are in a position to explain the real situation in people's lives. They could explain the reason for the inequality of people who speak the same language, have the same culture and share the same background.

vi) Regular assessment of the programmes deployed for youth development, such as public laboratories, telecentres or youth development centres, where their skills and talents may be explored through re-engineering and re-adaptation of ICT tools should be motivated.

vii) Curricula should include ICT in the accommodation and tourism sector and be taught at all levels so that learners understand the interdependence of these two sectors.

viii) To teach communities how ICT could contribute to their social and economic lives, it is recommended that Rwandan educational material is developed to include ICT for tourism and value chain approaches, to improve cross-sector impacts. This should be done in partnership with knowledgeable and skilled people in private and civil society institutions.

ix) Joint actions are required to deploy OLPC in all primary schools countrywide so that all children can gain ICT understanding and knowledge.

x) The study data revealed that the current young generation is eager to gain new knowledge and skills, especially in ICT and other economic sectors such as tourism, where there is still a need to eliminate the old system of learning and apprenticeship. It is therefore strongly recommended that the Ministry of Education should assess the progress of the modern method of learning (known as participative learning) since this allows learners at all levels to become responsible for their personal knowledge and skills.

7.3 Recommendations for policy makers

The combinations of findings in this study have a number of implications for policies related to integration of ICT in the economic sectors and social lives of Rwandan citizens.

xi) Firstly, local authorities should be innovative and identify a win-win position for ICT suppliers and end-users. There should be a concern about community members merely having a phone to make calls and unable to benefit from the Internet. However, the affordability of mobile phones with smart devices should be evaluated in partnership with the private sector and ICT suppliers.

xii) Secondly, a more concerted effort is needed from the government to produce professionals and innovators in both the ICT and tourism sectors through technical vocational education, training schools and incubation centres. People with intellectual property need to be informed of their rights to protection while merchandising products.

xiii) Thirdly, as far as accessibility and usability is concerned, relevant government institutions should work with reliable ICT specialists to outsource modernised ICT facilities (from ICT infrastructure to smart devices) since the study findings suggest that there are issues of piracy and obsolete equipment, thus expected end results become questionable because of wrong products. In the research findings the issue of high taxes on ICT equipment in general was a concern. It is therefore recommended that policy makers and stakeholders must urgently consider the reduction of taxes since Rwanda does not yet produce ICT equipment. A reason for this recommendation is to attract business people in the ICT sector to contribute to the gross domestic product.

xiv) Fourthly, the findings and grounding theories on ICT availability in Rwanda show that developing countries follow the consumerism theory and Rwanda should be no exception on that point. Thus, the researcher recommends that relevant authorities form partnerships with private and civil society to promote a paradigm shift towards encouraging local skills and innovations to re-engineer imported equipment after its expiration. Rwandan skilled and knowledgeable youth entrepreneurs could enter this sphere of new business to assist in socioeconomic transformation.

xv) For example, national initiatives should be mentored and coached to be more productive and have a competitive edge over eastern African countries. One such initiative is the Klab Club where graduates are innovative and put into practice their knowledge to meet some of Rwanda's needs, including assembling the imported parts of drones to promote flying drones in Rwandan space to facilitate awareness on the ground, software development, and website design and development. These initiatives are constructive and entrepreneurs should be guided towards other cost saving programmes, such as the local assembly of vehicles, motorbikes and bicycles. The research suggests that the parts-assembling processes done in Rwanda will showcase available local knowledge and skills.

xvi) Finally, public institutions in partnership with relevant government agencies in charge of ICT procurement should be driven by quality rather than price.

7.4 Recommendations for civil society

As influencers in different domains, civil society's role in doing the right thing in the right way for the right people in need is justified. In view of ICT equipment quality and accessibility, it is recommended that civil society, particularly entities from the developed world that are active in Rwanda, share updated ICT information and equipment with all stakeholders. Their partnerships with public and private institutions could contribute to shaping practical policy incorporating all stakeholders in both the ICT and tourism sectors. For example, sharing successes with the support of different ICT infrastructure and devices could inspire local ICT users and aspirant users to plan for the future. The role of civil society could be seen as knowledge-transfer through mentoring and coaching programmes in partnership with the Ministry of Education and community stakeholders towards building strong institutions for long-term development.

7.5 Recommendations for the private sector

Demographically, the private sector was represented by 69.1% of participants in the study and this allowed the researcher to consider their views on issues of accessibility and usability of ICT.

The study findings revealed that the majority of business and self-employed people in the ICT sector were concentrated in Kigali. Accordingly, it is very important to stress that those suppliers based in Kigali are the retailers of overseas wholesalers. The researcher agrees with Kramer *et al.* (2007:4) that the action of creation or expansion of economic opportunities could rightly be considered as a responsibility of a government towards the citizens, but the researcher does not agree that the impacts of the state, who are driving the business, will not trickle down to local communities since there are many people who would rather be self-employed, business owners or investors. For instance, in the tourism and hospitality industry there are undeveloped niche areas where the private sector, in partnership with government, the ICT society and civil society, could intervene in investing in e-tourism, e-hospitality, e-tour operations and e-travel agencies. These are entrepreneurs who will pay taxes, perhaps develop new technologies and invest in significant ICT infrastructure for social and economic transformation.

Some of the respondents in this study suggested areas in which the private sector could intervene, including Internet penetration in key provinces and districts for tourism-activity purposes. This venture could expand broadband services and reach out to the majority of citizens. Major priorities focus on financing big ICT projects, human capacity development, regulations, content development, consumer protection and cyber security. This argument justifies the recommendation for the private sector to be included in specific issues such as

interconnectivity, standards and ICT pricing. There is also a need to raise awareness of potential customers who are still not informed of the benefits offered by broadband technologies. Affordable connectivity and devices and quality of broadband services are under further consideration. In addition, increasing technical knowledge of managing broadband technologies requires telecom operators to work closely with training providers to develop hands-on technical training programmes.

For improving ICT accessibility the problem of networking should be solved by business dealers in the telecommunication industry, but also ICT equipment should be purchased at the most affordable price. Finally, people should be educated in utilising ICT equipment, including those already in business who need training in business communications to enable them to solve issues of customer service delivery using ICT.

The private sector should always be up to date with new information. They should participate in making Internet accessible to communities, expanding connectivity to remote areas and establishing training centres for locals in the territories (provinces, districts, sectors, cells and villages) where the government has not yet responded. The private sector, in partnership with government, should work to establish an industry to produce ICT tools locally and this would reduce ICT prices.

These recommendations are relevant to people already in the business and to young graduates whose ambition is to influence the local communities in which they live.

7.6 Recommendations for the ICT industry

Many writers have expressed the necessity of a vibrant ICT industry in any economy (Castells, 1999; Buhalis & O'Connor, 2005; Carmody, 2012; Murphy *et al.*, 2014).The research understanding of the ICT society, regardless of the geographic context, is that it is a sophisticated technology, infrastructure, equipment, items, devices and programmes that contribute to do things in a better way to improve the social and/or economic lives of the citizens of Rwanda. In this context, the ICT society stakeholders comprise the supply-demand elements and the society of consumers which is far bigger than the suppliers' element. This implies that consumers will consume even what they do not understand, or refuse completely to consume, if it benefits them.

The study findings highlighted a complex problem – the use of any technology or ICT equipment requires energy and water but in Rwanda these crucial basics are not always available. In addition, the usability of that technology or equipment needs skilled and knowledgeable people.

Therefore, the researcher recommends that ICT suppliers must promote knowledge-transfer in disadvantaged societies before deployment of ICT material, a process that should start

with identifying opportunities to inform investors about the society's larger needs and wants in the long term. For instance, in the Western and Northern Provinces opportunities exist for deploying both digital systems and equipment in agri-tourism businesses. Another recommendation is to promote a win-win situation between suppliers and consumers, for example, addressing the lack of quality of ICT equipment and devices that advantages the supplier and demotivates users.

It is recommended that the ICT society, in partnership with public, private and civil society organisations, should evaluate and monitor to what extent their innovations and technologies have really reached the lower strata of citizens in a holistic view, not just through telecommunications, Internet accessibility and usability only in major cities. Based on grassroots data information, innovative approaches such as linkages between the ICT society and local communities could have a major positive impact on the poor.

7.7 Conclusive links to the research problem and study objectives

The study set out to explore the contribution of information communication technologies to the economic lives of tourism stakeholders in Rwanda. Different forms and uses of ICT contribution in Rwanda were identified and the impacts of TVC for pro-poor benefits. The study also sought to determine whether ICT integration could promote social and economic transformation, particularly for tourism stakeholders and community-based organisations.

The general theoretical literature on the subjects, and specifically in the context of Rwanda, is inconclusive on several pertinent questions within the ICT contribution discourse, where the study sought to answer the objectives and questions.

7.7.1 The contribution of ICT to tourism stakeholders in their economic lives

Almost half of the respondents agreed that the use of ICT in their province had enabled local communities to understand the role of tourism in their area, while a little more than half agreed that the use of ICT in their province had contributed to the growth of educated people, allowing for the use of ICT in tourism activities to promote the tourism value chain or to address pro-poor impacts (Masele, 2015; Nadkarni, n.d.).

Many participants agreed that the use of ICT in their province had contributed to a decrease in waste products in the agriculture sector, that the use of ICT in their province had led to a decrease in educational costs, and that the use of ICT had resulted in education for all in their province.

- Also, the majority of respondents agreed that the use of the Tourism Value Chain development approach could yield more benefits to the poor (pro-poor impacts) and that the integration of local participant perceptions and technology in the process of

planning and developing tourism for pro-poor impacts could enhance the effectiveness of the TVC (Ashley *et al.*, 2000; Ashley & Mitchell, 2008; Engelen, 2011; Pastakia & Oza, n.d.). These respondents agreed that:

- all tourism businesses should be in a decentralised database;
- informal tourism businesses should receive skills training to use IT in the daily transactions by LCB;
- the establishment of tourism information centres in each district could assist to disseminate accurate tourism receipts to relevant higher authorities for developing national tourism;
- computerised records of all informal and formal tourism businesses could help to overcome inaccurate data record-keeping;
- the creation of tourism and ICT villages could enhance social and economic
- transformation, such as mindset transformation and lifestyle improvements;
- ICT could promote agri-tourism and tourism in the province;
- promoting a culture of a quality customer care service industry at provincial level is one way to up-sell the country from internal to international; and
- forming, coaching and mentoring tourism co-operative communities.

7.7.2 Local community benefits from TVC implementation

The research data reveals that respondents' countrywide agreed that consideration of local participant perceptions and technology in the process of planning and developing tourism for pro-poor impacts could enhance the effectiveness of the TVC to benefit the poor. It is noted that local communities are still not benefiting from any TVC implementation because they are not regarded as active players in the value chains (Ndivo & Cantoni, 2015).

Secondly, respondents countrywide accepted that any form of psychological development (formal or informal training) for stakeholders involved in local community-based tourism development had worked for the poor to accelerate changes. It was established that promotion of shared-knowledge groups, for example through hotel and tour associations, and visits to places of ICT best practice might inspire improvements for tourism firms and community organisations, as indicated during most focus group discussions in all five areas of Rwanda. Therefore, it is emphasised that promotion of tourism studies could catalyse innovation and human capital for real local changes.

7.7.3 Main obstacles to tourism businesses in online procurement

Respondents countrywide generally found it easy to purchase ICT equipment. From this data it was concluded that procurement areas, availability of ICT devices and connectivity of those devices, devices used for business transactions, and Internet time spent on a daily basis, are

all obstacles for users but opportunities for suppliers of ICT equipment in tourism businesses (Vallabh, 2012; Buhalis & Sou Hyu Jun, 2012; Lyons *et al.*, 2015; Stanford & Guiver, 2016).

The following is a summary of the main obstacles identified during the study:

- A lack of sufficient knowledge and awareness of ICT-related matters;
- A lack of sufficient IT infrastructure and skills to use that already in place;
- Internet access is too expensive;
- ICT tools are not accessible to all;
- Connectivity problems, there are sufficient telecentres and lack of awareness in the community of such facilities;
- No standard infrastructure, no exploited viewings of sites, limited finances and a very limited domestic tourism culture in Rwanda;
- Connectivity issues in some districts, electricity provision problems, poor networking, low levels of ICT literacy, community resistance to change and a shortage of equipment; and
- Tourism itself is still underdeveloped. What is still unknown is the use of websites, e - payment facilities and in general ICT development, which is a tool enabling businesses to maximise income and market Rwanda for tourism development.

7.7.4 Improvement of consumer records through TVC linkages

Niininen *et al.* (n.d.:6) suggest that the stability and continuity of a business is in direct relationship to the collection and arrangement of information on individual customers, utilisation of that information to more effectively target existing customers, and allowing the customer to customise and personalise the service to match their own needs and preferences. The research data revealed that those businesses that captured customer records had ICT devices such as computers, and those that do not capture customer records do not have ICT tools, which suggests they do it manually.

7.7.5 Current suppliers' and users' understanding of ICT

The research findings revealed that most participants who worked for different institutions were able to use ICT tools. It is recommended that practical policy makers and programme designers should aim to improve comprehensive ICT understanding and thereby increase the number of ICT users in the different economic sectors. The focus should be on transformative and transactional end results in the wider community.

7.7.6 Implications of ICT industry standards development, legislation, and online learning accessibility and usability

The effects of ICT industry standards development, legislation, online learning accessibility, and usability were developed and cross-related with tourism and hospitality firms in Rwanda. Different economic activities were considered when identifying these implications. These activities ranged from Internet society services, banking systems, education, telecommunication, money business transactions, transportation, surfing the World Wide Web, to receiving daily updates on the status of the Rwandan economy.

It was found that online services, referring to tourism online travel agents and feedback sites, were low, and that Rwandan accommodation establishments and tour operations had been slow to provide or integrate the growing number of services being provided in the tourism sector (Foster & Graham, 2014:32).

The research findings revealed that currently (2015) upmarket tourism and hospitality companies are in a better position, due to easy access to funds and ICT infrastructure, than smaller firms. The problems relate to connection, weak networks, scarce energy resources, a shortage of skills, and insufficient knowledge on how to integrate service-based Internet to full access and usability of ICT in Rwanda. Money and time management is what matters most of all to customers. The researcher's discussions on Rwanda's ambitions to diversify tourism products revealed that a lack of successful integration would allow competitors to take advantage of tourists with complex requirements in finding hotel availability, book permits, and transfer of money.

7.7.7 Accessibility and user-friendliness of ICT for tourism product/service dissemination

Shanker (2008:51) states that ICT and tourism are interdependent sectors. The researcher believes that ICT has become a positive factor, equal to other tourism attractions at any given destination and this argument is validated by 100% of government interviewees who confirmed the existing link between ICT and tourism.

With regards to product and service distribution to the consumers, researchers such as Foster and Graham (2014:32) state that online visibility and accessibility offers the potential for Rwandan companies to reach customers directly and connect and market their goods. However, this occurs only with a few tour operations that can afford to use resources such as websites and social networks, and some upmarket large hotels that have integrated services to attract customers.

This should not be an excuse though for smaller firms to stagnate. They should be motivated to adopt online visibility, which can inclusively accommodate small establishments and improve accessibility features, so that customer numbers of small companies could increase.

Furthermore, assistance in developing online skills would develop a knowledgeable and skilled group of tourism entrepreneurs in Rwanda. However, it is important to note that besides connectivity issues a number of other challenges still limit the ability of firms to reach customers directly, including lack of skill in how best to exploit online resources, issues around finance and time management to interact with customers, brand names, logistical quality, power and networks. This makes it difficult for Rwandan firms to grow without an active set of policies and learning structures that target consumer demands**.**

7.7.8 The future of ICT as an enabling tool for tourism sector development lies in local government participation

The research findings show that 60% of the government officials interviewed indicate that at local government level, they had a plan to integrate ICT into the tourism sector for improved pro-poor benefits.

All the officials who were interviewed agreed that the next step of integrating ICT into tourism planning could enhance pro-poor benefits in their locality, where it is critical that Rwandans must benefit from ICT offerings in all economic sectors. The findings are supported by UNWTO (2011:10) that Rwanda, like any other sub-Saharan country, should continue to work on incorporating new technologies into daily management of tourism firms and destinations because these technologies would help to improve the operations of emerging and existing facilities, such as hotels, restaurants, bars, museums and attractions.

Theoretical arguments for ICT contributions therefore need to be revisited to further understand the dynamics around ICT integration in all economic sectors, including tourism, for pro-poor benefits, and how this can be improved in all parts of Rwanda. For instance, the study findings show that in the finance sector most digitised payments occur in the capital of Kigali. In the researcher's view, the digitisation movement should be extended countrywide and this would be made easier when the banking system and energy facilities are fully established. This is consistent with Foster and Graham's (2014:31-32) argument, that digitisation and Internet benefits do not necessary offer a pathway out of poverty, as suggested by UNWTO (2014:13-14). The adoption of new technologies would strengthen business institutions, improve customer service delivery and resolve issues related to costs, time management, communication and transportation. Issues related to poverty reduction could involve the creation of money. The researcher emphasises that there is more involved than just digitisation technology.

A particular sector strategy, with theoretical underpinning, was the structural programme of the World Bank (2011:3) which supports developing countries in their initiatives for poverty reduction by using ICT. Evidence from Foster and Graham (2014:32), and this thesis, points to a success story in Kigali, while other provinces have still not developed beyond ICT

inequalities. The research data ultimately suggests that the current poverty reduction policy structures could have meaningful impacts on the problem (Republic of Rwanda, 2013a:21-23). The theoretical arguments for this justification maintain the need for policy implementation, monitoring and evaluation, and in this respect the researcher linked this need to other interventions in the context of pro-poor benefits.

7.8 Concluding remarks

The scale of this discussion is extensive and multidimensional, even at the local level. However, to generate achievable policy strategies and development targets with regards to ICT contributions to tourism value chains for pro-poor benefits, there is a need for more than one study and empirical survey at the local level to allow further investigations of local dimensions on the topic.

The government has achieved much post-genocide but in the ICT sector greater emphasis should be on ICT that works for community development. ICT for them means using facilities to work for them, such as having constant energy (electricity on a regular basis), water, affordable PCs, laptops, cell phones, establishing (many) telecentres, youth development centres at very low rural levels of governance, deploying local capacity builders to create awareness of ICT uses in tourism platforms, and high speed Internet facilities. These should be made available to all by government. Local government should do more than they do at present to empower local communities to effectively use available ICT tools. The establishment of an ICT village in Kigali could be a model to serve the rest of the country. Despite the many energy challenges in Kigali and elsewhere in the country, it appears that ICT integration in upmarket tourism and hospitality businesses in Kigali is making tourists feel more comfortable, engendering a home-from-home feeling.

This chapter proposed recommendations to increase pro-poor benefits through a proposed model designed for responsible stakeholders involved in both ICT and tourism villages. Pending other developments on the suggested model, the researcher believes that ICT for a tourism village in Rwanda, and particularly in those regions with a flourishing tourism industry, would showcase the destination first, and then the country as a whole, and there is no doubt that the adoption of the proposed model could result in less movement of people from rural areas to urban areas in Rwanda.

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LIST OF APPENDICES

APPENDIX A: COVERING LETTER FOR TOURISM STAKEHOLDERS

A model of the contribution of Information Communications Technology to the tourism value-chain for pro-poor benefits in Rwanda

This questionnaire is part of my doctoral studies in Tourism and Hospitality Management in the Faculty of Business. This questionnaire seeks to establish the contribution of ICT on tourism stakeholders in their economic routines. Furthermore, this questionnaire is designed to investigate the role of ICT on the tourism income distribution of all players in the tourism value chain in Rwanda with emphasis on Northern-Western Provinces of Rwanda. The outcome will assist tourism practitioners to make ICT a priority to enable the tourism value chain to work effectively for the local communities in the visited destinations.

What we will do with the results

- Firstly, please be assured that individual responses will be kept secure and in complete confidence.
- Secondly, the findings will be analysed and ,
- Thirdly, will be made available to all interested at the destination.
- Finally, the summary of the findings may be published academically (i.e. in research journals), should they merit the attention of researchers and others who are working to improve the economic status of communities.

It is vital that all your answers are accurate and honest. Your answers to this questionnaire will not be disseminated further. I commit myself to keep your information in the high level of confidentiality and privacy, including your names.

Please complete all questions. For questions or comments about this questionnaire, or if you require information about the study, feel free to contact or email me at the following:

Cell :(+27) 781182453/ (+250) 788790191

E-mail: safariernest2004@yahoo.com / safariernest2010@gmail.com

Note: The participation in this survey is voluntary and anyone may withdraw at any time.

Ernest Safari Researcher

APPENDIX B: QUESTIONNAIRE FOR TOURISM STAKEHOLDERS

SECTION (A): GENERAL BIOGRAPHICAL INFORMATION

Please answer the questions by putting (X) in a relevant square (❑) or by writing your answer in the space provided.

1. Please tick one box indicating gender

Male	❑
Female	❑

2. Please tick one box indicating your age range

Under 20	21-30	31-40	41-50	Over 51
❑	❑	❑	❑	❑

3. What is your country of origin? Please state which country if not from Rwanda.

Rwanda	1	Neighbouring countries	2	African Countries	3	Out of Africa	4

3.1 Which country?.....

3.2 If you are based in Rwanda which province is applicable?

n Province		rn Province	
rn Province		Province	
of Kigali			

3.3 Please specify your district.....

3.4 **Please indicate your home language (the language that you mostly use at your place of residence).** If your home language is Kinyarwanda for example then please place an X next to the appropriate row.

1	Kinyarwanda	
2	Swahili	
3	English.	
4	French.	
5	Other (please specify)	

4. How long have you been in the district noted in 3.3?

Less than 1 year ❑ 1-2 Years ❑ 3 Years❑ 4 Years ❑ 5 Years ❑ More than 5 years ❑

5. If you are a tourist/visitor mark with an x identifying the reasons of your visit?

Exploration	Economic	Political	Environmental	Academic purposes	Social	Other,
❑	❑	❑	❑	❑	❑	

If you marked other, please explain……..

6. If you are resident, what is your occupation?

Employee	Unemployed	Studying	Business	Employer	Other
❑	❑	❑	❑	❑	❑

If you marked other, please explain……

7. If you are currently working, what type of company/institution are you working for?

Government	NGO	Self-employment	Private Company	Other
❑	❑	❑	❑	❑

If you marked other, please explain……

8. How long have you been working at the institution noted in 7? (Please state)

Years		Months		Day	

9. What was your previous occupation?

Employee	Unemployed	Supervisor	Middle Manager	Senior Manager	Other
	❑	❑	❑	❑	❑

If you marked other, please explain……

10. In which sector were you active?

Formal	❑
Informal	❑

11. Please indicate whether your current employment is:

Part-time	❑
Full-time	❑

12. If you are studying what is your highest qualification? If you are not studying at the moment go to question 15

Secondary school	Diploma	Degree	Masters	PhD	Post doctoral	Other

If you marked other, please explain……

13. If you have completed secondary school, what is your current field of study?

Applied Sciences	Business	Education and Social Science	Engineering	Health and Wellness Science	Informatics and Design
❑	❑	❑	❑	❑	❑
Other ❑ please specify……..					

14. How do you access your education if you are studying

ttendance	attendance	tudies

Note: If you are a full-time student and not a Rwandan resident, thank you for your time. If you are a full-time student and a Rwandan resident please complete the following:

15. Please place an X next to the statement that most accurately describes the type of industry your firm is involved in. (Also place an X next to the appropriate row).

1	**Primary industry (conversion of raw material into primary goods and the creation of raw materials for the secondary industry),** which includes agriculture (cultivation of animals, plants, food, fungi, fibre.), agribusiness (farming, contract farming, seed supply, co-operatives, animal husbandry, processing and farm machinery.), fishing (catching of fish, fish farming, whaling and commercial fishing.) mining (extraction of coal, gold, copper, diamonds, shale and limestone.), forestry (plantation development, production of wood, wildlife management, water quality management, watershed management, erosion control and recreation.) and quarrying (extraction of rock, sand, building material, road material).	
2	**Secondary industry (involves refining, construction and manufacturing),** which includes light engineering, industrial engineering, electrical engineering, civil engineering, electronics and electronic engineering, manufacturing, production, construction etc.	
3	**Tertiary industry (also known as the service industry and deals with services and the distribution of finished goods)** and includes government services (Rwanda Revenue Authority, Post Office, Sky Net, the Defence Force, the police.) municipal services, financial services, education, healthcare, banking, insurance, life assurance, investments, public health, waste removal, accounting services, legal services, business consulting, news media, *hospitality, events management, hotels, B&Bs, travel, car hire, tourism and tour guides*, retailing, wholesaling, franchising, gambling, real estate, pest control, distribution services, transport, logistic services (import agents, export agents, freight forwarders, entertainment and sales(motor cars, trucks, clothing).	
4	**Quaternary industry (a relatively new type of knowledge industry that is concerned with technological research, design and development),** which includes information technology, computers, communication services, research and development, product design, financial planning, knowledge-based services, the media, pharmaceuticals.	

16. Please indicate the classification of your organisation by placing an X next to the appropriate business classification. For example if you work for a government institution please place an X next to the Government or quasi-government row. Please also state your type of business, e.g.: tour operator, car dealership, clothing retailer

1	Sole proprietor.	
2	Partnership.	
3	Close corporation.	
4	Private limited company	
5	Public company.	
6	Governmental or quasi-governmental organisation (e.g. Local Government).	
7	Not-for-profit organisation.	
8	Other and specify	

17. Please indicate the attributes that best describe the size of your organisation by reading the parameters below and placing an X next to the appropriate organisational size. For example, if your business has the attributes of a small business, then please pace an X next to the small business row.

1	A **small-sized business**: (has less than 20 employees, and has an annual turnover of less than RWF 20,000,000m ($US 3, 070), operates on a local basis and has capital assets less than RWF 16,000,000m ($US 24,620) and is run and managed by its owners).	
2	A **medium-sized business**: (has less than 200 employees but more than twenty, or and has annual turnover of more than RWF 20,000,000m ($US 3,070) but less than RWF 5,000, 000,000m ($US 7,692,320) or and has capital assets in excess of RWF 40,000,000m ($US 61,540) but less than RWF 800,000,000m ($US 1,230,700) and is probably managed by its owners).	
3	A **large-sized business**: (has a strong regional, national and international footprint, employs more than 200 employees, has an annual turnover of more than RWF 5,000,000,000m ($US 7,692,310), has capital assets greater than RWF800,000,000m ($US 1,230,700) and is managed by a professional management team).	

18. Please indicate whether your organisation is a primarily local, national or international firm. If for example your business is international in stature, then please place an X next to the international organisation row.

1	Local organisation.	
2	Nationally represented organisation.	
3	International organisation.	

19. Please indicate the status of the particular business. For example if your firm is a local branch office, then please place an X next to the appropriate row.

1	Local office or local branch office.	
2	Regional office.	
3	Head office.	
4	Local international branch office.	

20. Please indicate whether your firm procures on a centralised or a decentralised basis. If centralised then please place an X next to the centralised purchasing row.

1	Some form of centralised purchasing.	
2	All purchases are decentralised	

21. What of the following best describes your occupation and/or level of management? Please indicate your level of management by placing an X next to the appropriate row.

1	Buyer/procurer.	
2	Senior buyer/procurement officer.	
3	Manager: buyer/procurement.	
4	Accountant.	
5	Finance manager.	
6	CEO (Chief Executive Officer or MD (Managing Director).	
7	Business owner.	
8	Sales Agent	
9	Other and specify.	

22. What is your annual income range. Please place an X next to the appropriate row.

1	RWF 250,000 ($US 400) or less.	

2	RWF250,001 to RWF 300,000 ($US 400-500)	
3	RWF300,001 to RWF400,000 ($US 500-650)	
4	RWF400,001 to RWF500,000 ($US 650-800).	
5	RWF500001 to RWF600,000 ($US 800-1000).	
6	RWF600,001 to RWF1m ($US 1000-1600).	
7	Above RWF1m ($US >1600).	
8	Not Applicable(N/A)	

23. If you are a business person, how do you advertise your business? (Tick all appropriate blocks)

-face operation ❑	nerce business❑	agents ❑
f mouth ❑	lets ❑	info centres ❑
t ❑	shows ❑	gns ❑
nd specify:		

Note: If not a Rwandan resident, thank you for your time

If you are a resident please continue with Section B below.

SECTION (B): INFORMATION RELATED TO ICT APPLICATIONS

24. Please read each of the following statements regarding the benefits of ICT in your Province and rate your answer by marking with X the appropriate block. **Codes: SA=Strongly, A= Agree, N/U=Neutral or Undecided, D=Disagree, SD=Strongly Disagree**

No	STATEMENTS	SCALE				
		SA	A	N/U	D	SD
1.	The use of ICT in my province has resulted in easy accessibility for our business growth.	❑	❑	❑	❑	❑
2.	The use of ICT in my province has resulted in useful information for our business growth	☐	☐	☐	☐	☐
3.	The use of ICT has enabled my province to position its tourism potential in the country.	❑	❑	❑	❑	❑
4.	The use of ICT has enabled my province to position its tourism potential in the region.	☐	☐	☐	☐	☐
5.	The use of ICT has enabled my province to position its tourism potential in the overseas.	☐	☐	☐	☐	☐
6.	The use of ICT in my province has enabled local communities to understand the role of tourism in their area.	❑	❑	❑	❑	❑
7.	The use of ICT in this my province has contributed to the growth of educated people.	❑	❑	❑	❑	❑
8.	The use of ICT in my province has contributed to a decrease in waste products in the agriculture sector.	❑	❑	❑	❑	❑
9.	The use of ICT in my province has reduced the number of poor people.	❑	❑	❑	❑	❑
10.	The use of ICT in this province has provided employment opportunities in tourism and hospitality.	☐	☐	☐	☐	☐
11.	The use of ICT in my province has increased the number of computer literates in the province.	❑	❑	❑	❑	❑
12.	The use of ICT in my province has led to professionalism in tourism and hospitality	❑	❑	❑	❑	❑

No	STATEMENTS	SCALE				
		SA	A	N/U	D	SD
13.	The use of ICT in my province has led to updated education policies/training in tourism and hospitality sector	❑	❑	❑	❑	❑
14.	The use of ICT in my province has led to an increase of infrastructure needed to exceed tourists' expectations.	❑	❑	❑	❑	❑
15.	The use of ICT in my province has led to freedom of multimediality (a number of media).	❑	❑	❑	❑	❑
16.	The use of ICT in my province has made markets more available to farmers.	❑	❑	❑	❑	❑
17.	The use of ICT in this province has led to mobility of businesses.	❑	❑	❑	❑	❑
18.	The use of ICT in my province has led to high internet connectivity in all tourism businesses	❑	❑	❑	❑	❑
19.	The use of ICT in my province has led to an increase of Tele-centres.	❑	❑	❑	❑	❑
20.	The use of ICT in my province has led to an increase of the number of youth development centres.	□	□	□	□	□
21.	The number of youth development centres is a result of the growth of ICT in my province.	□	□	□	□	□
22.	The use of ICT in my province has led to an increase in numbers of online visitors.	❑	❑	❑	❑	❑
23.	The use of ICT in my province has caused the increase of the number of mobile phone users.	❑	❑	❑	❑	❑
24.	The use of ICT in my province has caused the removal of the barriers of communication.	□	□	□	□	□
25.	The use of ICT in my province has followed availability of the electricity power	❑	❑	❑	❑	❑
26.	The use of ICT in my province has resulted in computerised management systems enhancing data capturing for future use.	❑	❑	❑	❑	❑
27.	The use of ICT in my province has caused the decline education cost.	❑	❑	❑	❑	❑
28.	The use ICT has resulted in eeducation for all in my province.					

SECTION C: TOURISM VALUE CHAIN FOR PRO-POOR IMPACTS IN RWANDA

25. Please mark with an X the appropriate answer on how best to resolve the issue of tourism value chain challenges in Rwanda. There are no correct or incorrect answers to this section. Please be guided by your own information or views when responding to each of the statements.

No	STATEMENTS	**SCALE**				
		SA	**A**	**U/N**	**D**	**SD**
	All tourism businesses should be in a decentralised data base.	❑	❑	❑	❑	❑
	Informal tourism businesses should be trained to use IT in their daily transactions by LCB.	❑	❑	❑	❑	❑
	The establishment of tourism information centres in each district could assist to know accurate tourism receipts from low to high level of national tourism	❑	❑	❑	❑	❑
	The computerised records of all informal and formal tourism businesses could help to address the issues of inaccurate data records	❑	❑	❑	❑	❑

No	STATEMENTS	SCALE				
		SA	A	U/N	D	SD
	The creation of tourism villages and ICT villages could enhance social-economic transformation, such as mindset transformation, high profile of residents, life-style changes.	❑	❑	❑	❑	❑
	Promoting local farmer by means of ICT could lead to high level economic linkages in the province.	❑	❑	❑	❑	❑
	Promoting a culture of a customer care service industry at provincial level is one way to up-sell the country from internal to the external.	❑	❑	❑	❑	❑
	Integrating local participants perceptions and technology in the process of planning and developing tourism for pro-poor impacts could enhance the effectiveness of the TVC	❑	❑	❑	❑	❑
	Facilitating tourism studies for those stakeholders involved in local community-based tourism development in countries where TVC has worked for the poor would speed up changes.	❑	❑	❑	❑	❑
	Forming, coaching and mentoring tourism co-operatives to enabling them to create jobs could have rapid impacts in your area.	❑	❑	❑	❑	❑

SECTION D: ICT AND THE INTERNET INTEGRATION IN TOURISM BUSINESS IN RWANDA

- Please answer the questions by putting (X) in a relevant box or by writing your answer in the space provided.
- ICTs (Information and Communication Technologies) refer to computers, computer infrastructure and any associated technologies, including software, hardware and Internet connectivity.

26. Please tick business you are involved in the following box

1	Farming	
2	Trading	
3	Retail business	
4	Wholesaler	
5	hotel	
6	Bar and Restaurant	
7	Craft business	
8	Bed and Breakfast	
9	shopping	
10	Entertainment	
11	Transportation	
12	Tour operation	
13	Tourist guiding	
14	Training/school	
15	NGO	
16	Any other, please specify	

27. What does ICT mean in your business/work/household?

.....

27.1 If your establishment is using IT, how many of your staff are able to use IT equipment in the work environment..... (%)

28. Which of the following devices do you have in your business? □ Please answer the questions by putting (X) in a relevant box. Is it connected to the internet?

	PC		Laptop		Cell phone		Personal digital assistant (PDA)	
Availability								
Internet connectivity	Yes	No	yes	No	Yes	No	Yes	No
Any other, please specify:								

29. How is it easy to access them?

	Very easy(1)	Easy(2)	Not easy(3)	Somehow difficult(4)	Very difficult (5)
PC					
Laptop					
Cell phone					
PDA/Tablet					

30. How often do you use the above devices for business transaction purposes?

	All the time	Most of the time	sometime	Seldom	Never
PC					
Laptop					
Cell phone					
PDA/Tablet					

31. Could you estimate how many daily hours you spend on the internet for business purposes?

N/A	Less than 1 hour	1-3	4-5	6-8	9-10	11-15

32. Did ICT reduce your cost in any way in the last three years?

Yes	No

32.1 If yes please explain.

……

33. Did ICT improve your life style in the last three years?

Yes	No

33.1 If yes please explain.

……..

34. Where do you access the internet (more than one option is possible)

At home	In my work place	Internet cafe	On my phone	Other

34.1 If you noted" other" please specify……

35. Do you find easy to purchase ICT equipments?

Yes	No

35.1 If easy, where do you purchase the ICT equipments?

Supplier in the province	Kigali-(Capital of Rwanda)	Neighbouring countries	Abroad

35.2 If not easy, what are the main obstacles and opportunities did you face when undertaking procurement?

……

36. Do you take records of your business consumers?

Yes	No

36.1. If yes, how your consumers' records are captured.

Please answer the questions by putting (X) in a relevant box

Type of products	
Services	
Spent	
Origin	
Special requests	
Other and specify	

36.2. If No, what type of ICT would you think can improve your business/work environment?

……
……

SECTION E: OPEN-ENDED QUESTIONS

Please write your concise answer in the spaces provided.

37. What do you think about improving your business/work environment, and in the process using ICT for economic and social transformation in your province?

……

38. What are the difficulties that you are facing while improving your business/ work environment using ICT?

……

39. How can ICT be an enabling tool to your business/work place environment development?

……

39.1 How accessible and user-friendly is IT for disseminating tourism products and services to consumers?

……

40. Do you have policemen, firemen and medical emergency specialists in the community?

Yes(1)	No(2)	Not sure(3)

41. Do you have a Development centre-based ICT in the community?

Yes(1)	No(2)	Not sure(3)

42. Please provide any suggestions for the improvement of ICT accessibility in province/district.

……

Thank you for your co-operation

Notes:

LCB: Local Capacity Building

TVC: Tourism Value Chain

PDA: Personal digital assistant

ICT: Information Communication Technology

N/A: Not Applicable

APPENDIX C: FOCUS GROUP DISCUSSION

For Office only

Focus Group Discussion No……

Date……..

Area……..

A model for the contribution of Information Communications Technology to the tourism value-chain for pro-poor benefits in Rwanda

The objectives of this Focus group discussion are to:

- Learn about the activities of various community based tourism organisations within the region as expeditiously as possible.
- Understand how they contribute to the integration of ICT in the development plan and tourism.
- Identify the relationships between.

This focus group discussion comprises the following themes:

- Demographic data of the Focus Group
- Existing ICT project supporting tourism
- Existing opinion on ICT projects and the social-economic impacts of tourism
- Infrastructure and public service comments
- ICT and tourism questions
- Group discussion recommendations
  -
  -

Demographic Data of the Focus Group (information to be listed on attendance list)

Date:	name:	telephone/address:	occupation:	# of female
local organisation:		location:		# of Male

Existing ICT project supporting tourism: *1.* How do ICT project's support

tourism currently exist in your community?

……

2. Does ICT project's supporting tourism currently exist in your community?

Yes(1)	No(2)

2.1 How Is ICT beneficial to the community in terms of social, environmental and economic impacts?

……

3.1 Is ICT beneficial to the community in terms of social, environmental and economic impacts?

Yes(1)	No(2)

3.2 Does ICT benefit you personally?

Yes(1)	No(2)

3.3 If yes, please give explain how you benefit from ICT in your locality

……
……

Existing opinion on ICT projects and the social-economic impacts of tourism

1. Have the numbers of tourists visiting your community increased in the last five years because of ICT projects?

Yes(1)	No(2)	Not sure(3)

2. Why do you say so"?

……

3. Do you benefit having tourists in your community?

Yes(1)	No(2)

3.1 If yes, give your reasons

……

If no, give reasons

……

4. What are the positive impacts of having ICT projects together with tourism in your community?

……

5. Currently, does your community experience any negative aspects associated with tourism? If so, please explain:

……

6. Why do tourists take pictures in your destination/village?

……

6.1 How do you feel about tourists taking pictures in your destination/village?

Very proud (1)	Proud(2)	Good(3)	Indifferent (4)

6.2 How do you feel about having visitors in your areas?

……

6.3 How safe is your area?

……

7. Are there any "rules" or cultural customs that you feel tourists should obey?

Yes(1)	*No(2)*

7.1 If yes, what are they?

……

8. Why are tourists attracted to your area?

……

9. What are your most unique selling attractions?

……

10. What are possible unique attractions that have yet to be developed for tourism?

……

Infrastructure and Public Service Comments:

1. What services are needed in the community to make it more comfortable for residents and visitors?

……

ICT and tourism questions:

1. Do you feel that there is a link between tourism and ICT?

Yes(1)	No(2)	Not Sure(3)

2. Is there an ICT village at this time? If yes, how do you benefit from it?

Yes(1)	No(2)	Not sure(3)

If yes, how

……

……

3 If yes to question 2, is the community involved in the management of this project?

Yes(1)	No(2)

4. If yes to question 2, do you think that the community should have more or less involvement in the management of the project?

Yes(1)	No(2)	Not sure(3)

5. How could the community improve their involvement in tourism management and ICT project?

……

……

6. Does the community benefit from ICT projects in your area?

Yes(1)	No(2)	Not sure(3)

6.1 If yes, how do they benefit?

……

6.2 If yes, do they recognise these benefits?

Yes(1)	No(2)	Not Sure(3)

6.3 If not, how could they better understand these benefits?

……

7. Can you describe any benefits that you are personally receiving because the project is community information communication technology?

……

8. Do local people lose any benefits for not having ICT projects in the destination?

Yes(1)	No(2)	Not Sure(3)

8.1 Please explain……

……

9. How could tourism and ICT improve community benefits in your area?

……

……

Group discussion recommendations:

1. What are your suggestions for future tourism development in this community? What investments or improvements are of top priority?

……

2. If other activities, services, or products could be offered in your village or area, where do you think these activities or services should be located? Who should run them?

……

3. Are there other forms of development that you think would benefit the local residents more than tourists?

Yes(1)	No(2)	Not sure(3)

3.1 If yes, what are they?

……

Thank you for your participation

APPENDIX D: INTERVIEW GUIDE

A model of the contribution of Information Communications Technology to the tourism value-chain for pro-poor benefits in Rwanda.

This interview seeks to establish the contribution of ICT on tourism stakeholders in their economic lives. Furthermore this interview is designed to seek the views of decision making players in the tourism sector and ICT. The outcomes will assist and guide tourism practitioners to make ICT a priority, and to enable the tourism value chain to work effectively for the local people of Rwanda, focusing on two flourishing tourism regions, Northern and Western Provinces.

What we will do with the results

- Firstly, please be assured that individual responses will be kept secure and in complete confidence.
- Secondly, the findings will be analysed and summarised.
- Thirdly, the summary of the findings will be made available to all interested stakeholders in the region.

Finally, the summary of the findings may be published academically (i.e. in research journals in South Africa and elsewhere), should they merit the attention of researchers and others who are working to improve the economic status of communities.

Questions

1. Do you think ICT is an enabling tool for the tourism sector development in your province?

Yes/No

1.1 Please explain your response.

……

2. What are the perceived challenges against ICTs effective contribution to the tourism sector in the area, if any?

……

3. Do you have a typical ICT that contributes to tourism sector? Yes/No

If yes, which ICTs are contributing to tourism sector?

……

If no, please explain your response

……

3.1 What are the types of ICT that could be promoted to ensure a change in the tourism sector for pro-poor benefits in your Province?

……

4. Do you have a provincial tourism plan for pro-poor benefits? Yes/No. Please explain your response.

……

5. Do you have any provincial plan to integrate ICT in the tourism sector for better pro-poor benefits? Yes/No. Please explain your response.

……

5.1 Do you think the integration of ICT in a tourism plan could enhance pro-poor benefits? Yes/No. Please explain.

……

5.2 Do you think ICT could be a positive factor to attract tourists in the area? Yes/No

Please motivate your answer in the space below.

……

6. How do local people access ICT equipments in the province?

……

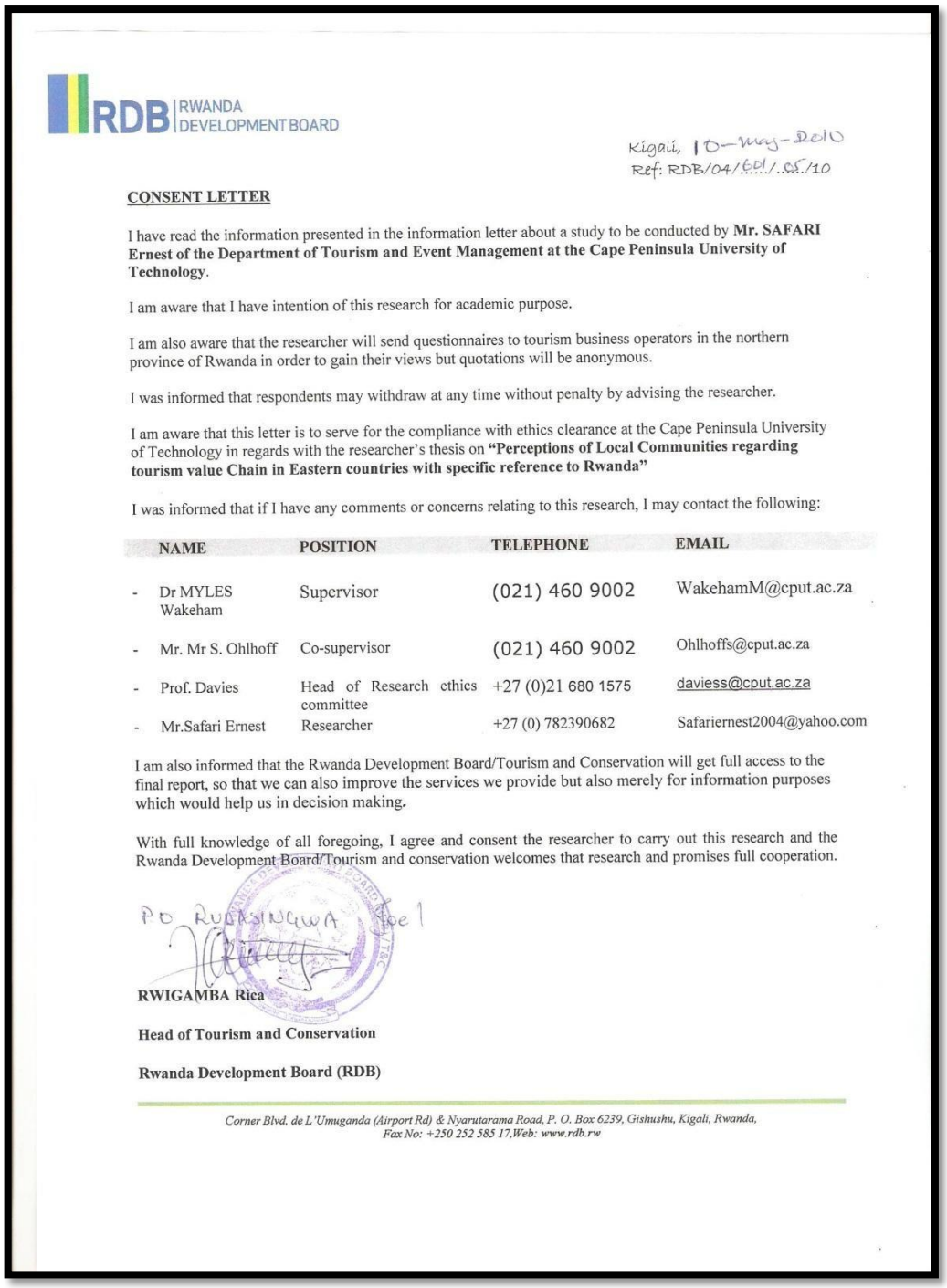
6.1 How does ICT impact the local communities' lives in this province?

……

Contact: Safariernest2004@yahoo.com/safariernest2010@gmail.com

Cell: +2781182453/0788790191

APPENDIX E: CONSENT LETTER FROM RWANDAN DEVELOPMENT BOARD



RDB | RWANDA DEVELOPMENT BOARD

Kigali, 10-May-2010
Ref: RDB/04/601/..05./10

CONSENT LETTER

I have read the information presented in the information letter about a study to be conducted by **Mr. SAFARI Ernest of the Department of Tourism and Event Management at the Cape Peninsula University of Technology**.

I am aware that I have intention of this research for academic purpose.

I am also aware that the researcher will send questionnaires to tourism business operators in the northern province of Rwanda in order to gain their views but quotations will be anonymous.

I was informed that respondents may withdraw at any time without penalty by advising the researcher.

I am aware that this letter is to serve for the compliance with ethics clearance at the Cape Peninsula University of Technology in regards with the researcher's thesis on **"Perceptions of Local Communities regarding tourism value Chain in Eastern countries with specific reference to Rwanda"**

I was informed that if I have any comments or concerns relating to this research, I may contact the following:

	NAME	POSITION	TELEPHONE	EMAIL
-	Dr MYLES Wakeham	Supervisor	(021) 460 9002	WakehamM@cput.ac.za
-	Mr. Mr S. Ohlhoff	Co-supervisor	(021) 460 9002	Ohlhoffs@cput.ac.za
-	Prof. Davies	Head of Research ethics committee	+27 (0)21 680 1575	daviess@cput.ac.za
-	Mr.Safari Ernest	Researcher	+27 (0) 782390682	Safariernest2004@yahoo.com

I am also informed that the Rwanda Development Board/Tourism and Conservation will get full access to the final report, so that we can also improve the services we provide but also merely for information purposes which would help us in decision making.

With full knowledge of all foregoing, I agree and consent the researcher to carry out this research and the Rwanda Development Board/Tourism and conservation welcomes that research and promises full cooperation.

PO RUGASINGWA Joe 1

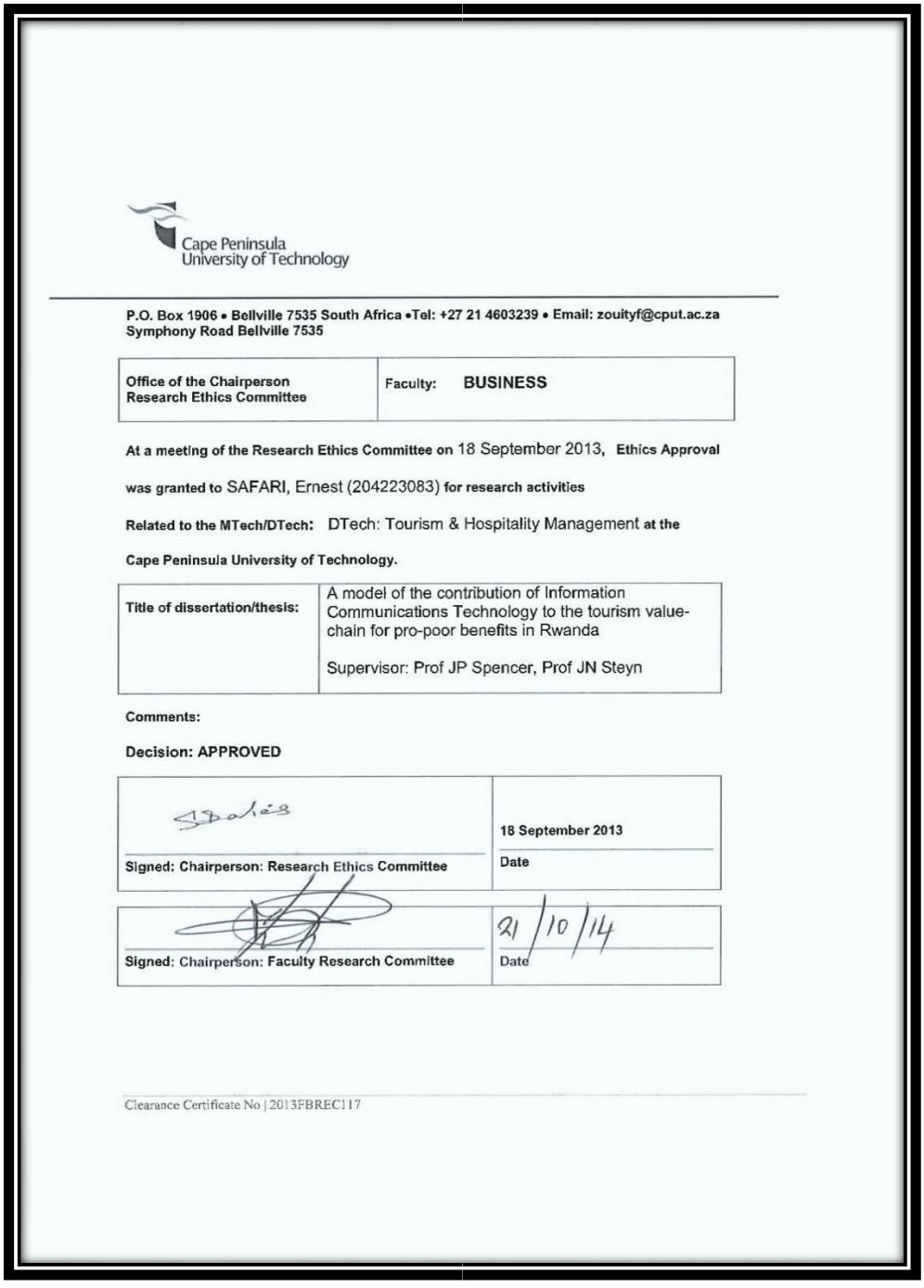
RWIGAMBA Rica

Head of Tourism and Conservation

Rwanda Development Board (RDB)

Corner Blvd. de L'Umuganda (Airport Rd) & Nyarutarama Road, P. O. Box 6239, Gishushu, Kigali, Rwanda,
Fax No: +250 252 585 17,Web: www.rdb.rw

APPENDIX F: CPUT ETHICAL CLEARANCE



Cape Peninsula University of Technology

P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 4603239 • Email: zouityf@cput.ac.za
Symphony Road Bellville 7535

Office of the Chairperson Research Ethics Committee	Faculty: BUSINESS

At a meeting of the Research Ethics Committee on 18 September 2013, Ethics Approval was granted to SAFARI, Ernest (204223083) for research activities

Related to the MTech/DTech: DTech: Tourism & Hospitality Management at the Cape Peninsula University of Technology.

Title of dissertation/thesis:	A model of the contribution of Information Communications Technology to the tourism value-chain for pro-poor benefits in Rwanda Supervisor: Prof JP Spencer, Prof JN Steyn

Comments:

Decision: APPROVED

Signed: Chairperson: Research Ethics Committee	18 September 2013 Date
Signed: Chairperson: Faculty Research Committee	21/10/14 Date

Clearance Certificate No | 2013FBREC117

APPENDIX G: LETTER FROM GRAMMARIAN

22 Krag Street
Napier
7270
Overberg
Western Cape

September 2017

EDITING & PROOFREADING

Cheryl M. Thomson

A MODEL OF THE CONTRIBUTION OF INFORMATION COMMUNICATION TECHNOLOGY TO THE TOURISM VALUE CHAIN FOR PRO-POOR BENEFITS IN RWANDA

This is to confirm that the language and technical editing of the above-titled Doctoral thesis of ERNEST SAFARI**,** student number 204223083**,** at the CAPE PENINSULA UNIVERSITY OF TECHNOLOGY, was undertaken by me in preparation for submission of this thesis for assessment.

Yours faithfully

CHERYL M. THOMSON

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cell: 0826859545