ROLE OF INTANGIBLE RESOURCES ON THE COMPETITIVENESS ENHANCEMENT OF TELECOMMUNICATION COMPANIES IN RWANDA

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Role of Intangible Resources on the Competitiveness Enhancement of Telecommunication Companies in Rwanda

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been submitted for examination with our approval as the University Supervisors

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DEDICATION

This thesis is dedicated to my lovely husband Michael and our lovely children Enyinnaya, Onyekachi and Chidiebere whose love, patience, perseverance and prayers enabled me to overcome many challenges and confrontations throughout my doctoral studies.

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ABBREVIATIONS AND ACRONYMS

AMC	Ability to Monitor Competitors
ANOVA	Analysis of Variance
ASR	Age, Size, Regulations
BMB	Being a Member of Business
CAGR	Compound Annual Growth Rate
DSL	Digital Subscriber Line
DTH	Direct to Home
DTI	Department of Trade and Industry
ECO	Export Customer Orientation
EDGE	Enhanced Data for Global Evolution
GDP	Gross Domestic Product
GPRS	General Packet Radio Service
GSM	Global System for Mobile communication
IFAC	International Federation of Accountants
IHC	Intangible Human Capital
IPTV	Internet Protocol television
ISC	Intangible Structural Capital
IRC	Intangible Relational Capital
IRM	Intangible Resource Model
IRV	Intangible Resource Variables
JKUAT	Jomo Kenyatta University of Agriculture and Technology

KMO	Kaiser-Meyer-Olkin
MYICT	Ministry of Youth &i Information and Communication Technology
OECD	Organisation for Economic Co-operation and Development
PC	Personal Computer
RBV	Resource-Based View
RDB	Rwanda Development Board
RURA	Rwanda Utilities Regulatory Authority
R&D	Research and Development
SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factor
VRIN	Value, Rare, Inimitable and Non-substitutable
VRIO	Value, Rare, Inimitable and Organized
3G	Third Generation
4G LTE	Fourth Generation Long-Term Evolution

DEFINITION OF TERMS

Intangible Resources: These are resources that are not feasible, less flexible, hard to accumulate, and not easily transferred, given the fact that they are mostly distinctive to firms (Perrini & Vurro, 2010). Intangible resources include any factor that contributes to the value generating processes of the company (Kaufmann & Schneider, 2004).

Intangible Human capital: This refers to the knowledge and experience, innovation and creativity, skills and abilities residing with and utilized by individuals (Perrini & Vurro, 2010). For this study: skills and abilities, knowledge and experience, innovation and creativity are the operational terms for intangible human capital.

Intangible Relational capital: This is the organizational relationship with the stakeholders of the firm, which includes customers, employees, suppliers, industry associations, stakeholders, and strategic alliance partners (Kashyak, 2014; Ogundipe 2012; Ordonez de Pablos, 2003). It is the value of the relationships between the firm and its environment. Relational capital in this study includes relationship with customers, relationship with suppliers and relationship with competitors.

Intangible Structural capital: This is the supportive non-physical infrastructure, processes and databases of the organization that

enable human capital to function (Maddocks & Beaney, 2002). Structural capital in this study includes systems and programs, research and development and corporate reputation.

Competitiveness Enhancement: Competiveness Enhancement is obtained when an organisation develops or acquires a set of attributes that allow it to outperform its competitors. Competitiveness pertains to the ability of an organization to outcompete or outperform the competitors (Riley, 2012). Enhanced competitiveness refers to an organization having better factors that helps the organization to outperform the competition.

ABSTRACT

The fundamental concentration of this research was to establish the role of intangible resources on the competitiveness enhancement of the telecommunication companies in Rwanda. Competitiveness of companies in the same industry must continue to be enhanced in order to thrive in a competitive environment. Competitiveness is more likely to spring from intangible rather than tangible resources. Intangible resources are less flexible, hard to accumulate, and not easily transferred, given the fact that they are mostly distinctive to firms. The Rwandan telecommunication companies have reasons to identify and employ their intangible resources in order to enhance their competitiveness. The specific objectives were to determine the role of intangible human capital, intangible structural capital and intangible relational capital in enhancing competitiveness of telecommunication companies in Rwanda and to establish the combined effect of intangible resource variables in enhancing competitiveness of telecommunication companies in Rwanda. The study also sought to determine the moderating effect of company age on the relationship between intangible resource and competitiveness enhancement. The study adopted a cross-sectional survey research design. The target population comprised the three telecommunication companies from which primary data was collected using questionnaires. The respondents comprised of Directors, Executives, Managers, Assistant Managers and Administrators. These categories of employees of the companies have the right knowledge concerning the study. Out of 655 employees of the three companies (RURA, 2014), the sample size of 248 was determined using Slovin's formula, out of which 183 respondents from Airtel and Tigo properly filled and returned the questionnaire. Purposive sampling method was used to identify these categories of employees of the companies with the right knowledge concerning the study. The data were analysed using descriptive and inferential statistics. The findings of this study imply that there is a strong, positive, direct and significant relationship between intangible resources and competitiveness enhancement. Therefore, this study concludes that intangible human capital, intangible structural capital and intangible relational capital are good measures of intangible resources that can enhance competitiveness of telecom companies in Rwanda. The study recommends that intangible human capital, intangible structural capital and intangible relational capital should be positioned for the competitiveness enhancement of telecommunication companies in Rwanda. The enhanced competitiveness is underlined by a strong focus on their relationship with customers, suppliers and competitors, innovation and creativity, knowledgeable, skilled and experienced people, corporate reputation, systems and programs, research and development. This recommendation was directed to MTN, Tigo and Airtel Rwanda to review their intangible resource systems regularly and be more aware of the link between their intangible resources and competitiveness enhancement.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Organizations have to compete with goods and services from all over the world to satisfy a more educated and sophisticated customer. What is satisfactory to the customers today may not be regarded as such tomorrow as their expectations are continuously changing in a globally-dynamic environment. Moreover, the fall-outs of a deregulated global competition have offered customers choices among various alternatives. Ho (1999), claims that the creation of the global market, the international orientation of management, the introduction of new technologies and shifts toward customer focused strategies sweeps national boundaries and make the competition stronger than ever.

Global economic competition has increased and organizations have often overlooked their intangible resources as a source of competitiveness and paid more attention to physical and financial resources (Marr, 2006). The increasing demand and sophistication of customers have virtually modified the rules of competition and forced organizations to focus on quality, creativity, innovation, experience, branding, reputation, know-how and relationship with stakeholders. This focus will not only lower costs but also outperform the products and services of competitors spread across the world. The same focus will also attract customer loyalty, retention, satisfaction, product innovation and increased market share. In the global economy, the success of a corporation lies more in its intellectual and systems capabilities than in its physical assets (Volkov & Garanina, 2007). Globalization, technological progress and the related fluctuations in market development rates have increasingly made entry barriers fragile and the search for economies of scale hardly sustainable in the long run.

1.1.1 Tangible and Intangible Resources

With the rising complexities in global competitive dynamic forces and context, literature and managerial practice are converging on acknowledging intangible resources as the mainstays of business growth and value creation (Perrini & Vurro, 2010; Brondoni, 2009; Lev, 2001), and foresighted firms have been those placing a bet on intangible resource accumulation (Perrini & Vurro, 2010). Compared to tangible resources, intangible resources are superior sources of core competencies. Therefore, intangible resources need to be recognized as a comprehensive management paradigm for enhancing organizational competitiveness.

Barney (1991) categorized firm resources as: physical capital, such as physical technology used, equipment, and geographic location. Human capital includes experience and training while Organizational capital includes firm planning, internal and external relationships. In comparison with tangible resources, such as equipment, financial or physical resources, intangible resources are less flexible, hard to accumulate, and not easily transferred, given the fact that they are mostly distinctive to firms (Perrini & Vurro, 2010). Since these resources are valuable, rare and not easily imitated, they have the potential to become the source of differential, long-lasting performance. Another benefit of intangible resources is that, unlike most tangible resources, their use can be leveraged, for instance, sharing knowledge among employees does not diminish its value for any other person (Volkov & Garanina, 2007).

Barney and Hesterley (2006), state that a firm's resources and capabilities are valuable when they enable it to exploit external opportunities or neutralize external threats. While such valuable resources and capabilities are a firm's strengths, resources and capabilities that are not valuable are a firm's weaknesses. Using valuable resources to exploit external opportunities or neutralize external threats will have the effect of increasing the firm's net revenues or decreasing its net cost (Barney & Hesterley, 2006).

It is imperative for organizations to recognize that if they want to survive and prosper in the long run in an increasingly complex and connected world, they need to strategically manage their intangible assets (Marr, 2005). Organizations have to understand their various stakeholders' needs and align their strategies, processes and capabilities to satisfy those diverse sets of wants and needs so that they can deliver value to their stakeholders (Kennerley & Neely, 2003). Identification, measurement and management of the strategic value drivers facilitate superior performance (Marr, 2006). It means that organizations can become more and more competitive by identifying and leveraging the use of their intangible resources.

Theories of strategic management such as the resource-based view show that organizations can only gain sustainable competitiveness if they focus on the development of their value drivers. Intangible assets such as know-how, brands, copyrights, patents and relationships with customers or suppliers, are key value drivers in today's business world (Marr, 2005). It is critical, therefore, for organizations to identify and understand these organizational value drivers. Whereas, tangible resources such as equipment have actual physical existence, intangible resources such as corporate images, brands and patents, and other intellectual property exist in abstraction, (Berry, 2004). From the foregoing, it is evident that organizations possess various intangible resources such as brand, corporate reputation, business ethics, corporate social responsibility, good governance, human capital, organizational capital and technological capital. The recognition of these intangible organizational resources should be the main concern of the organization since they are vital and strategic factors in business success.

1.1.2 Intangible Resources and Competitiveness Enhancement

Competitiveness enhancement is more likely to spring from intangible rather than tangible resources (Rothaermel, 2012). Any competitor who has the necessary cash can buy tangible assets such as buildings or computer servers in the open market. However, a brand name must be built, often over long periods of time (Rothaermel, 2012). People in companies provide skills, knowledge, intuition and reasoning known as human

capital. Additionally, the culture inside an organization consists of relationships, values and routines. Companies that have a strong set of intangible resource values have a strategic edge over those that do not have, through employees' increased skills, knowledge, experience, innovativeness and creativity. Intangible resource as a source of competitiveness must be scarce, relevant, durable, immobile, and un-replicable. Moreover, the capacity to manage human intellect and to convert it into useful products and services is fast becoming the critical executive skill of the age (Volkov & Garanina, 2007).

Organizations may possess intangible resources, but recognizing their importance is required. Intangible resources are essential to the continued operation of an organization. They present an opportunity to increase a company's market share value and earn a significant revenue or profit over time through the production or distribution of goods and/or the provision of services (Barney & Hesterley, 2006; Flatt & Kowalczyk, 2008; Rothaermel, 2012). Much of a company's wealth comes from less defined assets such as reputation, technology or a particular set of cultural attributes within the company.

Anecdotal evidence suggests that a company's worth relies heavily on its endowment with resources (Barney & Hesterley; 2006, Flatt & Kowalczyk, 2008; Rothaermel, 2012). Empirical research shows that resource management practices affect firm performance and competitiveness (Carmeli & Tishler, 2004; Newbert, 2007). Moreover, despite the growing awareness of the importance of researching core strategic resources and activities, the work that has been done to date has largely taken the form of reports and case study analysis. Large sample studies demonstrating how organizational intangible resources, independently, complementarily and interactively, may or may not enhance the organization's performance are yet to be seen, (Carmeli & Tishler, 2004).

Marr (2013) and International Federation of Accountants (IFAC, 1998) categorize intangible resources into three classes: Human Capital, Structural Capital and Relational Capital. Human capital is the knowledge, innovation and creativity, skills and abilities residing with and utilized by individuals (Perrini & Vurro, 2010). The second

component, which is structural capital, includes the institutional knowledge (Perrini & Vurro, 2010; Teece, 1987), codified experience (Perrini & Vurro, 2010; Nelson & Winter, 1982), shared values, perceptions and feelings that differentiate firms from one another (Perrini & Vurro, 2010). It also includes firm's reputation, branding and image, which make the values and visions of the organization considered, acceptable and legitimate by stakeholders. Finally, the authors also delineate relational capital encompassing the quality and quantity of relationships in which a firm is embedded (Perrini & Vurro, 2010; Adler & Kwon, 2002).

Successful companies are, undoubtedly, those constantly introducing innovations based on new technologies, research and development, as well as on knowledge, experience and attainments of their employees. It is arguable that the value of companies is mostly generated by intangible assets, and not by "traditional" assets having the tangible form, (Volkov & Garanina, 2007). The surveys carried out by Volkov & Garanina (2007), revealed that 2/3 of American companies have turned to pro-active thinking and place a higher emphasis on collection and analysis of non-financial data. The same surveys confirm the fact, that 1/3 of all the effected investment solutions is based on the existing intangible assets, and that the decisions made on the basis of intangible assets allow to make a more accurate prediction of income and profitability of a company in the future, hence, the company's value for the shareholders.

The ratio of intangible assets to tangible assets was 30:70, but in 1990, the ratio was 63:37 (Kashyap, 2014; Brennan & Connell, 2000). This shows a turnaround in the importance attached to tangible and intangible resources. While 85% of all companies market cost is contributed by intangible assets, tangible and physical assets contributed the remaining 15% (Ghelichi, 2009). A repercussion to this is that not only do companies have to identify, assess and manage intangible assets but also they need to raise and improve the assets, otherwise, they would collapse (Cohen & Kaimenakis, 2007). Volkov and Garanina, (2007), argue that 6 to 30% of company's value is obtained from tangible assets. Everything else comes from intangible assets. That is why it is more important for managers to pay attention on intangible assets and be able to

evaluate them in order to use them more effectively and obtain enhanced competitiveness for their companies.

According to Marr, (2006), a survey ordered by the consulting firm Accenture revealed that most executives around the world believe that intangible resources are critical for the future success of their businesses, (Molnar, 2004). Organizations try to achieve competitiveness in order to make more profits, gain market shares and increase their success in a long period perspective. Thus, an organization should try to understand which of its intangible assets mostly influence the sustainability of competitiveness, (Greco, Cricelli, & Grimaldi, 2013).

Most traditional management systems were designed for an era when tangible assets dominated, (Carmeli & Tishler, 2004). Early academic debate on the categories of firm assets and their link to competitive gains have progressively shifted to the search for new sources of intangible resources, (Brondoni, 2009; Carmeli & Tishler, 2004). Recent contributions have started to show how companies voluntarily responding to social and environmental concerns develop intangible resources that can be sources of competitiveness (Surroca, Tribo & Waddock, 2010; Perrini & Vurro, 2010).

Competitiveness is achieved increasingly by firms that succeed in mobilizing their intangible resources in the form of knowledge, technological skills, experience, and strategic capabilities toward creating new processes and product or service offerings (Tovstiga & Tulugurova, 2007). Hence the successful mobilization of these intangible resources may be identified as a distinctive core competency for the organization.

1.1.3 Africa's Telecommunication Industry

There is no business organization that is protected from the global economic competition, irrespective of its size, location, products, and markets. The telecommunication companies worldwide are not left behind in this intense global competition. In the recent past to date, Telecommunication has been an important driver

of economic growth in Africa and other continents, (Zakir, Maske & Suraj, 2010). The market is increasingly competitive, and world-class local enterprises are emerging in voice and data services. Telecom company revenues have increased at a compound annual growth rate (CAGR) of 40 per cent, and the number of subscribers has rapidly exceeded 400 million.

As the traditional urban markets become saturated; penetration in major cities such as Abidjan (Côte d'Ivoire), Lusaka (Zambia), and Libreville (Gabon) is 70 per cent or more and about 50 per cent of the growth in voice will come from rural areas (Zakir et al, 2010). To capture this opportunity, operators and regulators must forge new industry practices and new operating models to create the method of slashing cost by 50 per cent or more, innovating in distribution and seeking more individualized pricing models. Data services yield large growth pocket of about $5 billion, and experiences gained from other countries suggest that a 10 per cent increase in broadband penetration translates into additional GDP growth of some 0.5 to 1.5 per cent (Zakir, et al, 2010).

The telecommunication industry structure is such that many markets, even smaller ones, have four or more players, for example, in Kenya there is intense competition between Safaricom, Airtel and Orange/Telkom. There is also the regulator's (Communications Authority of Kenya) approval to license three new telecommunications companies, (Ombok, 2014). Uganda's seven players compete in a very tight market, with price wars and different products to appeal to the different segments. In this same way, different players compete in this industry in India, Germany, Russia, Nigeria, South Africa, Tanzania, among others.

According to Bower, Debruyne and Melton (2014), many telecommunication companies have grown exceedingly complex over the years and now find themselves in a dangerous spot, struggling to remain agile while more nimble competitors aggressively court their customers. The dynamism of the sector actually contributes to complexity, as companies frequently launch new products and services, each of which must be integrated with existing products and maintained on the back end with billing and network systems. This

complexity manifests itself along several dimensions, including product lines, technology and organization and it comes at a time when telecom companies cannot afford to alienate customers with a confusing array of product offers, long wait times or inaccurate bills (Bower, Debruyne & Melton, 2014).

Competitors in the telecommunication companies are becoming more agile and releasing new products and services faster than before. More companies are moving into this space by offering online services that replicate phone service, and they are beginning to bundle these successfully with media content (Bower, Debruyne & Melton, 2014). Any telecom company that is slow to up its innovation act loses its market and customers to competitors. Telecommunication companies thus have many reasons to identify and employ their intangible resources to improve customer service, to become more responsive, reduce time to market, and reduce costs, remove inefficiency, thereby enhancing competitiveness.

1.1.4 History of Telecommunication Industry in Rwanda

Rwanda's history of mobile telecommunication companies was pioneered by MTN Rwandacell, a South African based company, which received a license in 1998 to provide GSM services for both post-paid and prepaid subscribers. At that time, prices and tariffs of both cell-phones and phone calls were high and MTN had few subscribers. With the increased GDP per capita in Rwanda at $540 as at 2010, there was a corresponding increase in the provision of mobile services like GPRS, EDGE, 3G and zero Facebook by MTN, (www.rura.gov.rw statistics).

MTN's monopoly in Rwanda lasted for 10 years after which Rwandatel (80% owned by LAP Green Networks of Libya) joined the mobile services market. Rwandatel's introduction of 3G networks before MTN quickly attracted subscribers, the number reaching over 100,000 in less than 2 months of operations. At that time, Rwanda's mobile communication revolution had just begun, with faster data communications and internet through hand-held PCs and mobile phones. In April 2011, Rwandatel had its

license revoked by Rwanda's telecom regulator, RURA, due to failure to meet licensee obligations such as coverage, planned investment targets and quality of service.

The third company to enter the mobile communications market was Millicom named Tigo (owned by Luxembourg) which was licensed to carry out operations in late 2009. With intensive marketing (public transport buses were painted Tigo colours with overwhelmingly cheap call costs of 300Rfr per 24 hours) and rapid coverage of networks countrywide. By late 2011, Bharti Airtel (Indian owned) secured a license to provide 2G and 3G cellular services.

Significant developments have taken place in the Rwanda's Telecommunication Sector. By December 2013, the number of active mobile-cellular phone subscribers had increased to 63.5%, up from 53.1% in December 2012, (Ministry of Youth & ICT (MYICT) Report, 2014). MYICT (2014) reports that as at December 2013, Rwanda had 6,689,158 mobile subscribers, hence a total addition of 998,407 new subscribers in a period of 12 months. From this figure, MTN Rwanda Ltd. had the largest number of share of subscribers, followed by Tigo Rwanda Ltd and Airtel Rwanda Ltd with 3,556,497 (53.17%), 2,175,127 (32.52%) and 957,534 (14.31%) subscribers respectively (MYICT Report, 2014).

On the other hand, the expansion of the Third Generation (3G) Networks continued to be the focus in the country. By December 2013, Airtel Rwanda had achieved 71% countrywide population coverage of their 3G networks, while MTN Rwanda and Tigo Rwanda had reached 67% and 43% respectively (MYICT Report, 2014). The commonly known 4th Generation Long-Term Evolution (4G LTE) internet network that offers the fastest wireless communication on high-speed data for mobile phones and devices such as modems and routers was launched in November 2014. The service was welcomed by MTN Rwanda and Airtel Rwanda, and both telecoms unveiled a retail pricing for their 4G services. MTN sells 5GB at a retail price of Rwf18,600 and Airtel sells the same for Rwf20,000 for a month's subscription, (Mugisha & Mwai, The New Times, 2014).

The telecommunication industry as a knowledge-economy industry is research intensive and highly innovative and relies heavily on research and development of their products through the intangible resource of human capital. Thus, this study will establish the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda.

1.2 Statement of the Problem

The Rwandan Telecommunication industry is an integral part of the country's economic growth towards the achievement of vision 2020. The sector has posted some growth in the last few years and has a potential to grow at a much higher rate. However, there is a sharp decreasing market share in mobile subscription, low penetration rate in internet usage and high cost of products and services (RURA, 2014). MTN Rwanda has a decreasing market share of 56% as at June 2013, 50% as at September 2014, against 64% of June 2012. Tigo Rwanda comes at the second level with a decreasing market share of 30% as at June 2013, 36% as at September 2014, against 34% of June 2012 while Airtel Rwanda, has the lowest market share of 14% as at June 2013 and as at September 2014, against 2.3% by June 2012 (RURA Annual Report, 2014). Currently, 4G LTE is only accessible in the capital – Kigali city and unaffordable for the common man (Mugisha & Mwai, The New Times 2014). The Regulatory Agency report (RURA 2014) has proved that there is decreasing market share, low penetration rate and high cost of products and services which shows that the telecommunication companies in Rwanda are not competitive enough compared to their counterparts in the region (RURA 2014). This study was to determine the role of intangible resources on the competitiveness enhancement of telecom companies in Rwanda.

Empirical literature has shown that past researchers explored a linear and significant relationship between intangible resources and competitive advantage. Kumlu (2014) studied the effect of intangible resources and competitive strategies on the export performance of small and medium sized enterprises in Turkey within the framework of the resource-based view. His findings revealed that intangible resources had a linear

significant relationship with export performance. Ichrakie (2013) discovered a linear significant impact of intangible resources on the establishment of sustainable competitive advantage within the context of the Job Network industry in Australia. Raduan, Jeka, Haslinda and Alimin (2012) empirically tested the relationship between organizational resources, capabilities, systems and competitive advantage using 127 respondents from the manufacturing industry in Malaysia through a cross-sectional study using structured questionnaire. The overall findings of their study indicated linear, significant and positive effects of organizational resources, capabilities and systems collectively on competitive advantage, providing support and corroboration to the resource-based view.

A review of the empirical studies shows that the researchers have used competitive advantage measures to assess organizational performance: profitability and productivity. Hussain (2014) investigated 49 banks listed with the Central Bank of Pakistan and revealed that there is linear correlation between various sub-dimensions of intellectual capital and three dimensions of business performance: "productivity", "profitability" and "market value". Abdulai, Kwon and Moon (2012) carried out an empirical study on software firms in West Africa on the relationship between human capital, structural capital and relational capital and the competitive capabilities of software firms, hence influence organization performance. Their findings demonstrated that these resources had positive significant linear relationship with the external competitive capability of software firms.

Although, empirical literature of Abdulai, Kwon and Moon (2012), Hussain, (2014), Kumlu (2014), Raduan, et al, (2012) and Ichrakie (2013) emphasize the significance of intangible resources on organizational performance, however, they did not focus on the direct or indirect role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. Hence, this study was to establish the role of intangible resources on the competitiveness enhancement as well as the moderating effect of age of telecommunication companies in Rwanda with specific focus on MTN Rwanda, Tigo Rwanda and Airtel Rwanda.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective was to determine the role of intangible resources on the competitiveness enhancement of Telecommunication Companies in Rwanda.

1.3.2 Specific Objectives

The following specific objectives were developed to guide this study:

1. To determine the role of intangible human capital on competitiveness enhancement of telecommunication companies in Rwanda.
2. To evaluate the role of intangible structural capital on competitiveness enhancement of telecommunication companies in Rwanda.
3. To assess the role of intangible relational capital on competitiveness enhancement of telecommunication companies in Rwanda.
4. To establish the joint effects of intangible resource variables on competitiveness enhancement of telecommunication companies in Rwanda.
5. To determine the role of the age of the telecommunication companies on intangible resources and competitiveness enhancement

1.4 Research Hypotheses

Following the specific objectives set for this study, the researcher developed the following non-directional hypotheses to guide the study.

H_1: There is a significant relationship between intangible human capital and competitiveness enhancement of telecommunication companies in Rwanda

H_2: There is a significant relationship between intangible structural capital and competitiveness enhancement of telecommunication companies in Rwanda

H_3: There is a significant relationship between intangible relational capital and competitiveness enhancement of telecommunication companies in Rwanda.

H_4: There is a significant joint effect relationship between intangible resource variables and competitiveness enhancement of telecommunication companies in Rwanda.

H_5: There is a significant moderating effect of the age of the telecommunication companies between intangible resources and competitiveness enhancement

1.5 Significance of the Study

There is paucity of research on telecommunication companies in Rwanda, especially on the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. The findings of this study will be useful to MTN, Tigo and Airtel Rwanda for decision making regarding intangible resources and competitiveness enhancement. To the Government of Rwanda, especially the telecom regulator - RURA, the findings will be useful for regulatory policy issues and monitoring the competitiveness of the industry vis-à-vis other regional companies and industries. To other researchers and scholars, it will be an addition to the existing body of research and knowledge. It will be a basis for further research in the area of intangible resources and competitiveness enhancement in organizations by other researchers and the scholarly fraternity.

1.6 Scope of the study

The scope of this study was limited to the role of intangible resources in enhancing competitiveness in telecommunication companies in Rwanda, with specific attention on MTN, Tigo and Airtel Rwanda. The research was carried out in MTN Rwanda, Tigo Rwanda and Airtel Rwanda, since they were the only telecom companies in the country at the time of study. The time scope of the study was one academic year from 2014 to 2015. The geographical scope of the study was Rwanda where such study is yet to

uncover the role of intangible resources on competitiveness enhancement especially as RURA reports diminishing market shares.

1.7 Limitations of the Study

The researcher experienced slow retrieval of the filled questionnaire during the primary data collection stage due to busy schedule of the respondents. This limitation was overcome by the arrangements with the employees who facilitated the process and helped in retrieving the administered questionnaires. Moreover, they were informed of the letter of introduction from the university which assured the respondents that the information provided would be used for academic purposes and treated with confidentiality.

Secondly, all the administered questionnaires were not completely returned and some of the respondents did not fill some part of the questionnaire completely. This was identified during data processing and was handled by data cleaning, since the data collected and processed was up to 80% of the entire administered questionnaire, this therefore did not pose a serious problem.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature was drawn from the work of other scholars, from textbooks, journals, reports, online sources and resources in order to get the views of other authors based on past studies done on this topic. The literature was largely theoretically informed by the resource-based view and competitive advantage theories. The empirical literature was used to support the objectives of the study which were anchored on determining the role of intangible resources on competitiveness enhancement of telecommunication companies in Rwanda.

2.2 Theoretical Framework

The theories underlying the variable of intangible resources and competitive advantage are the resource based view (Barney, 1991) and competitive advantage theories (Porter, 1990).

2.2.1 The Resource-Based View (RBV)

The resource-based view theory stems from the principle that the source of organizational competitive advantage depends on the unique resources and capabilities that a firm possesses (Steinthorsson, 2002) and not their positioning in the external environment or simply evaluating environmental opportunities and threats in conducting business. The resource-based View theory (RBV) has emerged as a key model of inquiry into the determinants of organizational performance. Since the early 1990s, numerous studies have examined RBV's assertion about the positive correlation between an organization's strategic intangible resources and performance (Crook, Ketchen, Combs, & Todd, 2008).

The RBV, a model that sees resources as key to superior organizational performance and approach to achieving competitive advantage emerged in 1980s and 1990s, after the publication of major works by Wernerfelt, 1984; Prahalad & Hamel, 1990; Barney, 1991. One of the basic assumptions of these supporters of the resource-based view hinges on the argument that organizations should look inside the company to find the resources that are sources of competitiveness instead of looking at competitive environment. The internal analysis provides important information about an organization's specific resources and capabilities that will focus on skills and abilities the organization's employees have; what resources owned by the organization; how successful the organization is at innovating products; the organization's financial position; how customers perceive the organization and the quality of its products or services. In the globalized and knowledge-based economy, telecommunication companies need to develop, manage and monitor their intangible resources to enhance their competitiveness (Cohen & Kaimenakis, 2007).

Every organization wants to create a situation where its own resource position directly or indirectly makes it more difficult for others to catch up. According to the resource-based view (RBV), assets, skills and capabilities create value that lead to a sustainable competitive advantage and superior financial value performance for the firm (Barney & Hesterley, 2006; Flatt & Kowalczyk, 2008; Grant, 2006; Rothaermel, 2012). It is rare when only some firms have it, when there are no substitutes and imperfectly imitable by other organizations (Barney & Hesterley, 2006; Flatt & Kowalczyk, 2008). Schilling (2013) views "a harmonized combination of multiple resources and skills that distinguish a firm in the marketplace" as core competence. According to Prahalad and Hamel, (1990), core competencies fulfil three criteria, namely: provision of potential access to a wide variety of markets, a significant contribution to the perceived customer benefits of the end product, and difficulty of imitation by competitors. If the organizational resources are exceptional or unique, they are called the organization's core competencies. The core competencies are the organization's major value-creating skills, capabilities and resources that determine the organization's competitive weapons

(Swart, 2006). A clear assessment of the organization's internal resources such as technical expertise, skilled workforce and experienced employees is necessary.

Barney (1991) identified VRIN framework that examines if resources are valuable, rare, costly to imitate and non-substitutable. The framework was later improved from VRIN to VRIO by trying to ascertain if a company is organized to exploit these resources (Barney & Hesterly, 2006). If a resource exhibits VRIN/VRIO attributes, the resource enables the firm to gain and sustain competitiveness. Barney and Hesterley (2006), state that a firm's resources and capabilities are valuable when they enable it to exploit external opportunities or neutralize external threats. Using valuable resources to exploit external opportunities or neutralize external threats will have the effect of increasing the firm's net revenues or decreasing its net cost (Barney & Hesterley, 2006). A firm must have resources and capabilities that are superior to those of its competitors. Resources in the Resource Based View are the tangible and intangible resources that a firm controls and uses to implement its strategies. RBV theory of strategic management shows that organizations can only gain competitive advantage if they focus on the development of their tangible and intangible resources as their value drivers. However, intangible assets such as know-how, brands, copyrights, patents and relationships with customers or suppliers, are key value drivers in today's business world (Marr, 2005).

Resource heterogeneity are resources that are very different in nature, functionality and difficult to understand. It implies that some firms may be more skilled in accomplishing a business activity than their competitors which provides a competitive advantage. Resource immobility refers to resources controlled by some firms which do not diffuse to other firms (Barney & Hesterley, 2006). It is a resource that is difficult to obtain by competitors because the cost of developing, acquiring or using that resource is too high. It is therefore, critical for organizations to identify and understand these organizational value drivers. Ray, Barney, and Muhanna, (2004), paid specific attention to the issue of sustainable competitive advantage measures and argue that process performance as a dependent variable is a more appropriate measure to test the resource-based logic than the overall performance of the firm. Furthermore, the authors argue that financial

performance may be understated especially when a firm's stakeholders are appropriating potential profits from the business prior to the firm's published results (Ray, Barney, & Muhanna, 2004). Finally, they argue that business process itself is the source of sustainable competitive advantage when it exploits resources with VRIO attributes (Barney, 2006).

2.2.2 Theory of Competitive Advantage

Porter (1990) identified the theory of the competitive advantage of nations which provides a sophisticated tool for analyzing competitiveness with all its implications. Porter's theory contributes to understanding the competitive advantage of nations in international trade and production. The theory was based on the conception that an organization's major objective was to develop sustainable competitive advantage over competitive rivals in the industry market environment (Ologbo, Oluwatosin & Kwakyeisa 2012). One of the main underpinnings of competitive advantage theory considers factor conditions being the inputs which affect competition in any industry as comprising a number of broad categories including human resources (Porter, 1990): the quantity, skills and cost of personnel; physical resources: the abundance, quality, accessibility, and cost of the nation's land, water, mineral, or timber deposits, hydroelectric power sources, fishing grounds and other physical traits. Knowledge resources: the accumulated scientific, technical, and market knowledge in a nation in the sphere of goods and services, capital resources: the stock of capital available in a country and the cost of its deployment; infrastructure resources: the characteristics (including type, quality) and the cost of using the infrastructure available (Porter, 1990).

While analyzing these factors as a prerequisite for building competitive advantage, it is relatively unimportant to emphasize just their quantity or involvement in a particular company. What determines their influence on competitiveness is the degree of efficiency and effectiveness of the way they are deployed within a company. This in turn affects directly their potential for influencing the establishment of competitive advantage. In

Porter's theory the basic unit of analysis for understanding competition is the industry, the arena in which the competitive advantage is won or lost (Porter, 1990).

Generally, the theoretical literature dwelt more on the relationship between resources and competitive advantage. However, the empirical studies vary in support for RBV, which in itself may be a consequence of methodological choices related to different variables and the relevant operationalization of such chosen variables (Dongmei, Nigel, & Donald, 2014; Newbert, 2007; Armstrong & Shimizu, 2007). Most existing statistical tests of the theory have focused on identifying and operationalizing the predictor variable of resources and capabilities with less attention on intangible human capital, intangible structural capital and intangible relational capital. Research has also shown that the dependent variable, competitiveness enhancement, has rarely been explored. Therefore, this study aims to address these gaps and establish practical and effective measurement of competitiveness enhancement through empirical testing.

Despite the popularity of Barney's RBV and Porter's competitive advantage theories, important intangible resource variables that could have been used to make sufficient, correct and informed decisions on the role of intangible resources on competitiveness enhancement of telecommunication companies in Rwanda were left out. This study, therefore, undertakes an investigation on measures of competitiveness with special focus on customer attraction and retention, cost reduction, market share and innovative products. In doing so, the study contributes to the empirical research on the RBV and competitive advantage theories.

2.3 Conceptual Framework

The concepts underlying the role of intangible resources on the competitiveness enhancement in this study were subdivided into components showing the independent and dependent variables as well as their sub-variables as depicted in figure 2.1. Moderating variable was introduced since it was not known whether the role of intangible resource will have direct significant relationship with competitiveness

enhancement. The moderating variable might be used to explain why the independent variable affects the dependent variable if found to have any effect between the independent and dependent variables.

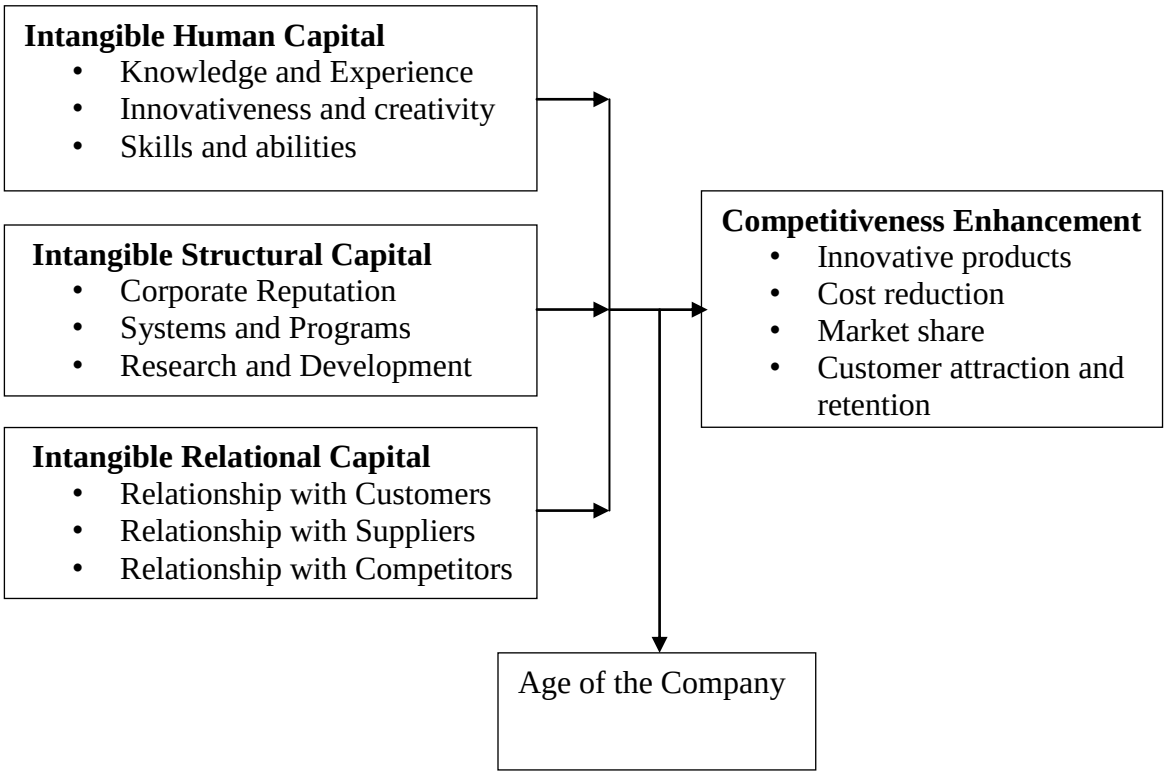

Figure 2. 1: Conceptual Framework

2.4 Review of Literature on Variables

The future success and value of organizations depends on intangible resources such as customer relationships, brand image, know-how, or intelligence data (Marr, 2013). Intangible resources are non-physical sources of value such as knowledge and skills of employees, brand image, reputation, and relationships with suppliers, organizational culture, best practices or patents (Marr, 2006). An organization's success hinges on its ability to identify and leverage these intangible resources. Often, different terms are used

to describe the concept of intangible resources. It is also referred to as intangible assets, intellectual capital or knowledge assets (Marr, 2006). The first step in the quest to measure and manage intangible resources is to come up with a classification. Different classifications and definitions exist for intangible resources, but, what is important is that a classification is comprehensive and does not leave out important forms of intangible resources. Intangible resource is in many respects based on the classification developed by Marr (2013) Intangible resources can be split into three component classes: these are human resources, structural resources, and relational resources.

Marr (2013) observed that organizations are generally good at measuring and managing financial performance, but, the problem is today's financial performance is a lagging indicator. Marr therefore, classified intangible resources as a wide spectrum of value drivers that are vital to the success of organizations as seen in table 2.1:

Table 2. 1: Classification of Intangible Resources

INTANGIBLE RESOURCES		
HUMAN CAPITAL	**RELATIONAL CAPITAL**	**STRUCTURAL CAPITAL**
• Knowledge and knowhow	• Formal relationships	• Brand names
• Skills	• Informal relationships	• Data and information
• Work-related experience	• Social networks	• Patents
• Work-related competencies	• Customer engagement	• Copyrights
	• Partnerships	• Design rights
• Emotional intelligence	• Brand image	• Trade secrets
• Entrepreneurial spirit	• Corporate reputation	• Management philosophy
• Flexibility and changeability	• Customer loyalty	• Corporate culture
	• Licensing agreements	• Management processes
• Employee loyalty	• Distribution agreements	• Corporate values
• Employee satisfaction	• Joint ventures	• Information infrastructure
• Employee engagement		

Future Value Drivers (Marr, 2013)

The key objective of this classification is to facilitate the identification of the intangible resources within organizations (Marr, 2006, Marr, 2013). It is evident that the different models to measure intangible resources put forward different ways of classification and are also differentiated from each other in the terminology used. Despite this, there is certain consensus regarding three core components or dimensions: Human Capital, Structural Capital and Relational Capital (Marr & Roos, 2005; Brennan & Cornell, 2000; Petty and Guthrie, 2000; Roos et al, 2001; Bontis, 2002; Ordóñez de Pablos, 2002; Bueno, 2003; Kauffman & Schneider, 2004). The three categories were subdivided as human capital, or the knowledge, innovation and creativity, skills and abilities residing with and utilized by individuals (Perrini & Vurro, 2010; Becker, 1993; Pfeffer, 1994); organizational capital, or the institutional knowledge (Perrini & Vurro, 2010; Teece, 1987), codified experience (Perrini & Vurro, 2010; Nelson & Winter, 1982), shared values, perceptions and feelings that differentiate firms from one another and reputation, branding and image such that its own values and visions are the ones considered acceptable and legitimate by stakeholder; relational capital, or the quality and quantity of relationships in which a firm is embedded (Perrini & Vurro, 2010; Adler & Kwon, 2002).

By sub-dividing human, structural and relational capital, Cabrita & Bontis (2008) came up with learning and education, experience and expertise, innovation and creation for human capital. They subdivided systems and programs, research and development and intellectual property right for structural capital. For Relational Capital, they came up with strategic alliances, licensing and agreements, relationship with partner, supplier and customers, Knowledge about partners, customer and suppliers. This study adopted some of the sub-divided elements from Perrini & Vurro (2010) and Cabrita & Bontis (2008) for the conceptual framework. Table 2.1 shows that firms access various intangible resources as they try to implement a market strategy. However, the 'resource-based view' suggests that not all intangible resources can contribute equally to a firm's success, and that capabilities are more important contributors to a firm's success (Ichrakie, 2013; Barney, 1991; Newbert, 2007; Teece, 2007). This study determines the

role of intangible resources based on Marr's classifications with some modifications and adjustments within a single industry, the telecommunication companies in Rwanda.

2.4.1 Intangible Human Capital

Human capital is the value that the employees of a business provide through the application of skills, know-how and expertise (Maddocks & Meaney 2002). Intangible human capital is an organization's combined human capability for solving business problems and exploiting its competitive advantage. Intangible human capital is inherent in people and cannot be owned by an organization, intangible human capital can leave an organization when people leave. While management accounting is often concerned with questions of how to model human beings as a capital asset, present theories attempt to break down human capital into one or more components for analysis, usually called "intangible resources" (Paolo, 2002; Sveiby, 1997). Intangible human capital development becomes a part of an overall effort to achieve cost-effective and firm performance. Hence, firms need to understand intangible human capital that would enhance employee satisfaction and improve performance (Marimuthu, 2013).

Human capital lays the micro foundation for a firm to achieve competitiveness (Coff & Kryscynski, 2011; Ployhart & Moliterno, 2011) such as financial, product and service innovations (Subramaniam, Snell & Youndt, 2004), and patent output (Rothaermel & Hess, 2007). Many scholars have focused on human capital research and accumulated a considerable amount of results. Many corporate executives are concerned with measuring the concepts of human capital, (Han, Shian and Yeh-Yun, 2008). The Intellectual Capital Report on human capital published by the Skandia Group in 1994, was followed by empirical studies of human capital by Bontis and Fitzenz (2002). These numerous empirical studies describe the characteristics of human capital as education, experience, skills and the qualities of management that exert a positive effect on organizational performance (Han et al., 2008; Huselid, 1995).

Human capital is a collection of human intangible resources. It is regarded as the fundamental element of intellectual capital. It is the core resource and competence for obtaining competitive advantage in organizations (Han et al, 2008; Snell & Lepak, 1999). It is basically all the knowledge, talents, skills, abilities, experience, intelligence, training, judgment, and wisdom possessed individually and collectively by individuals in a population. These resources are the total capacity of the people that represents a form of wealth which can be directed to accomplish the goals of the organization. This resource comprises people's individual and collective learning and knowledge, skills and expertise, creativity and innovation, competencies and capabilities, that is, people's continuous capacity for providing customer-valued outcomes. Collis and Montgomery (1995) pointed that the importance of human capital depends on the degree to which it contributes to the creation of a competitive advantage. From an economic point of view, transaction-costs indicate that firm gains a competitive advantage when they own firm-specific resources that cannot be copied by rivals.

Following the work of Snell and Lepak (1999), a firm's human capital has two dimensions which are value and uniqueness. An organization indicates that resources are valuable when they allow improving effectiveness, capitalizing on opportunities and neutralizing threats. In the context of effective management, value focuses on increasing profits in comparison with the associated costs. In this sense, firm's human capital can add value if it contributes to lower costs and provide increased performances. The importance of organizational human capital with regard to firm performance was further supported by Hsu et al. (2007). In addition, evidence shows that the relevance of human capital to firm performance has also become prevalent among the technology-based new ventures, and it seems that the use of human capital in small technology based new ventures tends to have a great impact on the firms' success (Marimuthu, Arokiasamy & Ismail 2009, Shrader & Siegel, 2007). Organizations' success depends on employees' knowledge, experience, creative activity and qualification and emphasis is placed on continuous learning, research and development (Urbancova, 2013).

Michael et al. (2001) established a curvilinear relationship between human capital and firm performance. Liu (2014) after studying the United States Pharmaceutical Industry affirms that human capital has received much attention because human capital lays the micro-foundation for a firm to achieve competitive advantage (Barney & Wright, 1998; Coff & Kryscynski, 2011; Ployhart & Moliterno, 2011). Prior research has shown that human capital is critical to firm performance, such as financial performance (Hitt, Bierman, Shimizu, & Kochhar, 2001; Reed, Lubatkin, & Srinivasan, 2006), product and service innovations (Subramaniam & Youndt, 2005). Seleim, Ashour, and Bontis (2007), conducted a survey on the relationship between human capital and organizational performance of software companies and found that the human capital indicators had a positive association on organizational performances. These indicators such as training attended and team-work practices, tended to result in superstar performers where more productivity could be translated to organizational performances.

In a study by Bontis and Fitzenz (2002), a total of 25 firms in the financial services companies were selected. The study measured human capital effectiveness with four metrics: revenue factor, expense factor, income factor and human capital return on investment. The fundamental aspects of any organization are to generate more revenue and income per employee. They established that human capital has a direct impact on higher financial results per employee and the development of human capital is positively influenced by the educational level of employees and their overall satisfaction. Norma, (2006) examined the relationship between intellectual capital and new venture performance in high tech ventures of United States of America. The findings of this study suggested that human capital is the most critical component of intellectual capital when predicting operating performance.

2.4.1.1 Knowledge and Experience

Human capital is absolutely important for an organization's success (Crook et al., 2011). Intangible human capital increases through knowledge and experience (Sullivan & Sheffrin, 2003). Knowledge is considered to be the most complex of an organization’s

intangible resources which ensures the competitiveness of the enterprise. To develop organizational competitiveness, it is important that organizations truly leverage on the workforce as a competitive weapon. To accomplish this undertaking, organizations will need to invest resources to ensure that employees have the knowledge and experience they need to work effectively in a rapidly changing and complex environment. It is necessary to note that organizations have embraced the notion of human capital as a good competitive advantage that will enhance higher performance and Green (1993) declares that the workforce's lack of knowledge is related to low competitiveness.

Human capital plays an important role in the strategic formulation on how to create competitiveness through knowledge and experience of employees. Longo et al. (2009) emphasized that human capital is the main source of creativity and innovation. Human capital is the organization's workforce's skill sets, depth of expertise, and breadth of experience (Taie, 2014; Ahangar 2011). Human resources are the living and thinking part of intellectual capital resources (Mahmood; Baratali & Somayeh 2012).

2.4.1.2 Innovation and Creativity

Creativity and innovation are the implementation of a new or significantly improved product (goods or services), process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations, (OECD, 2005). At the micro level, organizations that create and innovate tend to be cost effective and produce better quality products and services more efficiently. This is likely to increase demand for their products and services. At the aggregate level, organizations that create and innovate will become more competitive and exhibit faster growth than those which do not. This may drive out inefficient players from the market, create room for more competitive firms and contribute to overall productivity gains in the industry. Hall (2011) empirically established this positive link for a set of 23 countries by comparing aggregate product and process innovation rates, with aggregate productivity as measured by GDP per hours worked. His findings are robust to sophisticated

econometric estimations. An interesting dimension of his finding is the positive link between size, particularly large firms, innovation and productivity/profitability.

The human factor is an indispensable element in the process of innovation. Based on analyses of external and internal conditions, people generate ideas that might help organizations gain competitiveness and thus distinguish it, at least for a certain period of time, from its competitors. According to Martín-deCastro, Delgado-Verde, Navas-López & Cruz-González (2013), the innovation capability of an organization depends closely on its intellectual and/or organizational knowledge assets and on its ability to employ these assets (Urbancova, 2013).

Human capital also encompasses how effectively an organization uses its people resources as measured by creativity and innovation. New, innovative, and strategic initiatives cannot be effectively conceptualized, developed, and implemented in the absence of diverse, information-rich, insightful, and knowledge based inputs from a wide cross-section of organization members. To be creative and innovative requires more intimate knowledge of the ground realities of the market place, internal resources and working of the organization (Rastogi, 2000).

Innovation is seen as a critical drive of organizational performance. In this respect, education has been pointed out as a key aspect for the economic success of every organization (Urbancova 2013, Romero & Martinez-Roman, 2012). Since knowledge is a fundamental factor in the innovation and assimilation of new technologies (Romero & Martinez-Roman, 2012), individual training plays an important role in contributing to the internal learning and the generation of new ideas within the business (Galende & De la Fuente, 2003).

Innovative activity of organizations significantly influences competitiveness, which is based on inimitable skills and abilities. According to Urbancova, (2013), achieving a higher competitiveness by an organization means innovating and producing less costly products of better quality compared to those manufactured by competitors. If an

organization is not capable of introducing innovative products and services on an on-going basis, there is a risk that it will lag behind and the initiative will be taken over by the competitors.

Human capital in organizations tends to create a significant contribution on organizational competencies and this in turn becomes a great boost for further enhancing innovativeness. The current literature to a large extent supports the fact that an organization's performance is positively impacted by the presence of human capital (Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009). A causal model using a set of cross-sectional data developed by Selvarajan et al. (2007) indicates that human capital enhancement paves way for greater innovativeness and this in turn offers positive implications on firm performance. An organization's performance and human capital could also be viewed in the context of high performance work systems (Hsu et al., 2007). It is argued that the formation and emphasis on the human capital enhancement will result in high performance or rather high performance work systems.

Marimuthu, Arokiasamy and Ismail (2009), propose that firms can be assessed using financial and non-financial performance. The financial performance includes employee productivity, defect rates and market share and non-financial performance that include workflow improvement, innovation, customer satisfaction and skills development (Kaplan & Norton, 2004). Human capital development and enhancement makes organizations to be more creative and innovative for long term survival in their international and global markets (Grossman, 2000). Patricia Hewitt, former UK's Secretary of State for Trade and Industry, added in a 2004 report that increasingly it is the intangible factors that underpin innovation and the best-performing businesses, (DTI, 2004; Marr 2006).

2.4.1.3 Skills and Abilities

The skills and abilities presented by the individuals in the organizations can lead to competitiveness of those organizations. When a company has employees with the

conceptual skills in related departments, they are in a position to transform the organization to better performance levels. This is indicated by employees being experts in their respective areas and professionals in their careers (Curado & Bontis, 2006). This sub-variable of human capital indicates the resourcefulness the employees bring to the organization. This resourcefulness is what steers the organizations to greater heights hence improved business performance and competitiveness (Khalique et al, 2011). Based on the foregoing arguments, it can be inferred that intangible human capital indicators can enhance a firm's competitiveness directly or indirectly.

2.4.2 Intangible Structural Capital

Structural capital can be owned and thereby traded (Bontis, 2000). It represents the codified knowledge bases that do not exist within the minds of employees (Bontis & Fitzenz, 2002). It includes processes, systems, structures, brands, intellectual property, vision, mission, infrastructure and other intangibles (Roos et. al., 2001, Bharathi, 2010). The structural capital of an organization represents the capabilities that meet its internal and external challenges (Cabrital & Vaz, 2006). Ordóñez de Pablos, (2004), sub-divides structural capital into organizational and technological capitals. Organizational capital includes all aspects that are related with the organization of the company and its decision-making process, such as organizational culture, structural design, coordination mechanisms, organizational routines, planning and control systems, infrastructure, information systems, and many more. Technological capital, on the other hand, includes all technical and industrial knowledge, like results from research and development and from process engineering. Baron and Armstrong, (2007), view structural capital as embedded or institutionalized knowledge that may be retained with the help of information technology on readily accessible and easily extended databases. It can include explicit knowledge that has been recorded on a database or in manuals and standard operating procedures, or tacit knowledge that has been captured, exchanged and codified. According to Evenson and Westphal (1995), organizational capital is the knowledge used to combine human skills and physical capital into systems for producing and delivering want-satisfying products.

Structural capital is the supportive non-physical infrastructure, processes and databases of the organization that enable human capital to function (Maddocks & Meaney, 2002). Structural capital includes processes, patents, trademarks as well as the organization's image, information system, proprietary software and databases. Because of its diverse components, structural capital can be classified further into organization, process and innovation capital. Organizational capital includes the organization philosophy and systems for leveraging the organization's capability. Process capital includes the techniques, procedures and programs that implement and enhance the delivery of goods and services. Innovation capital includes intellectual property such as patents, trademarks and copyrights. Structural capital can be considered to be the glue for an organization. It represents all the non-human storehouses of knowledge including databases, organizational charts, process manual, strategies, routines and policies (Bontis et al, 2000; Wu & Tsai, 2005; Shaari et al., 2010; Khalique, et al., 2011). Roos et al, (1998), stated that structural capital is "what remains in the company when employees go home for the night". Structural capital provides the environment that support individuals to invest their human capital to create and leverage to enhance the business performance and competitiveness.

2.4.2.1 Systems and Programs

Edvinsson & Malone (1997) opine that systems and programs are the institutionalized knowledge possessed by an organization and which is stored in database manuals, it is often the knowledge owned by the organizations. It can be in form of management philosophy, corporate culture, management processes, corporate values and information infrastructure. These calls for the organizations to have succession training programs for each and every major position, the company's culture and atmospheres should be supportive and comfortable. Companies should have in place an elaborate and well developed reward systems related to performance. The companies' systems and programs also needs to support their employees by constantly upgrading their skills and education whenever it is necessary and this yield better performance to organizations and improves organization's competitiveness (Youndt, 2000). An exploratory study

done in Italy by Ciasullo and Troisi (2013) discovered that ethics and value systems play a significant role in devising sustainable corporate strategy. Competitive strategies, innovation, quality and responsibility are reflected in management procedures and the supply network system involving partners in sustainable innovation processes.

2.4.2.2 Research and Development

The expansion of technology based communication and industry sectors that heavily depend on human innovation and capabilities such as research and development are examples of intangible structural capital (Bontis & Dzinkwoski, 2000). The intellectual capital represents a subset of such assets not recognized in financial statements. Disclosure of intellectual capital becomes important to signal investors about affairs of an organization in an intense globally competitive economic environment. The emphasis is more on the knowledge of intellectual capital that the employees bring to the organizations. One such area is research and development done in formulation of cost effectiveness (Thompson & Randall, 2000; Abeysekera & Guthrie, 2004b).

The telecommunication industry is research intensive and highly innovative and, therefore, it relies heavily on research and development of their products. In the United Kingdom, for example, Prime Minister Tony Blair wrote in a Government White Paper that intangible resources such as creativity and inventiveness are the greatest source of economic success but that too many firms have failed to put enough emphasis on R&D and developing skills, (DTI, 2003, Marr 2006).

2.4.2.3 Corporate Reputation

Corporate reputations are the actions which lead to a favourable social perception. This includes: codes of organizational behaviour, corporate governance code and social action. It is clearly not possible to buy or to sell reputation except insofar as it may be construed to reside in a registered brand name. Reputation, which represents the knowledge and emotions held by individuals about a product range, can be a major

factor in achieving competitiveness through differentiation; it also contributes to a defendable position because of the time which can be involved in matching a reputation which is strong in both fame and esteem (Hall, 2006).

Corporate reputation of a firm should be considered as an asset and wealth that gives that firm competitiveness because the firm will be regarded as reliable, credible, trustworthy and responsible for employees, customers, shareholders and financial markets (Awang & Jusoff 2009). Although reputation is an intangible concept, research universally shows that a good reputation demonstrably increases corporate worth and provides sustained competitive advantage. A business can achieve its objectives more easily if it has a good reputation among its stakeholders, especially key stakeholders, such as its largest customers, opinion leaders in the business community, financiers, suppliers as well as current and potential employees (Iwu-Egwuonwu, 2011). Corporate reputation is one of the strongest forms of intangible resources that help in building and sustaining an organization's competitive position.

2.4.3 Intangible Relational Capital

Relational capital is a source of capital that is difficult for competitors to capture and replicate. It is highly important as performance is increasingly being driven by it. Competitiveness drives requires on-going improvement in the quality of corporate management and in the sophistication of company strategies and operating practices (Ogundipe, 2012). Relational capital is the organizational association with internal and external stakeholders of the firm, which includes customers, employees, suppliers, industry associations, shareholders and strategic alliance partners (Kashyak, 2014; Ogundipe 2012; Ordonez de Pablos, 2003). It is the value of the relationships between the firm and its environment. The main indicators are reputation, strategic alliance, customers, suppliers and connection to other agents (Kashyak, 2014; Eduardo et al., 2004).

Bueno (2002) attempted to divide relational capital into business capital and social capital and further subdivided social capital into social integration capital and social innovation capital. The main theme of relational capital is the level of mutual trust, respect and friendship that arises out of close interactions between internal and external partners (Kale, Singh & Perlmutter, 2000). Relational capital includes company image, customer loyalty, customer satisfaction, and interaction with suppliers by employees, negotiating capacity, distribution channels, supplier channels, licensing agreements, and franchising agreements (Starovic & Marr, 2003). An enterprise's relational capital is represented by relationships among employees, between employees and customers, between employees and suppliers (Tomasz & Kijek, 2008).

The value of relational capital to the firm is directly related to the length of the relationship with third parties (Ordonez de Pablos, 2004). Relational capital has been defined as an intangible asset that is based on developing, maintaining and nurturing high quality relationship with any organization, individual or group that influences business performance or impacts the business including customers, suppliers, employees, government, partners, competitors and any other stakeholders (Ogundipe, 2012; Adecco Report 2007; Welbourne & Manuela, 2008). This relationship includes trust which, according to Morgan and Hunt (1994), exists when one party has confidence in an exchange partner's reliability and integrity. Business Networking, cluster initiative and collaborative and competitive advantage initiatives are all entrenched on trust in order to attract and retain customers.

Hussain (2014) investigated 49 banks that are listed with the Central Bank of Pakistan and revealed that there is correlation between various sub-dimensions of intellectual capital, that is, intangible resources and three dimensions of business performance: "productivity", "profitability" and "market value". According to the correlation analysis of "business performance" and sub-dimensions of intellectual capital, there is a high correlation between business performance and "relational capital (Hussain, 2014). Abdulai, Kwon and Moon (2012) carried out an empirical study on software firms in West Africa on the relationship between human capital, structural capital and relational

capital and the competitive capabilities of software firms, hence their influence on firm performance. The investigation by Abdulai, Kwon and Moon (2012), demonstrated that relational capital has positive significant relationship with the external competitive capability of software firms.

Firms are embedded in inter-firm relationships with networks of suppliers, buyers and even competitors that help them to gain competitive advantages in the sale of its products and services. Relational Capital refers to the value of the organization and the relationships which it maintains with the main agents connected with its basic business process. An organization with strong relational capital has a wide network of relationships which are managed well and consistently nurtured. In addition, this organization has healthy ties with all of its key stakeholders as opposed to focusing on just one stakeholder group. It is the strength of all the relationships that build a long-term competitiveness that is difficult for competitors to replicate, (Adecco, 2007).

2.4.3.1 Relationships with External Customers

Relationships with different segments of external customers who demand or could demand the goods or services that make up the basic business process of the entity. It entails such things as: Relevant external customer base, External customer loyalty, External customer satisfaction, External relationship processes and Distribution network. Customer relation capital refers to relationships to former, current and potential customers (Adecco Report, 2007). Building customer relationships increases value both for customers and the organization that it is such a compelling strategy. When executed properly, the focus on building relationships and brand loyalty is a win-win for customers and the organization alike.

Customer knowledge and the capability for differentiated customer treatment significantly improve many organizations' capabilities to retain customers. Knowledge of customers presents new opportunities for making the right offer or delivering the right service to the right person at the right time. Analysis of customer profiles, especially

using today's analytical tools, can provide powerful insight about needs and how to best serve them. Organization's customers are human, and people appreciate being recognized, listened to and understood. Relationships tend to develop when the organizations interact with them (Cleveland, 2014). Efficiently dealing with all the customers and providing them what they actually need increases customer satisfaction and increases the chance of getting more business that ultimately enhances turnover and profit. If the customers are satisfied they will always be loyal to the organization and will remain in business forever resulting in increasing customer base and eventually enhancing net growth of business. Organizations should realize that if customers are not given what they need, they will not be satisfied and they can easily move to a competitor who is ready to offer the products and services that will uniquely make them satisfied with great value added.

2.4.3.2 Relationships with Suppliers

Organizations are constantly faced with increasing competitive challenges and opportunities. In order to become or remain competitive, they have to learn and adapt to improved performance in various ways which includes relationship with different suppliers of resources necessary for the basic business process of the organization. The main variables are: Formalization of supplier relationships, Technological support, Personalization of products and services and Suppliers' response capacity. The external stakeholders' aspects of relational capital are the relationship with suppliers and customers. Fiala, and Borůvková (2012), refer to this as "backward" and "forward" relationship; backward as suppliers feed the business process and forward relates to customers, the end-users of the business value added process. The backward relationship with suppliers, of which the supply chain relational capital is an aspect of socialization of buyer-supplier relationship that may be assessed by the degree of mutual respect, trust and interactions that exist between organization and its suppliers (Cousins, Handfield, Lawson & Petersen, 2006).

While it is imperative to note that the quality of relationship between the organization and suppliers can drive competitiveness, it is also important to know that many supply chain problems begin and end with the organization-supplier relationship. The extent to which critical issues, wastes and cost drivers can be identified and mutually addressed depends heavily on the strength of the organization-supplier relationship (Gordon, 2013). Using suppliers as a source of new technology in areas that complement organizational competencies is a way to derive value from suppliers and become more competitive. Working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions.

2.4.3.3 Relationships with Competitors

Adecco Report (2007), views this as existing relationships with other competitors in the same industry as well as in related sectors. This includes: knowledge of competitors and relationship processes with competitors. The organizations in the same industry may be competitors most of the time, but collaborators at some point and customers sometimes. Good relationships with competitors can help to grow the business in new areas, both geographically and in market segments. It makes sense to be close to others and share ideas and solutions since they are within the industry and have similar experiences. It is important for companies to share knowledge with their competitors. Working and sharing ideas together helps to be innovative and raises the level of professionalism. Relationships with competitors help to best serve the customers. Networking with other experienced industry professionals through supervisor trainings, educational seminars and regular meetings in industry related subjects ultimately strengthens organizations.

Rose (2011), states that the value of information to be gleaned from friendly competitors far outweighs the risks of losing customers. Relationships based on cooperation differ from relationships based on competition. Cooperative relationships are built upon a mutual interest to support each other and interact without restraints. Relationships between cooperating firms are usually visible even to outsiders. These relationships are built on a distribution of activities and resources among actors embedded in the same

business network. Competitive firms on the other hand are forced to interact with each other. Competing relationships are conflicting, as the benefits for the involved actors usually cannot be fulfilled simultaneously. Competitors often try to avoid direct interaction, whereas buyers and sellers try to maintain the interaction. Competitive relationships are more informal and invisible, in that informational and social exchanges are more common than regular economic exchange.

The strategic dilemma faced by managers is to what extent they should compete with competitors and/or cooperate with competitors. It has commonly been stated that the driving force behind creating effectiveness is competition. On the other hand, Bengtsson and Kock (2000); assert that there is a demand for cooperation, as the actors must create long-term relationships based on a mutual interest and adaptations in order to know what the interacting partner is capable of doing. In business networks, both cooperation and competition are needed in relationships between competitors. However, the two types of interactions create progress in slightly different ways (Bengtsson & Kock 2000). By competition, firms are forced to undertake measures not always demanded by the end customers for gaining a stronger position relative to their competitors. Competition thereby gives rise to pressure to develop new products and markets. The benefits with cooperation are also related to development, but, the reason for cooperation is rather the access to resources than a driving-force or pressure to develop. Bengtsson and Kock (2003) affirm that by cooperation a company can gain time, competence, market knowledge, reputation, and other resources of importance for its business. The creation of new products can also be more cost-efficient as the involved actors contribute with their core competences. This means that actors can stay within their core business and still offer a wider range of problem solutions to their buyers or end customers than a single company can.

2.4.4 Competitiveness Enhancement

Empirical research shows that resource management practices affect a firm's performance and competitiveness, (Carmeli & Tishler, 2004; Newbert, 2007). There is

no industry, organization or market without competition. In every market, there is a battle to succeed. Winners are generally those who are competitive. A competitive business is one that performs better than the competition, ideally in a sustainable way rather than just over the short-term. Enhanced competitiveness enable a business to outperform the competition. Achieving competitive advantage, means being able to add more value for customers than rivals and attaining a position of relative advantage (Riley, 2012). Companies in the same market are vying for the same customers, technology and market. The complacent business that has enjoyed advantages in the past soon finds that fast-moving competitors overtake it.

Evidence that a business or brand that is increasing its market share, significant access to, or control of distribution channels, brand reputation, unique selling point, return on investment, higher sales revenues or has a significantly higher net profit margin than its competitors would suggest that the business is competitive, (Riley, 2012). Other measures of competitiveness, which link directly to the other functional areas of the business include: better quality and reliability on product features and performance, better customer service especially, after-sales support, customer information, handling of problems and complaints, higher than average customer loyalty, better than average efficiency, that is, being able to produce at a lower unit cost than most other competitors, either through better productivity or economies of scale, a more motivated and loyal workforce which in turn should benefit productivity, efficiency, quality, customer service, faster decision making, empowering employees involved in customer-facing roles to communicate and handle customer issues (Riley, 2012).

Competitiveness is mainly used to differentiate company performance in the profit-making sector. It is a concept that means much more than the financial performance and shareholder value which are both a measurement at a moment in time, usually short-term. Global competitive environment requires, speed, dynamic capabilities, fast responsiveness and flexibility. Objectives of organizations have shifted from profit maximization to value maximization. Hence the value of the firm generated through the intangible assets carries more importance than financial profit. Competitiveness is built

slowly over time from a number of different aspects: one of the most important is organizational image and integrity (Freeman, 2001).

The factors that may lead to the attainment of competitiveness are; sustained revenue, innovation and new product development, first to market, brand and reputation, advertising, media coverage, customer needs, customer service and satisfaction, employee relations, acquisitions and mergers, regulatory issues, political correctness, information technology services that affect customer service, (Freeman, 2001). Competitiveness variables for this study include: innovative products, cost reduction, market share, new customer attraction and retention.

2.4.4.1 Customer Attraction and Retention

The average business loses around 20 per cent of its customers annually simply by failing to attend to customer relationships. In some industries this leakage is as high as 80 per cent. According to Lynn (2000), some authors adopted the term customer capital because building relationship with customers is the top priority of every firm. Market orientation concept and direct interaction with customers are the bedrock of relational capital as far as customers are concerned. Creation of competency in response to market changes is a function of organization-wide generation and dissemination of market intelligence pertaining to the current and future needs of customers. It involves market sensitivity that demands measurement of factors that drive customers' satisfaction and loyalty (Ogundipe, 2012; Kijek & Kijek, 2007) and lead to new customer attraction and retention.

2.4.4.2 Cost Reduction

Relational capital covers all the intangible assets generated by developing, maintaining, and nurturing high quality relationships with the external partners that could enhance the firm's performance (Carson, et.al. 2004). Kijek and Kijek, (2007) identified two-fold impacts of relational capital on firms' performance namely: cost reduction and increased

market value. They opined that knowledge embedded in relationship among employees, customers and suppliers may lead to cost reduction. This may be achieved through process innovations, increased outputs that reduce variation.

Likewise, Young and Snell (2004) observed that the higher the level of relational capital resulting in better planning, problem solving and troubleshooting, the more likely the increase in production and service delivery efficiencies. Consequently, organizational costs would be reduced. Also, relational capital increases organization's information processing capacity thereby, reducing organizational costs. This is based on the trust in relationships among employees, with suppliers and customers that facilitate both efficient exchange of information by reducing the need for time consuming and costly monitoring and the effective exchange of information thereby removing the perceived need to hide sensitive information (De Declerq & Sapienza, 2006). Other studies assume that answering the expectations emerging from firms' stakeholder networks lowers transaction costs, improves trust, legitimacy and sustains the ability of firms to become competitive (Barnett, 2007).

2.4.4.3 Market Share

Gates and Langevin (2010) argued that relational capital covers the dealings of an organization with its external environment. Relational capital does not only integrate the knowledge about relationships with the organization's external partners but also stabilizes the environment and makes it accessible to the firm (Gates & Langevin, 2010; Mouritsen, 2009).

As regards the increase in market value, Maaloul and Seghai (2010) observed that relational capital may affect customer's satisfaction by increasing value that is offered at the market. It is thus noteworthy that strong relational capital is instrumental in enhancing customer benefits by helping to increase quality and flexibility, creating value for the customers through production and service delivery process innovations. Furthermore, (Kijek, 2007) explained that the networks with employees, customers and

suppliers should be able to better identify as well as satisfy customer needs; this automatically promotes the turnover of organizations.

2.4.4.4 Innovative Products

The goal of innovation strategy is to leapfrog other market players by the introduction of completely new or notably better products or services. This strategy is typical of technology start-up companies which often intend to "disrupt" the existing marketplace, make obsolete the current market entries with a breakthrough product offering. A review of various industrialized countries such as Netherlands, Germany, France, Norway, Sweden shows the elasticity of innovation with respect to profitability, (Van-Leeuwen & Klomp, 2006; Polder et al., 2009; Mairesse & Robin, 2010; Janz et al.,2003). Crespi, (2011) discovered that firms which innovated among a set of six Latin American countries investigated had higher labor productivity compared to non-innovating firms.

2.5 Empirical Literature

Kumlu (2014) studied the effect of intangible resources and competitive strategies on the export performance of small and medium sized enterprises in Turkey within the framework of the resource-based view. His findings revealed that intangible resources contribute to export performance than competitive export strategies. The constructs of his intangible resources include Export Customer Orientation (ECO), Ability to Monitor Competitors (AMC), Being a Member of Business group or alliance (BMB). Kumlu's study on intangible resources did not include human, structural and relational capital. His study did not discover the effects of these intangible resources on competitiveness which this present study sought to discover.

Ichrakie (2013) examined the impact of intangible resources on the establishment of sustainable competitive advantage within the context of the Job Network industry in Australia. His study focused on the significant contribution of capabilities and competencies on Job Network providers' success in comparison to intangible resources

classified as assets within the context of the ‘resource-based view’ and its core assumptions. 200 Chief Executive Officers of Job Network providers operating in Australia were the respondents. The results of this study report that, if taken in the context of a provider’s broader intangible resources pool, some intangible resources in the form of assets, but not all, might possess the characteristics of rareness, inimitability, valuable and non-substitutable (VRIN) and therefore could create resource positional barriers. However, the study of intangible resources by Ichrakie did not lay emphasis on human, structural and relational capital and their effects on competitiveness which were addressed by this study.

Raduan, Jeka, Haslinda and Alimin (2012), empirically tested the relationship between organizational resources, capabilities, systems and competitive advantage from the perspective of "value and quality" using 127 respondents from the manufacturing industry in Malaysia. The overall findings of their study indicated linear, significant and positive effects of organizational resources, capabilities and systems collectively on competitive advantage, providing support and corroboration to the resource-based view (RBV). Their studies, however, did not include the effect of intangible relational capital on competitiveness. Their study did not see systems as one of the sub-variables of intangible structural capital, but, as a stand-alone variable. This current study sought to address these identified deficiencies.

Dongmei, Nigel & Donald (2014) measured the effects of process performance on sustainable competitive advantage in Chinese Clothing Industry using 209 valid responses from participants in the Chinese clothing companies. The results suggest that process performance is an appropriate and effective method of measuring in terms of good construct validity and of consistency with the RBV expectations. The deficiency in their study is that they only focused on process which is a sub-variable of structural capital, but, there is need to measure the effects of intangible human, structural and relational resources on competitiveness enhancement as this present study suggests.

An empirical study carried out by Abdulai, Kwon and Moon in 2012 investigated factors instrumental to the success of software industries in India, Ireland and Israel in relation to the performance of 83 software firms in West Africa. This research focused on the influence of top management commitment and transformational leadership on intellectual capital and its relationship with firms' performance. The result of their investigation showed a significant relationship between the elements of intellectual capital and competitive capabilities of firms and between competitive capabilities and firm performance. Although, the elements of intellectual capital in this study were human, structural and relational, their relationship was not studied in East Africa and particularly in telecommunication companies in Rwanda, rather, they concentrated on software industries in India, Ireland, Israel and West Africa. This deficiency was addressed by this present study.

Ngari, Gichira, Aduda, and Waitutu (2013) tested three hypotheses on the performance of 31 pharmaceutical companies in Kenya. Their findings show that human capital, structural capital and relational capital positively influence business performance, especially human capital. Kaplan and Norton (2004) also carried out a study in the Taiwanese limited companies. Their findings depicted that relational capital is being increasingly recognized as the major drive for corporate and national growth. Their study also revealed that structural capital has significant positive association with its competitive capabilities (external and internal). The findings on human capital relationships with the external and internal competitive capabilities of firms were also supportive to their hypothesis (Abdulai et al., 2012).

As mentioned in chapter one, it is arguable that the value of companies is now mostly generated by Intangible Assets, and not by "traditional" assets having the tangible form, (Volkov, & Garanina, 2007). The surveys carried out by Volkov and Garanina in (2007), revealed that 2/3 of American companies have turned to pro-active thinking and place a higher emphasis on collection and analysis of non-financial data. The same surveys confirm the fact, that 1/3 of all the effected investment solutions is based on the existing Intangible Assets, and that the decisions made on the basis of Intangible Assets allow a

more accurate prediction of income and profitability of a company in the future, and, hence, the company's value for the shareholders (Volkov, & Garanina, 2007). Volkov and Garania (2007) argue that only from 6 to 30% of company's value are obtained from tangible assets.

2.5 Critique of the Existing Literature

Studies have shown that intangible resources play a significant and vital role in the competitive advantage and performance relationship (Abdulai, Kwon & Moon 2012; Hussain, 2014; Kumlu, 2014;, Raduan, et al, 2012; Ichrakie, 2013; Dongmei, Nigel & Donald, 2014). However, literature in which they affect the value of companies' competitiveness enhancement in developing economies like Rwanda will be developed by this current research. Evidence on the relationship between intangible resources and organizational competitiveness suggests that, the more the recognition of intangible resources, the higher the level of competitiveness (Cohen & Kaimenakis, 2007). Although, this is the case, different countries have different levels of competitiveness through intangible resources. Furthermore, companies especially in developing countries like Rwanda have largely addressed these issues from a perspective with little insight on possible reasons for disclosure of intangible resource information. Again, considering that intangible resources enhance competitiveness, none of the theories (Barney & Hesterly, 2006; Porter, 1990) have developed the practical implications of intangible resources on competitiveness in telecommunication companies in Rwanda. In Rwanda, the telecommunication companies only report financial resources but rarely do they report the role of intangible resources in enhancing competitiveness. The crux of this literature review was to establish the practice of intangible resources on competitiveness enhancement in order to test whether it can be replicated in the telecommunication companies in Rwanda.

2.7 Research Gap

Empirical literature has shown that past researchers explored a linear and significant relationship between intangible resources and competitive advantage. Kumlu (2014) studied the effect of intangible resources and competitive strategies on the export performance of small and medium sized enterprises in Turkey within the framework of the resource-based view. Ichrakie (2013) discovered a linear significant impact of intangible resources on the establishment of sustainable competitive advantage within the context of the Job Network industry in Australia. Raduan, Jeka, Haslinda and Alimin (2012) empirically tested the relationship between organizational resources, capabilities, systems and competitive advantage using 127 respondents from the manufacturing industry in Malaysia through a cross-sectional study using structured questionnaire. Hussain (2014) investigated 49 banks listed with the Central Bank of Pakistan and revealed that there is linear correlation between various sub-dimensions of intellectual capital and three dimensions of business performance: "productivity", "profitability" and "market value". Abdulai, Kwon and Moon (2012) carried out an empirical study on software firms in West Africa on the relationship between human capital, structural capital and relational capital and the competitive capabilities of software firms, hence influence organization performance.

Dongmei, Nigel and Donald (2014) measured the effects of process performance on sustainable competitive advantage in Chinese Clothing Industry using 209 valid responses from participants in the Chinese clothing companies. The results suggest that process performance is an appropriate and effective method of measuring in terms of good construct validity and of consistency with the RBV expectations.

There is existence of objective and contextual gaps since these past researchers like Abdulai, Kwon and Moon (2012), Hussain, (2014), Kumlu (2014), Raduan, et al, (2012), Ichrakie (2013), Dongmei, Nigel and Donald (2014) did not focus on the direct or indirect role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. Hence, this study was to establish the role of

intangible resources on the competitiveness enhancement as well as the moderating effect of age of telecommunication companies in Rwanda with specific focus on MTN Rwanda, Tigo Rwanda and Airtel Rwanda.

2.8 Summary

This chapter engaged with the review of the concept of intangible resources in order to assess its role on competitiveness enhancement. In this chapter, the theoretical framework guiding the discussion of the problem under study were the resource based view and competitive advantage theories emerged as a key perspective guiding the inquiry into the determinants of organizational competitiveness. It also addressed the review of empirical literature relevant to the problem being investigated as well as the conceptual framework where the relationships between independent variables and dependent variables are shown. From the literature, intangible resources consist of three well-established categories that incorporate human capital, structural capital and relational capital, (Marr, 2013, Brennan & Cornell, 2000; Petty and Guthrie, 2000; Roos et al, 2001; Bontis, 2002; Ordóñez de Pablos, 2002; Bueno, 2003; Kauffman & Schneider, 2004; Marr & Roos, 2005).

The position of the researcher concerning the problem of composition and structure of intangible resources is in many respects based on intangible resources classification developed by Marr (2013) and International Federation of Accountants (IFAC, 1998). The conceptual framework of this study therefore, adopts some of the elements from Perrini & Vurro (2010) and Cabrita & Bontis (2008). It is based on the human capital comprising knowledge and experience, innovation and creativity, skills and ability; Structural capital comprising of corporate reputation, systems and programs, research and development; Relational capital comprising relationship with suppliers, relationship with customers and relationship with competitors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter was to identify the appropriate methodology for this study. This section described the practical procedures employed in carrying out the study, it include the details of the research design, target population, sampling procedures, data collection instruments and procedures, and the data analysis techniques that were adopted. It gives the framework within which data are collected and analysed.

3.2 Philosophical Orientation

The study made considerations of the research philosophy to be adopted, which includes the two prominent research philosophical leanings and paradigms, namely, positivism and phenomenological. As a philosophy, positivism adheres to the view that only "factual" knowledge gained through observation (the senses), including measurement, is trustworthy. In positivism studies, the role of the researcher is limited to data collection and interpretation through objective approach and the research findings are usually quantifiable observations that lead themselves to statistical analysis. The research is purely objective, the researcher is independent from the study and there are no provisions for human interests within the study. Independent means that the researcher maintains minimal interaction with research participants when carrying out the research, (Wilson, 2010). In other words, studies with positivist paradigm are based purely on facts and consider the world to be external and objective. Advantages of positivism philosophy include fast speed of conducting the research and its coverage of a wide range of situations. Crowther and Lancaster, (2008), inform that as a general rule, positivist studies usually adopt deductive approach, whereas inductive research approach is usually associated with phenomenological philosophy. Positivism relates to the viewpoint that researcher needs to concentrate on facts, whereas phenomenology

concentrates on the meaning and has provision for human interest. Hatch and Cunliffe, (2006), state that positivists assume that what truly happens in organizations can only be discovered through categorization and scientific measurement of the behaviour of people and systems and that language is truly representative of the reality. On the other hand, phenomenologists are concerned with what things mean, rather than with identifying and measuring phenomena. They are particularly interested in the idea that human experience is a valuable source of data, as opposed to the idea that true research or discovery lies in simply measuring the existence of physical phenomena (Easterby-Smith, Thorpe & Jackson, 2008). The comparison between the positivist and phenomenological paradigms is presented in Table 3.1.

Table 3. 1: Comparison between the Positivist and Phenomenological Paradigms

The Positivist Paradigm	**The Phenomenological Paradigm**
Basic beliefs:	**Basic beliefs:**
- The world is external	- The world is socially constructed.
- Observer is independent	- Observer is part of it.
- Science is value-free	- Science is value-driven.
Researcher should:	**Researcher should:**
- Focus on facts	- Focus on meanings of events
- Look for causality	- Explore the totality of each individual case
- Try to measure phenomena	- Try to understand phenomena
- Formulate/develop hypotheses	- Formulate/develop ideas
Preferred research methods include:	**Preferred research methods include:**
- Concepts have to be operationalized	- Using multiple perspectives
- Taking large samples	- Taking small samples

Source: Easterby-Smith, Thorpe & Jackson, (2008).

Alongside the philosophical debate between phenomenology and positivism, there is a parallel debate among social scientists which concerns the respective merits of qualitative and quantitative research. Consistent with the argument by Henning, VanRensburg and Smith (2004), this study was classified as quantitative and a positivist framework was followed because it was an empirical investigation with the core of scientific endeavour being observation and measurement.

3.3 Research Design

Research design is the blue print for the collection, measurement, analysis of data and a plan to obtain answers to research questions (Coopers & Schindler, 2006). This study used cross-sectional descriptive and correlation research designs to identify, analyse and describe the significant relationship between intangible resources and competitiveness enhancement among telecommunication companies in Rwanda. The quantitative data was used to quantify the responses from the respondents on the relationship between dependent and independent variables since the data is required to be transposed into numbers in a formal, objective, systematic process and obtain information, describe variables and their relationship, (Mark, Philip & Adrian, 2009; Nicholus, 2011; William, 2010). Quantitative method used for this research is based on positive facts and not speculation upon origins or causes (Fahy, 2002; Galbreath & Galvin, 2004, 2006; Newbert, 2007). Quantitative data are more objective, since they are listed numerically and are equally considered by all observers. The quantitative method used for this study aimed at extending the quantifiable, empirical research base and generating results that can be used in future studies for verification or replication (Ichrakie, 2013).

3.4 Target Population

A population is the total collection of element about which inferences are made. It refers to all possible cases which are of interest for a study (Sekaran, 2008). The target population for this study is the three telecommunication companies. Available data from Rwanda Utilities Regulatory Authority (2014) revealed that the number of employees

working in the three telecommunication companies under study was 655 at the time of this study. Therefore, this study targeted the managers, executives and administrators since they deal with issues concerning competitiveness enhancement.

Table 3. 2: Target Population

Company	Total Staff
MTN	289
TIGO	222
AIRTEL	144
TOTAL	**655**

Source: RURA operators' returns (2014)

3.5 Sampling Technique and Sample Size

Kendall (1992) defined sampling as a process of systematically selecting representative elements of a population. When those elements are examined closely, it is assumed that analysis will reveal the useful information about the population as a whole. A sampling design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. The sampling frame describes the list of all population units from which the sample was selected (Cooper & Schindler, 2003). It is a physical representation of the target population and comprises all the units that are potential members of a sample (Kothari, 2004). The position of Patton (2002) remains that sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what is useful, what has credibility and what can be done with available time and resources.

The target population comprised of three telecommunication companies whose staff members were 655. To make the sample size an efficient estimate the study adopted a

simple random sample design, therefore, the sample size was determined using the Slovin's formula given as:

$$n = N/ [1 + (Ne^2)]$$

Where: n = Sample Size

N = Population

e = Error Limit (0.05 based on 95% confidence level)

Therefore $n = 655/ [1 + 655(0.05)^2]$

$$n = 248$$

Therefore, the sample size determined for this study was 248 employees. Therefore, this study sample was the managers, executives and administrators since they deal with issues concerning competitiveness enhancement. Purposive sampling was used to administer the questionnaire to these categories of employees with the right knowledge of competitiveness enhancement to elicit their response on the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda.

Table 3. 3: Sampling Frame

Company	**Total Staff**	**Proportionate Sample**
MTN	289	109
TIGO	222	84
AIRTEL	144	55
TOTAL	**655**	**248**

3.6 Data Collection Instruments

Collecting data through multi methods and from multiple sources lends rigor to the research (Sekaran, 2003; Kothari, 2004). Since studies in this area advocate for administration of questionnaire as the primary source of relevant data and they have succeeded in this approach (Saari & Abbas, 2011; Sharabati, Shawqi & Bontis, 2010; Khalique, Jamal, Abu & Adel 2011; Bontis & Cabrita, 2008), the primary tool of data collection for this study was the structured questionnaire used to collect factual information with a five point likert scale.

Different studies done in the area of intangible resources have used likert scale since they are perceptual measures and the data obtained was ordinal in nature (Sharabati, Shawqi & Bontis, 2010; Cheng-Ping, et al., 2010; Bontis et al., 2000; Chung-Fah & Sung-Lin, 2007; Saari, 2011). Given that intangible resources are difficult to measure objectively it was common to find the use of perceptual measures (Ngari, 2013; Kannan & Aulbur, 2004). Structured questionnaires were used because they help the respondents to respond more easily and help the researcher to accumulate and summarize responses more efficiently (William, 2006; Piergiorgio, 2003; Blaxter, Hughes & Tight, 2006). Ordinal data anchored on a five-point Likert scale was collected. The likert scale consisted of the following measures; 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree based on how the respondents feel the statement. In the design of the questionnaire, all questions were closed-ended except two. The background secondary data regarding the number of telecommunication companies and the number of employees were obtained from published sources from the RURA Annual Reports 2014 and 2015. Also, RURA Report 2014 and 2015 obtained from RURA website were used as secondary data to confirm the findings on competitiveness enhancement.

3.7 Data Collection Procedure

Fieldwork was conducted in the three telecommunication companies in Kigali city. Permission to conduct the research was obtained from the three telecommunication

companies. This was made possible as the researcher submitted a letter of recommendation from Jomo Kenyatta University of Agriculture and Technology to MTN, Tigo and Airtel to allow the researcher to collect data. The three companies responded positively and gave their written consent. A cover letter with clear guidelines and instructions was also provided along with each questionnaire administered to the respondents. The instrument for primary data collection was structured questionnaire with questions anchored on a five point likert type ranking scale administered to the respondents. The respondents filled and returned the questionnaires. The collection of the questionnaires was facilitated by some staff members in each of the telecom companies.

3.8 Pilot Test

A pilot study was undertaken on 22 employees to test the reliability and validity of the questionnaire (Cooper & Schindler, 2008; Nachmias & Nachmias, 2008). According to Nicholus (2011), the respondents in a pilot test do not have to be statistically selected. Extant literature suggests that a pilot study sample should be 10% of the sample projected for the larger parent study (Connelly 2008; Treece & Treece 1982). However, Hertzog (2008) cautions that this is not a simple or straight forward issue to resolve because these types of studies are influenced by many factors. Nevertheless, Isaac and Michael (1995) and Hill (1998) suggest 10 to 30 participants for pilots in survey research; Julious (2005) in the medical field and van-Belle (2002) suggest 12. Therefore, following Connely (2008), the number used for this study was 22 which was a 10 per cent of the sample size of 227 which is within the recommendation. Cronbach alpha at 95% significance level was used to test the reliability of the measures in the questionnaire.

3.8.1 Validity of the Instrument

Three forms of validity include content, internal and construct. Content validity has to do with the relevance of the data collected while internal validity has to do with logical

consistency of the responses given. Construct validity deals with the agreement of the instrument content or sections to the specific research objectives (O'Leary 1998). In this research, the foregoing three validities were assured as follows: first, to ensure construct validity, the instrument was structured according to the sections to address each research objective. Secondly, to ensure internal validity, the instrument was pre-tested on a small sample of 22 respondents and response categories compared in terms of the answers given. Thirdly, in order to ensure that the research observes content validity, the response elicited by the instrument was repeated indirectly for example by counter asking and probing. Besides, observation was used as a supplement.

3.8.2 Reliability of the Instrument

Reliability refers to whether an assessment instrument gives the same results each time it is used in the same setting with the same type of subjects. Reliability essentially means consistent or dependable results. Reliability is a part of the assessment of validity (Sullivan 2011). Reliability can be estimated in several ways; the method will depend upon the type of assessment instrument. Cronbach alpha is a test of internal consistency and frequently used to calculate the correlation values among the answers on the assessment tool. Cronbach alpha calculates correlation among all the variables in every combination and a high reliability estimate should be close to one (Sullivan 2011). To demonstrate the choice of tool to test validity and reliability, the following Cronbach alpha formula was used:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Where *N* is equal to the number of items,

c-bar is the average inter-item covariance among the items and

v-bar equals the average variance.

3.9 Data Analysis

The collected data cannot be useful, unless the data can be processed, analysed and converted into information in a format that can be helpful to the user to draw inferences. Kothari, (2005), states that data processing implies editing, coding, classification and tabulation of collected data so that a careful scrutiny of the completed questionnaires and scheduled responses can be put into a limited number of categories or classes. Data analysis was guided by the specific research objectives presented. After collection of data through questionnaire, data was edited; handling of blank responses, coding, categorizing the data and creating a data file was done. The data was entered into IBM-SPSS version 21 software program. After coding and entering the data in the statistical software, exploration was done using summary tools such as frequency distribution tables and charts. The first level of analysis was descriptive statistics used to yield measures of relationship. Secondly, the study employed inferential analysis in its significance test to prove the hypotheses as well as relationship between dependent and independent variables.

Goodness of measures was done through testing of reliability and validity. Reliability was done by testing for both consistency and stability. Consistency indicates how well the items measuring the concepts hang together as a set. Cronbach's alpha was performed to measure reliability on the objectives of the study. For validity tests, factor analysis was used to reveal whether the dimensions indeed were tapped by the items in the measures and finally the hypotheses were tested. Sekaran (2008) and Kothari (2004), advocate for this procedure of data analysis. Specifically, these were simple correlation coefficient and regression analysis to measure the association between the independent and dependent variables.

Bivariate correlation coefficient was used to test the relationship between independent and dependent variables. The Pearson correlation coefficient is a measure of how closely related two variables are, both of which must be measured at the interval/ratio level. This relationship is assumed to be linear, and the correlation is a measure of how tightly

clustered data points are about a regression line. Correlation ranges from –1.0 (perfect negative relationship) to 1.0 (perfect positive relationship) as postulated by Sekaran (2008) and Kothari (2004). Bivariate analysis is a simple (two variable) special case of multivariate analysis where multiple relations between multiple variables are examined simultaneously (Earl, 2009) which will also be the case for this study. The correlation coefficient was calculated to determine the strength of the relationship between independent and dependent variables. Multivariate regression analysis is one of the methods of regression analysis for multivariate associations in this study. The derivation of association using multivariate regression is similar to using bivariate regression.

Inferential statistics tests were used to help deductions to be made from the data collected and to test the hypotheses. Such inferential statistics includes multiple analysis of variance tests which were used to study the amount of variation within each of the sample relative to the amount of variation between samples in order to test the significance of the overall model at 95% level of confidence (Mugenda, 2008; Sekaran, 2008; William, et al., 2010). The researcher assumed a 95% confidence level while testing the four hypotheses so as to allow tolerance and f-tests to yield better coefficients at 95%. The data was presented using tables, statistical techniques, graphical techniques and at some point, a combination of both to indicate the results of the analysis and for better conclusions.

Simple regression analysis was performed to evaluate the significant relationships between the respective independent variables of intangible resources and the dependent variable, which consists of: intangible human capital (IHC) and competitiveness, intangible structural capital (ISC) and competitiveness enhancement and intangible relational capital (IRC) and competitiveness enhancement. The first hypothesis of this study was the analysis of the significant relationship between intangible human capital and competitiveness among telecommunication companies in Rwanda (hypothesis 1), therefore, the following simple regression equation model was performed:

$$\gamma = \beta_0 + \beta_1 X_1 + \varepsilon \qquad (1)$$

Where:

$\gamma =$ Competitiveness of the telecommunication companies

$\beta_0 =$ Constant (coefficient of intercept)

$\beta_1 =$ Slopes coefficients representing the influence of IHC on Competitiveness enhancement

$X_1 =$ Intangible Human Capital

$\varepsilon =$ Error Term

The second hypothesis for this study was to assess the significant relationship between intangible structural capital and competitiveness among telecommunication companies in Rwanda (hypothesis 2), therefore, the following simple regression equation model was used:

$$\gamma = \beta_0 + \beta_2 X_2 + \varepsilon \qquad (2)$$

Where:

$\gamma =$ Competitiveness of the telecommunication companies

$\beta_0 =$ Constant (coefficient of intercept)

$\beta_2 =$ Slopes coefficients representing the influence of ISC over Competitiveness enhancement

$X_2 =$ Intangible Structural Capital

$\varepsilon =$ Error Term

The third hypothesis for this study was to assess the significant relationship between intangible relational capital and competitiveness among telecommunication companies in Rwanda (hypothesis 3), hence, the application of the following simple regression equation model: $\gamma = \beta_0 + \beta_3 X_3 + \varepsilon$ *(3)*

Where:

$\gamma =$ Competitiveness of the telecommunication companies

$\beta_0 =$ Constant (coefficient of intercept)

$\beta_3 =$ Slopes coefficients representing the influence of IRC on Competitiveness enhancement

$X_3 =$ Intangible Relational Capital

$\varepsilon =$ Error Term

Multiple regression method was used to test intangible resource variable using standard and stepwise methods. Multiple regression technique requires testing of assumptions that, conditional on the explanatory variables, the response variable is normally distributed with a mean that is a linear function of the explanatory variable and a variance that does not depend on these variables before conducting the analysis (Chatterjee & Hadi, 2006). Henceforth, the analysis of the model and hypothesis testing were done. Combinations of Hypotheses 1 to 3 were tested to comprehend the relationships between the dependent variable and all independent variables jointly as shown in equation 4: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$ *(4)*

Where

Y = Competitiveness enhancement of telecommunication companies

$\beta_0 =$ Constant (coefficient of intercept)

$\beta_1 + \beta_2 + \beta_3$ = slopes coefficients representing the role of the associated independent variables over the dependent variable.

The first slope coefficient β_1, which describes the relationship between intangible human capital and competitiveness enhancement;

The second slope coefficient β_2, which describes the relationship between intangible structural capital and competitiveness enhancement; and finally,

The third slope β_3, which describes the relationship between intangible relational capital and competitiveness enhancement.

$X_1 =$ Intangible Human Capital

$X_2 =$ Intangible Structural Capital

$X_3 =$ Intangible Relational Capital

$\varepsilon =$ Error Term

Other scholars who have done related studies believe that the use of multiple linear regression models will give the best results, (Sharabati et al., 2010; Cheng-Ping, et al., 2010, Chung & Sung, 2007, Wasim, et al., 2011; Khalique et al., 2011). Therefore, multiple linear regression analysis was performed on this general model $Y = \beta_0 + \beta_1 IHC + \beta_2 ISC + \beta_3 IRC + \varepsilon$ for the analysis of the relationships between the dependent (Competitiveness enhancement) variable and the combination of the independent variables (Intangible Resources) that were defined from the fourth hypothesis and from the conceptual framework.

The researcher did not know whether the relationship between intangible resources will be direct or it must be combined with other factors to generate competitiveness enhancement. Hence, a fifth equation was proposed to check for the moderating effect of the age of the companies between intangible resource and competitiveness among telecommunication companies in Rwanda. Equation (4) shows the multiple linear regression model of the independent variables against the dependent variable. When the moderating effect of organization age is considered, then:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 Z + \beta_3 X_1 Z + \varepsilon \qquad (5)$$

Where:

$\gamma =$ Competitiveness enhancement of the telecommunication companies

$\beta_0 =$ Constant (coefficient of intercept)

$\beta_1 + \beta_2 + \beta_3$ = slopes coefficients representing the role of the associated independent variables on the dependent variable.

$X_3 =$ Intangible Resource Variables

Z = Age of the Companies

$\varepsilon =$ Error Term which is assumed to be normally distributed with mean zero and constant variance

The moderating effect was computed using the method proposed by Baron and Kenny (1986). According to Baron and Kenny (1986) in the first step the predictor variables (intangible resources) were entered into the regression equation to test the main effects. Secondly an interaction term was created by multiplying the composite scores of the independent variable and the moderator variable. This interaction term (intangible resources*organization age) was then entered into the regression equation.

CHAPTER FOUR

RSEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The empirical findings and results of the application of the variables were presented in this chapter. Data analysis was in line with specific objectives where patterns were investigated, interpreted and implications drawn on them. The quantitative data used for this study was analyzed using IBM SPSS version 21 and presented in the form of tables and graphs. The content of this chapter includes details of response rate, sample characteristics, presentation of data analysis, interpretation and discussion of findings. Various tests were adopted to test the relationship between variables, level of significance, reliability and random distribution of data. Specifically, Cronbach's alpha test, descriptive statistics, Pearson Bivariate correlation and Multiple Regression analysis were employed. The general objective of this research was to determine the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. The independent variables of the study were intangible human capital, intangible structural capital and intangible relational capital.

4.2 Response Rate

Out of the 248 questionnaires administered, 183 were filled and returned, which represents 73.8% response rate. As Mugenda and Mugenda (2003) observed, a 50% response rate is adequate, 60% is good, while 70% is rated very good. This agrees with Bailey (2000) who asserts that a response rate of 50% is adequate, while a response rate greater than 70% is very good. Based on this assertion, the response rate of 73.8% for this study was very good and considered satisfactory to make conclusions for the study.

The recorded high response rate was possible because the three companies were interested in the research since there was no recorded evidence that such a study has been done in Rwandan telecommunication companies as observed by the researcher.

Their interest arose due to the fact that the researcher notified these three telecommunication companies of the intended survey via a letter written by JKUAT, Kigali Campus. It was also possible because the questionnaires were administered and picked up by the staff of these companies who followed up with the respondents to ensure that they completed the filling of the questionnaires and returned.

Table 4. 1: Response Rate

Response Rate	Frequency	Percentage
Questionnaire Issued	248	100
Questionnaire Returned	183	73.8

4.3 Demographic Analysis of the Respondents

Demographic analysis of the respondents was done on the basis of employee current status, level of education and management level. Demographic analysis helps to know the views of the respondents, checks the distribution of the variables which help in inferential statistics (Sekaran, 2003).

Table 4. 2: Demographic Analysis of the Respondents

Respondents Demographic Analysis	Frequency	Per cent
Current status		
Director	9	4.9
Executive	17	9.3
Manager	37	20.2
Assistant Manager	21	11.5
Administrators	99	54.1
Highest level of education		
Master's Degree	44	24
Bachelor's Degree	104	56.8
Diploma	31	16.9
Secondary School Certificate	4	2.2
Level in the Company		
Top level	16	8.7
Middle level	102	55.7
Lower level	65	35.5

Table 4.2 presents the various job positions (current status) held by the employees who participated in the survey. These results show that the telecommunication companies comprise of organizational structures consisting of various position settings that are required for this study and all participated in this survey. They include: directors, executives, managers, assistant managers and administrators. Therefore, the results of this study were without prejudice. It is also evidenced that the respondents from these companies hold a range of educational qualifications falling between secondary school level and Master's Degree. The majority of the respondents (56.8%) were Bachelor's Degree holders, indicating that the responses of these employees to the survey questionnaire were without bias. Table 4.2 also depicts that all levels in the three companies were represented in this study which shows the objectivity of the study.

4.4 Reliability and Sampling Adequacy

4.4.1 Reliability Test Results

For overall analysis on reliability and validity for this study, Cronbach's alpha was computed since it is the most common reliability coefficient which estimates internal consistency by determining how all items on a test relate to all other items. The Cronbach's alpha reliability coefficient normally ranges between 0.1 and 1.0. The closer the coefficient is to 1.0, the greater is the internal consistency of the items (variables) in the scale. The higher the coefficient, the more reliable is the test. The reliability of an instrument refers to its ability to produce consistent and stable measurements. The rule of George and Mallery, (2003), follows that if α >0.9 (Excellent), >0.8 (Good), >0.7 (Acceptable), >0.6 (Questionable), >0.5 (Poor and Unacceptable).

Table 4. 3 Reliability Test Results

Factor	No. of Items	Cronbach's Alpha	Comment
Intangible Human Capital	26	0.850	Reliable
Intangible Structural Capital	27	0.904	Reliable
Intangible Relational Capital	29	0.909	Reliable
Competitiveness	16	0.876	Reliable

The findings depict that the internal consistency measures of the three independent variables and the dependent variable were reliable and valid since $\alpha>0.5$. The results for all variables were highly appreciated to confirm that all the items on the test measured what they were supposed to measure. The alpha for the items, namely: intangible structural capital, an independent variable with 27 items under investigation was 0.904. Similarly, the alpha for the intangible human capital, another independent variable with 26 items under investigation had a Cronbach's alpha of 0.850 indicating good internal

consistency. All the 29 items under intangible relational capital indicated high coefficient of 0.909 and 16 items on competitiveness with coefficient of 0.876 for cost reduction, which indicates that the items produced a scale that has reasonable internal consistency and reliability. All concepts depict that the value of Cronbach's Alpha are above 0.5, hence, the study constructs were reliable and valid (Nunnally & Bernstein, 1994).

4.4.2 Sampling Adequacy

Sampling adequacy is a statistical measure which was used to examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests. Two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. KMO "assesses the factorability of the correlation matrix" (Nunnally, 1978). According to Heir et al. (2010) a KMO measure of greater than 0.8 is marvellous, and a measure of greater than 0.6 is meritorious.

Table 4. 4: Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.932
Bartlett's Test of Sphericity	Approx. Chi-Square	1536.156
	Df	78
	Sig.	.000

In this study, the value of KMO was 0.932 hence the sample was adequate for conducting factor analysis. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Nunnally, 1978).

In order to assess the strength and significance of the relationships between items in the instrument, Bartlett's test of sphericity was performed (Nunnally, 1978). Bartlett's test of sphericity revealed a significance $p<0.05$, indicating that the strength of relationships

between the study items were strong enough to conduct factor analysis. However, further factor analysis was not performed in this study.

4.5 Descriptive Results

This section presents a summary of the 183 respondents rating on various indicators of the dependent variable – competitiveness enhancement. The data was analyzed by use of means, standard deviations and percentages. The analysis was presented in form of tables, graphs and charts.

4.5.1 Competitiveness Enhancement

In this study, the indicators of competitiveness enhancement were cost reduction, innovative products, market share and customer attraction and retention. Table 4.5 show the descriptive analysis of respondent's on the indicators of competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 5: Competitiveness Enhancement

	N	Mean	Std. Deviation
Cost Reduction	183	3.2222	1.01595
Customer Attraction and Retention	183	3.7416	.56296
Market Share	183	3.7923	.76595
Innovative Products	183	3.7678	.74266

Competitiveness enhancement indicators were subjected to ranking using a 5-point Likert scale. The strongest factor scored five points while the least scored one point. The mean and standard deviation scores were computed as shown in Table 4.5. Among the competitiveness enhancement indicators, market share was found to have the highest mean score 3.7923 followed by innovative products 3.7678, customer attraction and retention 3.7416. Cost reduction 3.2222 was the lowest rank on the scale.

The results in this section are supported and confirmed by the RURA Annual Reports (2014 and 2015) that noted a sharp decreasing market share, high cost, and low penetration rate of internet usage. MTN Rwanda has a decreasing market share of 56% as at June 2013, 50% as at September 2014 and 47% as at September 2015 against 64% of June 2012. Tigo Rwanda comes at the second level with a decreasing market share of 30% as at June 2013, 36% as at September 2014, and 35% as at September 2015 against 34% of June 2012 while Airtel Rwanda, has the lowest market share of 14% as at June 2013 and as at September 2014, and 18% as at September 2015 against 2.3% by June 2012 (RURA Annual Report, 2014, 2015).

Figure 4.1 confirms the decreasing market share rates. Respondents agreed that Employees have enough knowledge about the company's target market and Company's market share needs to improve continuously.

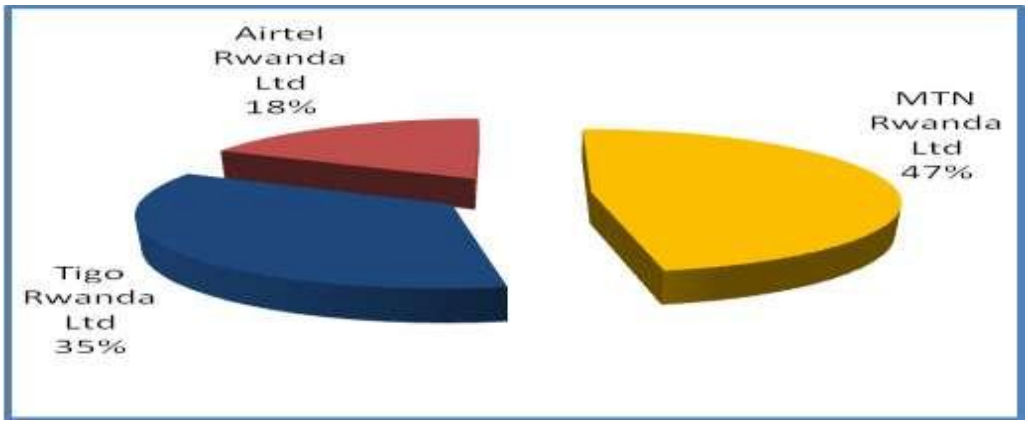

Figure 4.1: Mobile Telephone subscribers market share per operator as at the September 2015 (RURA, 2015)

The findings indicate that respondents did not agree that Company has the lowest costs for products and services compared to competitors, customers are in constant demand of your products and services since it is lowest among other competitors, when customers think of this company, they think of the lowest cost of service compared to competitors since cost reduction mean=3.22. Currently, 4G LTE is only accessible in the capital –

Kigali city and unaffordable for the common man (Mugisha & Mwai, The New Times 2014). Figure 4.2 confirms the findings.

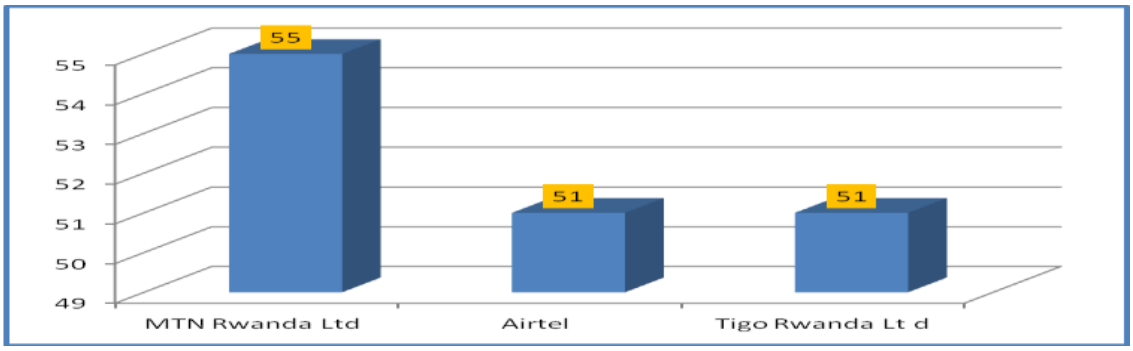

Figure 4.2: Standard mobile Internet tariff (Rwf/Mb) as at September 2015 (RURA, 2015)

Figure 4.3 was used to support the finding on attraction and retention of customers. The figure shows outgoing on-net traffic and incoming off-net traffic data which confirms the rate at which customers are attracted or retained.

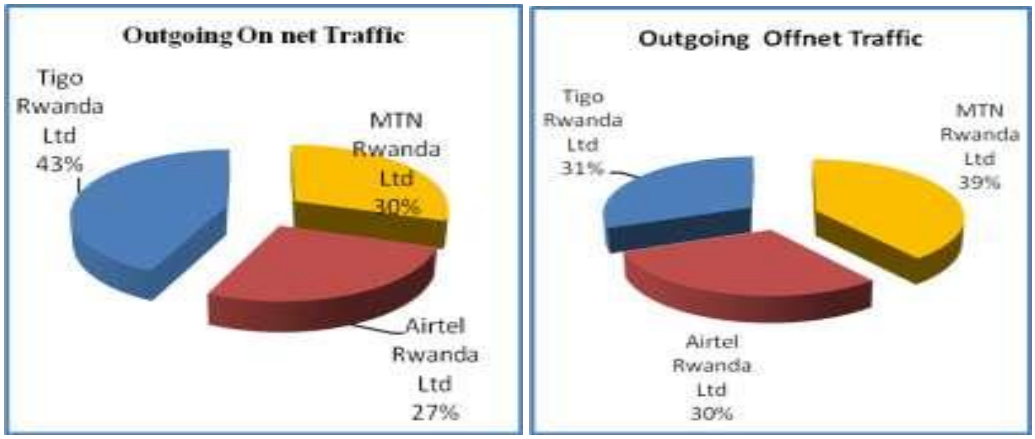

Figure 4.3: Outgoing on-net and off-net voice traffic per operator as at September 2015, (RURA, 2015)

The researcher asked an open ended question from respondents to confirm innovative products responses. The findings show that respondents have innovated products and services and this is supported by the following products and services offered by the companies Some MTN products/services include: cloud computing services, data centre services, directory, tax, water bill, school fees payment through Mobile Money and prestige programs. Some Tigo products/services include: Tigo Cash, Tigo Matic - the first automated teller machine for Tigo Cash transaction. Tigo Sugira offers the best rate on the market for a savings account. Tigo is first in line in accepting eGovernment payment, cross border mobile money transfer with currency conversion integrated into it, the recent acquisition of RSwitch to create a joint ecosystem with a number of financial institutions, Digital lifestyle - where customers have access to their funds in their bank account directly from their mobile and Tigo Western Union. Some Airtel products/service include: 2G, 3G and 4G wireless services, mobile commerce, fixed line services, high speed DSL broadband, IPTV, DTH, enterprise services including national and international long distance services to carriers. Airtel Rwanda has launched a new business oriented product (The Airtel business product) to provide custom-made end-to-end business and enterprise solutions with cutting-edge technology.

The fact remains that where companies with the same type of technology are in the same industry and market, they will always benchmark each other and as soon as a product or service sample is released by one company, others will immediately follow and might even overtake the first. This calls for valuable, rare, inimitable and non-substitutable intangible resource-based characteristics.

The figures show that their cost of products and services are high and there is need for cost reduction, market share is reducing and there is low penetration rate of usage. Therefore, these companies need to employ the combination of their intangible resources for the enhancement of their market share, cost reduction, customer attraction and retention and innovative products.

4.5.2 Descriptive Analysis of Intangible Human Capital

The first objective for this study was to analyze the role of intangible human capital in enhancing competitiveness among telecommunication companies in Rwanda and to assess the significant relationship between intangible human capital and competitiveness enhancement of telecommunication companies in Rwanda. Both descriptive and inferential statistics were carried out. The intangible human capital as a component of intangible resources was measured by knowledge and experience, innovation and creativity and skills and abilities.

Table 4. 6: Knowledge and Experience

	N	Mean	Std. Deviation
The level of knowledge and experience of employees are adequate	183	3.89	.895
Employees continuously learn from others including competitors	183	3.94	.833
Employees undergo continuous training programs every year	183	3.62	.992
The ratio of educated employees is on average compared with competitors and with what should be	183	3.43	.975
Company devotes a lot of time, effort and money to update and develop employees' knowledge and experience	183	3.55	1.020

As summarized in Table 4.6, the responses show that the respondents agreed that employees continuously learn from others ranked highest (mean = 3.94, SD = 0.833), followed by adequate level of knowledge and experience (mean = 3.89, SD = 0.895),

employees undergo continuous training programs every year (mean = 3.62, SD = 0.992), Company devotes a lot of time, effort and money to update and develop employees' knowledge and experience (mean=3.55, SD=1.020). The ratio of educated employees is on average compared with competitors and with what should be was ranked last (mean=3.43, SD=0.975). These findings agree with the findings of Bontis and Cabrita (2008) that increased training of employees may lead to higher productivity. Therefore, companies should increase the level of adequate knowledge and experience for the competitiveness of the company, continuous learning from others including competitors, continuous training programs every year, average ratio of educated employees compared with competitors and compared with what should be, a lot of time, effort and money devoted to develop and update employees' knowledge and experience for the competitiveness of these telecommunication companies.

Table 4. 7: Innovation and Creativity

	N	Mean	Std. Deviation
Company's employees are considered more creative and innovative compared to competition	183	3.69	.969
Company's employees are strong to voice their opinions in discussions	183	3.81	.907
Large numbers of new products have been introduced compared to competitors	183	3.95	.979
Employees continuously bring new knowledge and ideas to the business and share with their colleagues	183	3.89	.807
Employees are satisfied with the company's innovation policies and programs	183	3.61	1.032

Table 4.7 shows that the rankings of innovation and creativity from highest to the lowest were as follows: Large numbers of new products have been introduced compared to competitors (mean=3.95, SD=0.970), Employees continuously bring new knowledge and ideas to the business and share with their colleagues (mean=3.89, SD=0.807), Company's employees are strong to voice their opinions in discussions (mean=3.81, SD=0.907), Company's employees are considered more creative and innovative compared to competition (mean=3.9, SD=0.969), Employees are satisfied with the company's innovation policies and programs (mean=3.61, SD=0.032). Innovation and creativity in this study were discovered to have effect on competitiveness since employees were viewed as more creative and innovative than their competitors, strong to voice their innovative and creative opinions in discussions, regularly bring new knowledge, new ideas to the business and share with their colleagues, satisfied with the company's innovation policies and programs, new and improved products are introduced in large numbers compared to competitors. These results are in agreement with Wolff and Pett, (2006); Montequin (2006) who demonstrated that innovation had a strong and influential relationship with performance in their studies. Chen, Lee, Tung, and Kao (2008) found that there is a mutually positive correlation between innovative activities and corporate development of Taiwanese publicly listed IT Corporation.

Table 4. 8: Skills and Abilities

	N	Mean	Std. Deviation
Employees are specialists in their respective areas	183	3.50	1.005
Employees consistently perform at their best	183	3.84	.979
Employees competence matches with their work requirement and responsibilities	183	3.69	.930
The company has the lowest costs for products and services due to the competencies of the employees	183	3.35	1.204

Table 4.8 reveals that employees consistently perform at their best had the highest mean score =8.84 with SD clustered around it =0.979, followed by employees competence matches with their work requirement and responsibilities =3.69, SD =0.930, employees are specialists in their respective areas = 3.50, SD 1.005. The company has the lowest costs for products and services due to the competencies of the employees ranked last = 3.35, SD=1.204. The results show that skills and abilities have effect on competitiveness enhancement since employees are specialists in their respective areas, they consistently perform at their best, their competence matches with their work requirements and responsibilities, and Company has the lowest costs for products and services due to the competences of the employees. This result agrees with Martin and Staines (2008) who discovered that experience, skills and abilities were strongly associated with enterprise growth.

The findings in this descriptive analysis show that intangible human capital plays a role on competitiveness enhancement of telecommunication companies in Rwanda. These results are supported by studies done by Ngari, Gichira, Aduda, and Waitutu (2013), tested three hypotheses on the performance of 31 pharmaceutical companies in Kenya. Their findings show that human capital positively influences business performance. Also the findings of Abdulai, Kwon and Moon (2012) showed that human capital had a significant relationship with the external and internal competitive capabilities of firms.

4.5.3 Correlation Results between IHC and Competitiveness Enhancement

The researcher sought to determine whether significant relationships exist between knowledge and experience, skills and abilities, innovation and creativity and competitiveness enhancement. Pearson correlation analysis was used to explore the relationships that exist between the study variables. The correlation matrix table 4.9 was used to demonstrate the linear relationships and lack of auto-correlation among the variables.

Table 4. 9: Correlation Matrix between IHC and Competitiveness Enhancement

Pearson Correlation		KNOWEXP	SKILAB	INNOCREA	COSTREDU	INNOVPROD	MKTSHARE	CUSTATRE
KNOWEXP	Pearson	1	.**	.**				
	Sig. (2-tailed)		.	.				
	N	183						
SKILAB	Pearson	.586**	1	.**				
	Sig. (2-tailed)	.000						
	N	183	183					
INNOCREA	Pearson	.489**	.455**	1				
	Sig. (2-tailed)	.000	.000					
	N	183	183	183				
COSTREDU	Pearson	.320**	.388**	.272**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	183	183	183	183			
INNOVPROD	Pearson	.492**	.483**	.416**	.357**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	183	183	183	183	183		
MKTSHARE	Pearson	.599**	.606**	.449**	.505**	.604**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	183	183	183	183	183	183	
CUSTATRE	Pearson	.563**	.457**	.439**	.369**	.633**	.684**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	183	183	183	183	183	183	183

**. Correlation is significant at the 0.01 level (2-tailed).

From the correlation matrix (Table 4.9), it can be seen that all the intangible human capital variables are positively and significantly correlated with competitiveness enhancement.. Intangible human capital variables affect market share more as demonstrated in the second column from the right where *r = 0.599, 0.449 and 0.606* for

knowledge and experience, innovation and creativity, skills and ability respectively. Customer attraction and retention was the next as exhibited by the last column on the right where *r = 0.563, 0.439 and 0.457* for knowledge and experience, innovation and creativity, skills and ability respectively. Innovative products column was the next as displayed with *r = 0.492, 0.416 and 0.483* for knowledge and experience, innovation and creativity, skills and ability respectively. Cost reduction has the lowest relationship with intangible human capital variables as revealed by *r = 0.492, 0.416 and 0.483* for knowledge and experience, innovation and creativity, skills and ability respectively. All the sub-variables were significantly correlated at $p=0.01<0.05$. As postulated by Cooper and Schindler (2003), correlation between variables must be more than 0.8 for auto-correlation to be a problem. Since there are no correlation coefficients of more than 0.8, there is no concern of auto-correlation.

The results in Table 4.9 implies that an increase in knowledge and experience; skills and abilities; and innovation and creativity leads to increase in market share; and customer attraction and retention, innovative products, cost reduction, hence, the enhancement of competitiveness of telecommunication companies in Rwanda. These findings are supported by past studies which link human capital with organizational performance (Abdulai, Kwon & Moon, 2012; Zerenler, Hasiloglu & Mete, 2008; Ngari, 2013; Bontis & Cabrita, 2008). The evidence from the correlation matrix table portrayed that all the sub-variables were significantly and positively correlated which implies that an increase in knowledge and experience; skills and abilities; and innovation and creativity will lead to increase in innovative products, cost reduction, increased market share; and customer attraction and retention in these telecommunication companies.

4.6 Descriptive Analysis of Intangible Structural Capital

The second objective for this study was to analyse the role of intangible structural capital in enhancing competitiveness of telecommunication companies in Rwanda and to determine the significant relationship between intangible structural capital and competitiveness enhancement of telecommunication companies in Rwanda. Both

descriptive and inferential statistics were carried out. The intangible structural capital as a component of intangible resources was measured by research and development, systems and programs and corporate reputation.

Table 4. 10: Systems and Programs

	N	Mean	Std. Deviation
The company's systems provide for succession training programs for every position	183	3.53	1.147
The company's culture and atmosphere are supportive and comfortable	183	3.86	1.006
The company has a well-developed reward system and incentives related to performance	183	3.67	1.024
Staff has sufficient influence over decisions made within the company	183	3.53	1.058
The company follows bureaucratic principles rigidly	183	3.51	.907

This result illustrates that respondents agreed that company's culture and atmosphere are supportive and comfortable with a mean score of 3.86, SD=1.006, followed by the company has a well-developed reward system and incentives related to performance (mean=3.67, SD=1.024), Staff members have sufficient influence over decisions made within the company (mean=3.53, SD=1.058), company's systems provide for succession training programs for every position with a mean score of 3.53, SD=1.147 and the company follows bureaucratic principles rigidly (mean=3.53, SD=1.058).

Table 4.11: Corporate Reputation

	N	Mean	Std. Deviation
The company is free to put higher tariffs and price tags on its products and services and customers will be willing to pay such prices	183	2.81	1.410
Customers will prefer to patronize the products and services of the company even when competitors' products are available at comparable quality and price	183	3.52	1.026
The company attracts and retains good job candidates/ employees	183	3.40	1.149
The company generates customer loyalty and continued patronage	183	3.92	.795
Customers easily recommend this company to a friend or a colleague	183	3.85	.797

Corporate reputation as a component of intangible human capital in this study was assessed using five constructs to determine whether corporate reputation plays a significant role on competitiveness enhancement of telecommunication companies. The findings show that the company generates customer loyalty and continued patronage with a mean score=3.92, SD=0.795, this was followed by customers easily recommend this company to a friend or colleague (3.85, SD=0.797), customers will prefer to patronize the products and services of the company even when competitors' products are available at comparable quality and price (3.52, SD=0.026), the company attracts and retains good job candidates (3.40, SD=1.149), the company is free to put higher tariffs and price tags on its products and services and customers will be willing to pay such prices (2.81, SD=1.410). The findings in Table 4.11 are in harmony with Standifird (2001) whose study discovered that a positive reputation contributes to the reduction of

transaction costs related to the exchanges in which the firm and its customers take part. Standifird (2001) explained that corporate reputation allows a surge of cross-selling, it increases the number of loyal customers, or that it makes customers more willing to pay an over-price in acquiring products or services from top corporate reputation firms.

Table 4. 11: Research and Development

	N	Mean	Std. Deviation
The company is considered a research leader	183	3.55	.959
The company continuously develops work processes and re-organizes itself based on R&D	183	3.50	.983
The company follows up and adopts the latest scientific and technical development around the world	183	3.78	.811
The company determines appropriate and adequate budget for R&D	183	3.48	.870
The company's management board highly trusts and supports the R&D department	183	3.61	.830

The study sought to find out the role of research and development as a component of intangible structural capital on competitiveness enhancement of the telecommunication companies using five constructs. It was discovered that the Company follows up and adopts the latest scientific and technical development around the world had the highest mean=3.78, SD=0.811, this was followed by the Company's management board highly trusts and supports the R&D department (mean=3.61, SD=0.830), the Company is considered a research leader (mean=3.55, SD=0.959), the Company continuously develops work processes and re-organizes itself based on R&D (mean=3.50, SD=0.983) and the Company determines appropriate and adequate budget for R&D (mean=3.48, SD=0.870).

4.6.1 Correlation of ISC variables and Competitiveness Enhancement

The researcher sought to find out which of the competitiveness variables correlated more with the intangible structural capital (ISC) variables using Pearson's product moment correlation matrix table 4.13 to display the relationships.

Table 4. 12: Correlation Matrix between ISC variables and Competitiveness'

Pearson Correlation		SYSTPRO	RESCHDEV	CORPREPU	COSTREDU	INNOVPROD	MKTSHAR	CUSTATRE
SYSTPRO	Pearson	1						
	Sig. (2-tailed)							
	N	183						
RESCHDEV	Pearson	.657**	1					
	Sig. (2-tailed)	.000						
	N	183	183					
CORPREPU	Pearson	.588**	.699**	1				
	Sig. (2-tailed)	.000	.000					
	N	183	183	183				
COSTREDU		.546**	.456**	.535**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	183	183	183	183			
INNOVPROD	Pearson	.527**	.573**	.475**	.357**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	183	183	183	183	183		
MKTSHARE	Pearson	.576**	.581**	.603**	.505**	.604**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	183	183	183	183	183	183	
CUSTATRE	Pearson	.505**	.621**	.625**	.369**	.633**	.684**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	183	183	183	183	183	183	183

**. Correlation is significant at the 0.01 level (2-tailed).

From the correlation matrix (Table 4.13), it can be seen that all the intangible structural capital sub-variables are positively correlated with competitiveness variables. Among the intangible structural capital sub-variables, corporate reputation is correlated with customer attraction and retention (r = 0.625), market share (r = 0.603). On the other hand, its relationship with innovative products is the lowest (r = 0.475) among other sub-variables of ISC, but it correlates higher with cost reduction (r = 0.536) than research and development. Research and development correlates more with customer attraction and retention (r = 0.621), market share (0.581), innovative products (r = 0.573) than systems and programs, but, has the lowest correlation with cost reduction (r = 0.456) than the other two sub-variables of ISC. Systems and programs correlates more with cost reduction (r = 0.546) than other sub-variables of ISC. Systems and programs also correlates higher with innovative products (r = 0.527) than corporate reputation. However, it has the lowest relationship with market share (r = 0.576) and customer attraction and retention (r=0.505) than corporate reputation and research and development. All the same, all the sub-variables of ISC were positively correlated with competitiveness enhancement which implies that an increase in systems and programs; research and development; and corporate reputation will lead to an increase in innovative products, cost reduction, market share and customer attraction and retention. The results indicate lack of auto-correlation.

These findings were supported by Youndt and Snell (2004); Longo et al. (2009); Kong, (2010) who emphasized that structural capital is the skeleton and the glue of an organization because it provides the tools and architecture for retaining, packaging and moving knowledge along the value chain. The result is also supported by relevant literature, which to a large extent maintains the fact that firm performance is positively and significantly impacted by the presence of structural capital (Ngari, 2013; Bontis & Cabrita, 2008; Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009). The basic assumptions of RBV holds true that resources possessing specific characteristics such as being valuable, rare, inimitable and non-substitutable are the key determinants of a

firm's competitiveness and success and are referred to as strategic assets (Barney & Hesterly, 2006; Newbert, 2006; Wernerfelt, 1984; Barney, 1991).

4.7 Descriptive Analysis of Intangible Relational Capital

The third objective for this study was to determine the influence of intangible relational capital in enhancing competitiveness of telecommunication companies in Rwanda. In this study, intangible relational capital was measured using relationship with customers; relationship with competitors; and relationship with suppliers.

Table 4. 13: Relationship with Customers

	N	Mean	Std. Deviation
Many of the company's customers are loyal to the company and would indicate that they are generally satisfied	183	3.68	.805
Company's customers have increasingly chosen company's products compared to competitors' customers over the past few years	183	3.73	.878
The company capitalizes on customers' wants and needs by continually striving to make them satisfied	183	3.83	1.034
The company has greatly reduced the time it takes to resolve a customer's problem	183	3.78	.972
The company feels confident that the customers will continue to do business with it	183	4.01	.886
Customers' opinion are greatly taken into consideration	183	3.95	.830

The study sought to find out the role of research and development as a component of intangible structural capital on competitiveness enhancement of the telecommunication companies using five constructs. It was discovered that respondents agreed that the company feels confident that the customers will continue to do business with it had a mean score of 4.01 and SD=0.886, this was followed by customers' opinions are greatly taken into consideration (mean=3.95, SD=0.830), the company capitalizes on customers' wants and needs by continually striving to make them satisfied (mean=3.83, SD=1.034), the company has greatly reduced the time it takes to resolve a customer's problem (mean=3.78, SD=0.972), company's customers have increasingly chosen company's products compared to competitors' customers over the past few years (mean=3.73, SD=0.878), many of the company's customers are loyal to the company, and would indicate that they are generally satisfied (mean=3.68, SD=0.805). These findings are in agreement with Roos et al, (2007) who stated that customer capital is the relationship between firms and their customers. Their study concluded that customer relationship is the main theme of customer capital. Frustrated managers often do not recognize that they can tap into a wealth of knowledge from their own clients. Kohli and Jaworski (2000) indicate that understanding what customers want in a product or a service better than anyone else is what makes someone a business leader as opposed to a follower.

Table 4. 14: Relationship with Competitors

	N	Mean	Std. Deviation
Good relationships with competitors, help to grow the business in new areas both geographically and in market segments	183	3.71	1.063
Sharing ideas and knowledge together with competitors helps to be innovative and raises the level of professionalism	183	3.74	.953
In working and sharing the company has passed on to others many organizational skills, processes, information and more	183	3.61	1.047
Relationship with competitors help to best serve the customers	183	3.75	1.007
Networking with other industry professionals; supervisor trainings and educational seminars; and regular meetings in industry related subjects ultimately strengthen the company	183	3.91	.962

The findings of this study revealed that relationship with competitors can enhance competitiveness since they agreed that networking with other industry professionals; supervisor trainings, educational seminars and regular meetings in industry related subjects can ultimately strengthen the company with a mean score=3.91 and SD=0.962, this was followed by relationship with competitors help to best serve the customers (mean=3.75, SD=1.007), sharing ideas and knowledge together with competitors can help to be innovative and raise the level of professionalism (mean=3.74, SD=0.953), good relationships with competitors can help to grow the business in new areas both geographically and in market segments (mean=3.71, SD=1.063), the company has

passed on to others many organizational skills, processes and information in working and sharing ideas together (mean=3.61, SD=1.047).

Table 4. 15: Relationship with Suppliers

	N	Mean	Std. Deviation
Company maintains long standing relationship with suppliers	183	3.73	.884
The company has relatively complete data about the suppliers	183	3.54	.976
Customer supplier relationship quality can drive success	183	4.01	.809
Working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions	183	3.90	.774
Suppliers can help their customers enhance products and product features that will generate additional revenue	183	3.82	.795
The company's suppliers help reduce company's customer complaints and increase customer satisfaction	183	3.78	.798

Relationship with suppliers as a sub-variable of intangible relational capital in this study affect competitiveness enhancement since the respondents agreed that Customer-supplier relationship quality can drive success with a mean score of 4.01 and SD=0.809, followed by working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions (mean=3.90, SD=0.774), suppliers can help their customers enhance products and product features that will generate additional revenue (mean=3.82, SD=0.795), the company's suppliers help reduce company's customer complaints and increase customer satisfaction (mean=3.78, SD=0.798), companies maintain long standing relationship with suppliers (mean=3.73, SD=0.884) and they have relatively complete data about the suppliers (mean=3.54, SD=0.976)

4.7.1 Correlation between Intangible Relational Capital and Competitiveness

The researcher sought to find out which of the competitiveness variables correlated more with the intangible relational capital (IRC) variables using Pearson's correlation matrix Table 4.17.

Table 4. 16: Correlation Matrix between Intangible Relational Capital and Competitiveness Enhancement

Pearson Correlation		RELAT CUST	RELAT COMP	RELAT SUPP	COST REDU	INNOV PROD	MKT SHAR	CUST ATRE
RELAT CUST	Pearson	1						
	Sig. (2-tailed)							
	N	183						
RELAT COMP	Pearson	.417**	1					
	Sig. (2-tailed)	.000						
	N	183	183					
RELAT SUPP	Pearson	.699**	.478**	1				
	Sig. (2-tailed)	.000	.000					
	N	183	183	183				
COST REDU	Pearson	.394**	.368**	.345**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	183	183	183	183			
INNOV PROD	Pearson	.630**	.374**	.630**	.357**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	183	183	183	183	183		
MKT SHARE	Pearson	.611**	.447**	.646**	.505**	.604**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	183	183	183	183	183	183	
CUST ATRE	Pearson	.649**	.438**	.688**	.369**	.633**	.684**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	183	183	183	183	183	183	183

**. Correlation is significant at the 0.01 level (2-tailed).

From the correlation matrix (Table 4.17), it can be seen that all the intangible relational capital variables were positively correlated with competitiveness variables. Relationship with suppliers correlates more highly with customer attraction and retention, market share and innovative products where *r = 0.688, 0.646 and 0.630* respectively, but, it has the lowest correlation with cost reduction *r = 0.345* among other variables of IRC.

This was followed by relationship with customers where *r = 0.649, 0.611* and *0.630* for customer attraction and retention, market share and innovative products. It also has the lowest correlation with cost reduction where *r = 0.394*, however, cost reduction correlated more with relationship with customers than relationship with suppliers.

Relationship with competitors has the lowest correlation with competitiveness enhancement as compared to relationship with customers and suppliers. This was revealed by *r=0.438, 0.447, 0.374* and *0.368* for customer attraction and retention, market share, innovative products and cost reduction respectively. However, cost reduction correlates more highly with relationship with competitors than with relationship with suppliers as revealed by *r = 0.368.* The findings evidently illustrate that all the variables were significantly correlated at *p=0.01<0.05*.

This infers that an increase in relationship with customers, competitors and suppliers lead to an increase in competitiveness variables, hence, the enhancement of competitiveness among telecommunication companies in Rwanda. These findings are in line with those made by earlier scholars like Ogundipe, (2012); Tumwine, et al, (2012); Kijek (2007), Bueno and Salmador, (2004), Ulrich, (1998) and Leger, (2010). These findings are also in agreement with Kaplan and Norton (2004) from the study carried out in the Taiwanese limited companies that relational capital is being increasingly recognized as the major drive for corporate and national growth. The result is also supported by relevant literature, which to a large extent maintains the fact that firm performance is positively and significantly impacted by the presence of relational capital (Ngari, 2013; Bontis & Cabrita, 2008; Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009). The basic assumptions of RBV holds true that resources possessing

specific characteristics such as being valuable, rare, inimitable and non-substitutable are the key determinants of a firm's competitiveness and success and are referred to as strategic assets (Barney & Hesterly, 2006; Newbert, 2006; Barney, 1991).

4.8 Regression Assumptions

4.8.1 Normality Test

The standard assumption in multiple linear regressions is that the theoretical residual errors are independent and normally distributed. Exploratory data analysis was done using graphical normal probability plot and numerical Kolmogorov-Smirnov Test to check for the normality of the data set.

Table 4. 17: Kolmogorov-Smirnov Test of Normality

	Kolmogorov-Smirnov[a]		
	Statistic	Df	Sig.
COMPETITIVENESS	.059	183	.200*

Kolmogorov-Smirnov Test was used as numerical means of assessing normality. The K-S Test is more appropriate for sample sizes >50. If the significant value of the K-S Test is greater than 0.05, the data is normal. If it is below 0.05, the data significantly deviates from a normal distribution. Since the *p* value=0.200>0.05, the dependent variable was normally distributed.

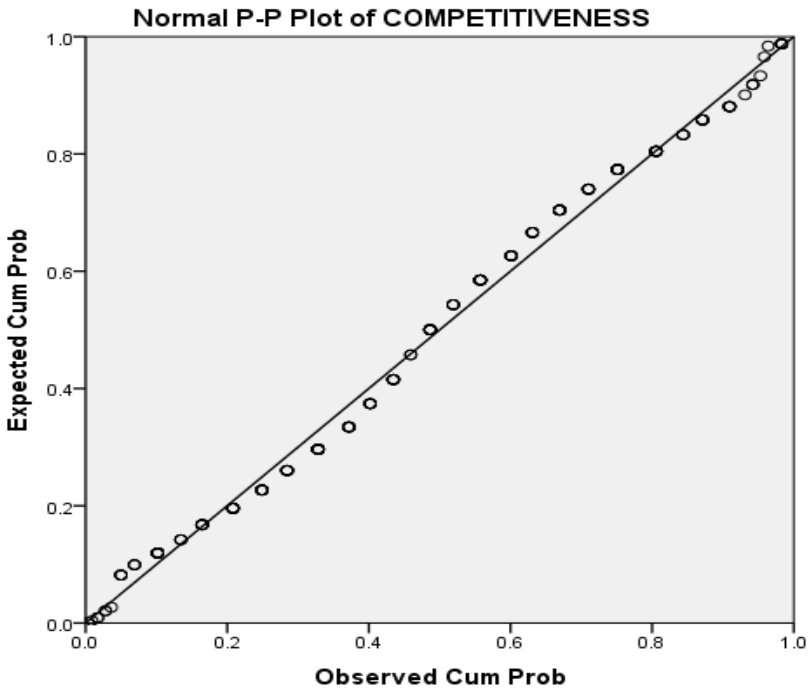

Figure 4. 4: Normal P-P Plot of Competitiveness

The same data was analysed to produce a Normal P-P Plot. The result show that the error term is normal, the residual errors are within the normal curve but not perfect. From this graph, the researcher concluded that the data appears to be normally distributed as it follows the diagonal line closely and appears to have a linear pattern.

Table 4. 18: Skewness and Kurtosis Test Results

N	Valid	183
	Missing	0
Mean		3.7269
Std. Error of Mean		.03274
Std. Deviation		.44296
Skewness		-.056
Std. Error of Skewness		.180
Kurtosis		-.734
Std. Error of Kurtosis		.357

The Skewness -0.104 with standard error of 0.180 and kurtosis 0.107 with standard error of 0.357 indicate that the data are well within ±1.96 limits, suggesting that the departure from normality is not significant. This is confirmed by visual inspection of the histogram of the same data shown in Figure 4.5. Standard deviation is a mathematical tool used to assess how far the values are spread above and below the mean. A high standard deviation shows that the data is widely spread and less reliable and a low standard deviation shows that the data are clustered closely around the mean and more reliable. Therefore, the standard deviation of 0.583 indicates that the data points are clustered closely around the mean score of 3.69 and tend to be normal.

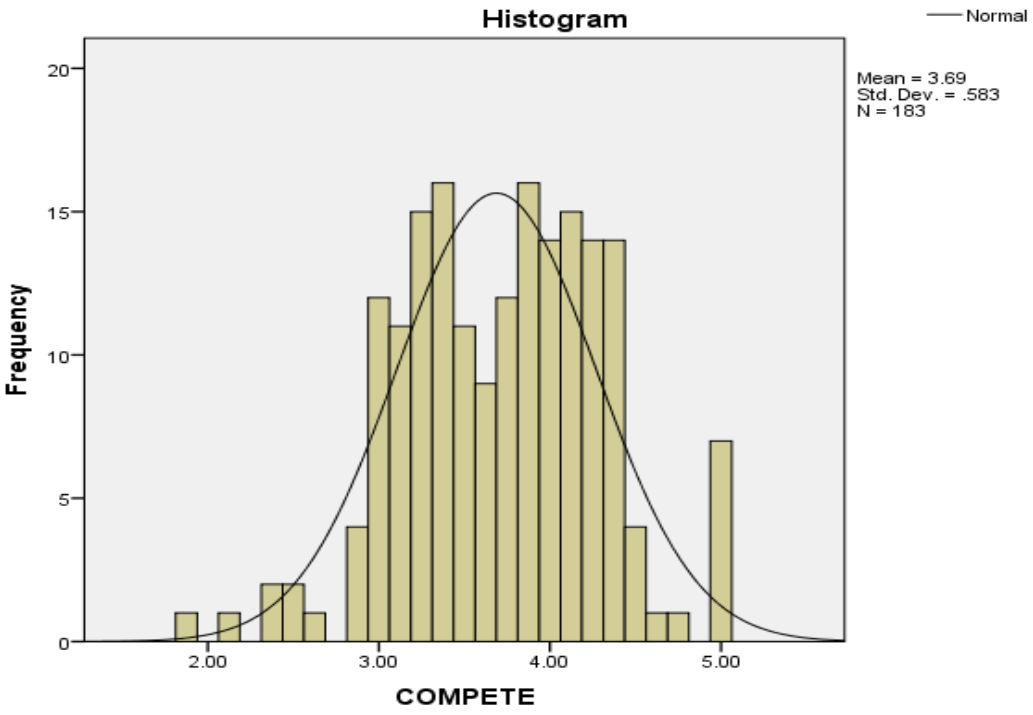

Figure 4.5: Normal Histogram of Competitiveness Enhancement

4.8.2 Test of Multicollinearity

Multicollinearity can be diagnosed through the test of tolerance and variance inflation factor (VIF). If the tolerance value is <0.20 and VIF>4, it indicates the existence of multicollinearity (Garson, 2012). A VIF of greater than 5 and a tolerance below 0.20 are generally considered evidence of multi-collinearity. In this study, the Tolerance for the data are all above 0.2 and VIF are less than 5, hence, there is no multi-collinearity.

Table 4.19: Multicollinearity Test of Intangible Resources

	Collinearity Statistics	
Variables	Tolerance	VIF
Intangible Human Capital	.342	2.927
Intangible Structural Capital	.293	3.417
Intangible Relational Capital	.376	2.662

The Tolerance and Variance Inflation Factor (VIF) in Table 4.20 indicate lack of effect of multi-collinearity (lack of overlap between predictors).

4.8.3 Test of Linearity and Autocorrelation

Multicollinearity and singularity can be diagnosed through correlation matrix, when there is high correlation among the variables (>0.80) there is multicollinearity (Garson, 2012). If the intercorrelations among all variables are <0.80, and are significant at 0.01, it depicts that multicollinearity would not exist (Gupta, 2000).

Table 4. 20: Pearson's Correlations Matrix between Intangible Resources and Competitiveness Enhancement

Correlation	Pearson	COMPETITIVENESS	IHC	ISC	IRC
COMPETITIVENESS	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	183			
IHC	Pearson Correlation	.681**	1		
	Sig. (2-tailed)	.000			
	N	183	183		
ISC	Pearson Correlation	.788**	.792**	1	
	Sig. (2-tailed)	.000	.000		
	N	183	183	183	
IRC	Pearson Correlation	.779**	.722**	.768**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	183	183	183	183

Table 4.21 presents the correlation coefficients for the study variables. It can be seen that from the correlation matrix, all the intangible resource variables are strongly correlated with competitiveness. The second column from the right displays the correlations of the independent variables with competitiveness. Intangible structural capital (ISC) in the order of r = 0.788, intangible relational capital (IRC) r = 0.779 are highly correlated with competitiveness and intangible human capital (IHC) r = 0.681 is moderately correlated. Above all, the comparison between IHC, ISC and IRC shows that ISC and IRC have a higher relationship with competitiveness than IHC. Although, there were some significant inter-correlations between independent variables, all the inter-correlation coefficients are below the level considered undesirable, which is generally 0.80 or higher. Therefore, the inter-correlations between the study independent variables were less than the starting point (0.80) that is considered problematic and significant at 0.01. Consequently, there was no presence of multi-collinearity among the independent variables. Intangible human, structural and relational capitals are important

sources of competitiveness enhancement. These findings are in line with those made by earlier scholars like Ogundipe, (2012); Tumwine, et al, 2012; Kijek (2007), Bueno and Salmador, (2004), and Leger, (2010). The findings are also in agreement with Kaplan and Norton (2004) from the study carried out in the Taiwanese limited companies that relational capital is being increasingly recognized as the major drive for corporate and national growth.

4.9 Regression Results

The four hypotheses as stated in chapter one of this study were tested using regression models. In order to establish the statistical significance of respective hypotheses, simple and multiple linear regression analysis were conducted as appropriate at 95 per cent confidence level ($\alpha = 0.05$). The following sections present the results of the hypotheses tests: The aggregate mean score of intangible human capital, intangible structural capital and intangible relational capital were regressed on the aggregate mean scores of competitiveness enhancement.

4.9.1 Relationship between IHC and Competitiveness Enhancement

The hypothesis (H_1) statement: there is significant relationship between intangible human capital and competitiveness enhancement of telecommunication companies in Rwanda. Simple regression analysis was conducted to investigate the statistical significant relationship between intangible human capital and competitiveness among telecommunication companies in Rwanda.

Table 4. 21: Model Summary of IHC and Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681[a]	.464	.461	6.85459

a. Predictors: (Constant), IHC
b. Dependent Variable: COMPETITIVENESS

The correlation coefficient *R* is the measure of the strength of the prediction of the dependent variable (competitiveness enhancement) depicts a value of *R*=0.681, which indicates a moderate and a good level of prediction. The coefficient of determination R^2 is the proportion of variance in the dependent variable that is explained or accounted for by the independent variable. As can be seen from the value of R^2=0.464, the independent variable (IHC) explains 46.4% of the variability of the dependent variable (Competitiveness enhancement). The remaining 53.6% is explained by other factors and variables other than IHC. The Adjusted R^2*=46.1%* did not change the results substantially as it reduced the explanatory behaviour of the predictor from 46.4% to 46.1%. Therefore, intangible human capital has a positive influence on competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 22: ANOVA Results for IHC and Competitiveness Enhancement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7348.635	1	7348.635	156.402	.000[b]
	Residual	8504.360	181	46.985		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS

b. Predictors: (Constant), IHC

Table 4.23 shows the Analysis of Variance (ANOVA) of the influence of IHC on competitiveness enhancement of telecommunication companies in Rwanda. The results with a p-value of 0.000 indicated that the linear model was highly statistically significant in explaining the influence of IHC on competitiveness enhancement. The F statistic of $F(1, 181) = 156.402$ at p=000<0.05. Therefore, the hypothesis that there is significant relationship between IHC and competitiveness enhancement of telecom companies in Rwanda is accepted.

Table 4. 23: Coefficients of IHC

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.025	3.711		3.510	.001
	IHC	.473	.038	.681	12.506	.000

Dependent Variable: COMPETITIVENESS

The identified bivariate equation model to understand this relationship was *Y*= $\beta_0 + \beta_1 X_1 + \varepsilon$ => competitiveness = *13.025+0.473*IHC*. The results in the coefficient table 4.23 indicated that there is significant relationship between intangible human capital and competitiveness enhancement of telecommunication companies in Rwanda since β =0.473, t=12.506, $p<0.05$ at 95% confidence interval. Thus, H_1 is accepted.

The result supports the position of scholars whose findings claimed that human capital lays the micro foundation for a firm to achieve competitiveness (Coff & Kryscynski, 2011; Ployhart & Moliterno, 2011). Employee as human capital gives a company the power and flexibility to rapidly position new knowledge, skills, and creative ideas and generate an ever-changing range of products and services. The result is also supported by relevant literature, which to a large extent maintains the fact that firm performance is positively and significantly impacted by the presence of human capital (Ngari, 2013; Bontis & Cabrita, 2008; Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009; Seleim, Ashour, & Bontis, 2007). The finding follows the main assumptions of RBV which holds that resources possessing specific characteristics such as being valuable, rare, inimitable and non-substitutable are the key determinants of a firm's competitiveness and success and are referred to as strategic assets (Barney & Hesterly, 2006; Newbert, 2006; Wernerfelt, 1984; Barney, 1991; Amit and Schoemaker, 1993).

4.9.2 Relationship between ISC and Competitiveness Enhancement

In this section, the main independent and dependent variables were analysed to find out the role of intangible structural capital in enhancing competitiveness of telecommunication companies in Rwanda. The second hypothesis (H_2) for this study was to assess the significant relationship between intangible structural capital and competitiveness among telecommunication companies in Rwanda. Therefore, simple regression was performed.

Table 4. 24: Model Summary of ISC and Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788[a]	.620	.618	5.76625

a. Predictors: (Constant), ISC
b. Dependent Variable: COMPETITIVENESS

The correlation coefficient in Table 4.25 illustrates a value of R=0.788, which indicates a strong positive linear relationship between intangible structural capital and competitiveness enhancement. The R^2 value of 0.620 illustrates that the independent variable (ISC) accounts for 62% of the variability of the dependent variable (Competitiveness enhancement). The remaining 38% is explained by other factors and variables other than IHC. The Adjusted R^2*=61.8%* did not change the results substantially as it reduced the explanatory behaviour of the predictor from 62% to 61.8%. Therefore, intangible human capital has a positive influence on competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 25: ANOVA Result for ISC and Competitiveness Enhancement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9834.813	1	9834.813	295.787	.000[b]
	Residual	6018.182	181	33.250		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS

b. Predictors: (Constant), ISC

Table 4.26 shows the Analysis of Variance (ANOVA) of the influence of ISC on competitiveness enhancement of telecommunication companies in Rwanda. The results with a p-value of 0.000 indicated that the linear model was highly statistically significant in explaining the influence of ISC on competitiveness enhancement. The F statistic of *F(1, 181) =295.787* at p=000<0.05. Therefore, the hypothesis that there is significant relationship between ISC and competitiveness enhancement of telecom companies in Rwanda is accepted.

Table 4. 26: Coefficients of ISC

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.900	3.116		1.893	.060
	ISC	.540	.031	.788	17.198	.000

a. Dependent Variable: COMPETITIVENESS

Simple regression coefficient was computed to investigate the statistical significant relationship between intangible structural capital and competitiveness of telecommunication companies in Rwanda. The identified univariate equation model to

understand this relationship between intangible structural capital and competitiveness among telecommunication companies in Rwanda was $Y=\beta_0+\beta_2 X_2+\varepsilon$ => competitiveness = *5.900+0.540*ISC.* The result in the coefficient table 4.26 shows that there is significant relationship between intangible structural capital and competitiveness of telecommunication companies in Rwanda since β=0.540, t=17.198 at $p<0.05$ at a 95% confidence interval. Thus, H_2 is accepted.

4.9.1 Relationship between IRC and Competitiveness Enhancement

The hypothesis (H_1) statement: there is significant relationship between intangible relational capital and competitiveness enhancement of telecommunication companies in Rwanda. Simple regression analysis was conducted to investigate the statistical significant relationship between intangible relational capital and competitiveness of telecommunication companies in Rwanda.

Table 4. 27: Regression Model Summary of IRC and Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.779[a]	.607	.604	5.86998

a. Predictors: (Constant), IRC
b. Dependent Variable: COMPETITIVENESS

The correlation coefficient in Table 4.28 represents the value of R=0.779, which indicates a strong positive linear relationship between intangible relational capital and competitiveness enhancement. The coefficient of determination R^2, which is the proportion of variance in the dependent variable that can be explained by the independent variables (technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model). The R^2=0.607 depicts that the

independent variable (IRC) accounts for 60.7% of the variability of the dependent variable (Competitiveness enhancement). The remaining 39.3% is explained by other factors and variables other than IHC. The Adjusted R^2*=60.4%* did not change the results substantially as it reduced the explanatory behaviour of the predictor from 60.7% to 60.4%. Therefore, intangible relational capital has a positive influence on competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 28 ANOVA Results for IRC and Competitiveness Enhancement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9616.330	1	9616.330	279.084	.000[b]
	Residual	6236.664	181	34.457		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS

b. Predictors: (Constant), IRC

Table 4.29 shows the Analysis of Variance (ANOVA) of the influence of IRC on competitiveness enhancement of telecommunication companies in Rwanda. The results with a p-value of 0.000 indicated that the linear model was highly statistically significant in explaining the influence of IRC on competitiveness enhancement. The F statistic of *F(1, 181) =279.084* at p=000<0.05. Therefore, the hypothesis that there is significant relationship between IRC and competitiveness enhancement of telecom companies in Rwanda is accepted.

Table 4. 29: Coefficients of IRC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.661	3.459		.480	.632
	IRC	.522	.031	.779	16.706	.000

a. Dependent Variable: COMPETITIVENESS

The hypothesis (H_3) states that there is significant relationship between intangible relational capital and competitiveness among telecommunication companies in Rwanda. Simple regression coefficient was conducted by the researcher to investigate the statistical significant relationship between intangible relational capital and competitiveness among telecommunication companies in Rwanda. The identified univariate equation model to understand this relationship between intangible relational capital and competitiveness among telecommunication companies in Rwanda was $Y= \beta_0 + \beta_3 X_3 + \varepsilon$ which became competitiveness = *1.661+0.522*IRC.* The results in the coefficient table 4.30 shows that there is significant relationship between intangible relational capital and competitiveness among telecommunication companies in Rwanda since β =0.522, t=16.706 at $p<0.05$ at a 95% confidence interval. Thus, H_1 is accepted.

These findings are in line with those made by earlier scholars like Ogundipe, (2012); Tumwine, et al, 2012; Kijek (2007), Bueno and Salmador, (2004), and Leger, (2010). This finding is in agreement with Kaplan and Norton (2004) from the study carried out in the Taiwanese limited companies that relational capital is being increasingly recognized as the major drive for corporate and national growth.

Intangible relational capital is an important source of competitiveness enhancement of the telecom companies in Rwanda since it cannot be imitated. The result conforms to previous studies done by Abdulai, Kwon and Moon (2012), Zerenler, Hasiloglu and Mete, (2008); Ngari, (2013); Bontis & Cabrita, (2008); Wan Fadzilah, (2008).

4.10 Multivariate Regression

The fourth hypothesis (H_4) for this study was to identify the significant joint effect of the intangible resource variables (IHC, ISC and IRC) on competitiveness enhancement. The following multiple linear regression model was advocated for the purpose of studying the significant joint causal relationships between the intangible resource variables (IHC, ISC and IRC) and competitiveness enhancement of telecommunication companies in Rwanda: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$

Table 4. 30: Goodness of Fit for Intangible Resources and Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.833[a]	.694	.689	5.20235	1.895

a. Predictors: (Constant), IRC, IHC, ISC

b. Dependent Variable: COMPETITIVENESS

To discover the unique joint contribution of each of the independent variables (IHC, ISC, IRC) in explaining Competitiveness enhancement, multiple regression analyses were undertaken. The Model Summary table 4.31 shows that the multiple correlation coefficient illustrates a very strong positive linear relationship *(R=0.833),* using all the predictors simultaneously. R-square is the amount of variance in a dependent variable in a multiple regression explained by a combination of all the independent variables. In this study, all the three independent variables, IHC, ISC and IRC together explain 69.4% of

the variance *(R^2=0.694)* and 68.9% of the variance (adjusted R^2=0.689) in relation to competitiveness. This indicates that intangible resources accounts for 69.4% of the variability of competitiveness enhancement.

Table 4. 31: ANOVA of Intangible Resources and Competitiveness Enhancement

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11008.458	3	3669.486	135.583	.000[b]
	Residual	4844.537	179	27.064		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS
b. Predictors: (Constant), IRC, IHC, ISC

The ANOVA (Table 4.32) shows that *F(3, 179) =135.583* and is significant. This indicates that the combination of the intangible resource variables (IHC, ISC and IRC) has a significant joint effect on competitiveness enhancement of telecommunication companies in Rwanda since *p=0.000<0.05*. Therefore, the hypothesis that there is significant joint relationship between intangible resources and competitiveness enhancement of telecom companies in Rwanda is accepted.

Table 4. 32: Coefficients of Intangible Resources

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.580	3.197		-1.120	.264
	IHC	.018	.049	.026	.373	.709
	ISC	.306	.052	.447	5.849	.000
	IRC	.280	.045	.417	6.182	.000

a. Dependent Variable: COMPETITIVENESS

The ANOVA (Table 4.33) indicates that the overall model fits the data well as expressed by the unstandardized and standardized beta coefficients. The model expressed as:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$ =>

$Y = -3.580 + 0.018IHC + 0.306ISC + 0.280IRC.$ In the Coefficients (Table 4.33), the *t* value and the Significance columns opposite each independent variable indicates whether that variable is significantly contributing to the equation for predicting competitiveness enhancement from the whole set of predictors. Thus, intangible human capital was positively related with competitiveness (β_1=0.018) but not significant (*p=0.709*), however, an increase in intangible human capital by 1 unit leads to an increase in competitiveness enhancement by 0.018. Intangible structural capital was positively and significantly related with competitiveness (β_2=0.306, *p=000*). This implies that an increase in intangible structural capital by 1 unit leads to an increase in competitiveness enhancement by 0.306 units. Intangible relational capital was positively and significantly related with competitiveness (β_3=0.280, *p=000*). This implies that an increase in intangible relational capital by 1 unit leads to an increase in competitiveness enhancement by 0.280 units. The Y- intercept -3.580 is the predicted value of the intensity of competitiveness enhancement when all the other variables are 0, implying that without inputs of the independent variables the intensity of competitiveness enhancement in telecommunication companies in Rwanda would be -3.580. The other coefficients tell about the relationship between independent and dependent variables.

These findings are in line with Subramaniam and Youndt (2005) who found that human capital itself was negatively associated with radical innovative capability in their study. Social capital played a significant role in both types of innovation, as it positively influenced incremental and radical innovative capabilities. Moreover, the most relevant issues are the lack of a direct impact as well as the lack of significant impact of human capital on performance (Lahiri et al., 2012). This could be an evidence of problems related to intangibility of this type of resources, as reported by Molloy, Chadwick, Ployhart and Golden (2011) and emphasized by several authors as a barrier

(Kraaijenbrink et al., 2010). Wu, et al. (2008), explored the mediating effect of intellectual capital on innovation in Taiwanese manufacture and non-manufacture industries and found that human capital, customer capital and structural capital affect innovation at a significant level. Zerenler, Hasiloglu and Mete, (2008), carried out a research in the Turkish automotive supplier industry in order to investigate the influence of intellectual capital and its components and concluded that human capital, structural capital and customer capital had significant positive relationships with innovation performance.

In addition, the resource-based view stresses the importance of internal characteristics possessed by intangible resources in explaining the differences in success levels among firms' competitiveness in the same industry (Wernerfelt, 1984; Barney, 1991). However, the literature suggests that not all resources contribute equally to a firm's success (Barney, 1991; Peteraf, 1993; Adner and Zemsky, 2006; Moliterno and Wiersema, 2007). It is argued that resources can be important contributor to and key determinant of a firm's success only if they possess certain characteristics (Barney, 1991). The clear direction of all the studies respecting human capital and competitiveness pointed to the 'rationality' conveyed by human capital theory (Teixeira, 2002), namely that of increasing the quantity of firm's intangible human capital. This is supported by relevant literature, which to a large extent maintains the fact that firm performance is positively impacted by the presence of human capital (Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009).

4.11 Interaction between IHC and other Intangible Resources

The researcher sought to analyse the interaction between intangible resource variables and their effects on competitiveness. The analysis started with interaction between IHC and ISC, and continued with interaction between IHC and IRC. This is to show how IHC complements the other intangible resources.

Table 4. 33: Interaction Model Summary between IHC and ISC and their effect on Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.793[a]	.629	.625	5.71489

a. Predictors: (Constant), ISC, IHC

When IHC and ISC interact and complement each other, they account for R^2=62.9% of the variability in competitiveness enhancement with a strong correlation coefficient R=0.793.

Table 4. 34: ANOVA of IHC and ISC

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9974.194	2	4987.097	152.697	.000[b]
	Residual	5878.800	180	32.660		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS

b. Predictors: (Constant), ISC, IHC

The ANOVA Table 4.35 confirms the significance of this interaction with F(2, 152.697), $p<0.05$. Therefore, when IHC and ISC interact and complement each other, they highly significantly influence competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 35: Coefficient of IHC and ISC

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.728	3.263		1.142	.255
	IHC	.107	.052	.153	2.066	.040
	ISC	.457	.051	.666	8.966	.000

a. Dependent Variable: COMPETITIVENESS

Table 4.36 illustrates that IHC complements the intangibility in structural capital to significantly influence competitiveness when the two are present. Telecom companies can improve their competitive positions by instituting good systems and programs that will attract more intangible human capital.

Table 4. 36: Model Summary between IHC and IRC and their effect on Competitiveness Enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798[a]	.636	.632	5.66191

a. Predictors: (Constant), IRC, IHC

When IHC and IRC interact and complement each other, they account for R^2=63.6% of the variability in competitiveness enhancement with a strong correlation coefficient R=0.798.

Table 4. 37: ANOVA Interaction Summary between IHC and IRC and their effect on Competitiveness

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10082.687	2	5041.343	157.261	.000[b]
	Residual	5770.308	180	32.057		
	Total	15852.995	182			

a. Dependent Variable: COMPETITIVENESS

b. Predictors: (Constant), IRC, IHC

The ANOVA Table 4.38 confirms the significance of this interaction with F(2, 157.261), $p<0.05$. Therefore, when IHC and IRC interact and complement each other, they highly significantly influence competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 38: Coefficients of IHC and IRC and their effect on Competitiveness enhancement

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.904	3.465		-.550	.583
	IHC	.172	.045	.248	3.814	.000
	IRC	.402	.044	.600	9.235	.000

a. Dependent Variable: COMPETITIVENESS

The results in Table 4.39 indicate that the interaction of IHC with IRC can highly and significantly affect competitiveness. Intangible human and relational capitals are

intrinsically linked because it is the people within an organization that create, maintain and nurture the relationships that contribute to daily performance. The most statistically significant predictor of the ratings of competitiveness is an interaction between the intangible relational and human capitals. This means, as the organization's intangible resources escalate, higher overall levels of competitiveness will be experienced. The strength of overall relationships with customers, suppliers and competitors directly impacts organization's competitiveness enhancement. Relationships, combined with human capital, drive new customer attraction and retention, increased market share, cost reduction and innovative products. The relationships employees carry with them on behalf of the organization, as well as their level of engagement and willingness to go beyond, are not easy to replicate. Competitors can copy jobs, hire people and move their organizations to other countries where they pay less to produce the same output, but they cannot create long-term, high quality relationships overnight. Intangible human and relational capitals are fundamentally connected and can be a point of competitiveness enhancement for an organization if time is taken to promote and support it.

An important explanation to this is that when intangible human capital (IHC) interacts separately with other intangible resources (ISC or IRC) will contribute more significantly to the enhancement of competitiveness of the telecommunication companies in Rwanda. This result is supported by the longitudinal study of Subramaniam and Youndt (2005) who found that human capital, organizational capital and social capital and their interrelationships selectively influence incremental and radical innovative capabilities. They also discovered that organizational capital positively influenced incremental innovative capability, while human capital interacted with social capital and positively influence radical innovative capability.

Furthermore, the components that affect IHC in this study (knowledge and experience; skills and abilities; and innovation and creativity) are tacit. They leave the organization as soon as the employee leaves. The elements of intangible structural capital in this study (systems and programs, research and development; and corporate reputation) belong to the organization and may have attracted more focus than intangible human

capital. Also intangible relational capital variables (relationship with customers, suppliers and competitors) belong to the organization as well as the individuals and it was also confirmed in this study that the interaction of IHC with IRC without the presence of ISC, can highly and significantly affect competitiveness enhancement.

Intangible human and relational capitals are intrinsically linked because it is the people within an organization that create, maintain and nurture the relationships that contribute to daily performance. The most statistically significant predictor of the ratings of competitiveness is an interaction between the intangible relational and structural capitals, followed by intangible relational and human capitals and finally intangible structural and human capitals. This means, as the organization's intangible resources increase, higher overall levels of competitiveness will be experienced. When intangible resources are fundamentally connected, they can be a point of competitiveness for an organization if time is taken to promote and support it.

4.9.6 Moderating role of age of the company on the relationship between intangible resources and competitiveness enhancement

The fifth objective was to determine the moderating role of company age on the relationship between intangible resources and competitiveness enhancement of telecommunication companies in Rwanda. The H_5 was to test whether significant moderating effect exists between intangible resources and competitiveness enhancement, hence the equation: $Y = \beta_0 + \beta_1 X_1 + \beta_2 Z + \beta_3 X_1 Z + \varepsilon$

Table 4. 39: Model Summary showing the effect of moderating variable between intangible resources and competitiveness enhancement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833[a]	.694	.689	.32515
2	.835[b]	.697	.690	.32460

a. Predictors: (Constant), IRC, IHC, ISC

b. Predictors: (Constant), IRC, IHC, ISC, Age

The linear regression model shows R^2= 0.697 which means that 69.7% change of competitiveness enhancement is accounted for by IHC, ISC, IRC and age of the company.

Table 4. 40: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	43.002	3	14.334	135.583	.000[b]
	Residual	18.924	179	.106		
	Total	61.926	182			
2	Regression	43.171	4	10.793	102.429	.000[c]
	Residual	18.755	178	.105		
	Total	61.926	182			

a. Dependent Variable: COMPETE

b. Predictors: (Constant), IRC, IHC, ISC

c. Predictors: (Constant), IRC*A, IHC*A, ISC*A, Age

Further test on ANOVA shows that the significance of the F-statistic (4, 102.429) is less than 0.05 since p=0.00 as indicated in Table 4.38. This implies that there is a positive significant relationship between moderating effect of company age between intangible

resources and competitiveness enhancement of telecommunication companies in Rwanda.

Table 4. 41: Regression Coefficients of intangible resources, company age and competitiveness enhancement

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.587	1.445		1.099	.273
	IHC*A	-.014	.012	-.317	-1.131	.260
	ISC*A	.013	.006	.301	2.180	.031
	IRC*A	.003	.012	.060	.209	.835

a. Dependent Variable: COMPETITIVENESS

Further analysis on coefficients showed that moderating effect of company age on IHC *B*=-0.014, p=0.260 showing negative and insignificant, ISC *B*=0.013, p=0.031 showing positive and significant, IRC *B*=0.003, p=0.835 showing positive and insignificant relationship. Thus, moderating effect of company age on intangible resources is altogether highly insignificant. Therefore, reject the hypothesis that company age has a moderating effect between intangible resources and competitiveness enhancement. Age of the company can moderate between ISC and competitiveness enhancement, but, cannot moderate between IHC and IRC and competitiveness enhancement. ISC is owned by the company, but IHC is inherent in human beings and complements with IRC to achieve success and once the human beings leave the organization they go with embedded intangible resources.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of major findings of the study, conclusions and recommendations. The study sought to establish the determinants of competitiveness enhancement of Telecommunication companies in Rwanda. The summary of key findings, conclusions and recommendations were done in line with the objectives of the study based on the output of the descriptive and inferential statistical analyses used to test the research hypothesis of the study.

5.2 Summary of major findings

5.2.1 Role of intangible human capital on competitiveness enhancement of Telecommunication Companies in Rwanda

The purpose of the study was to establish the role of intangible human capital in enhancing competitiveness among telecommunication companies in Rwanda. The results show that intangible human capital through knowledge and experience; skills and abilities and innovation and creativity can significantly and positively enhance competitiveness as the correlation coefficient indicated a linear, positive and significant relationship between intangible human capital and competitiveness R=0.681 and R^2=42.4% at an $\alpha<0.05$.

5.2.2 Role of intangible human structural capital on competitiveness enhancement of Telecommunication Companies in Rwanda

The second objective was to determine the role of intangible structural capital on competitiveness enhancement of telecommunication companies in Rwanda. The results show that intangible structural capital with emphasis on organizational systems and

programs; research and development; and corporate reputation can significantly and positively enhance market share, cost reduction, innovative products and customer attraction and retention thereby enhance competitiveness as the correlation coefficient indicates a linear, positive and significant relationship $r=0.788$, $R^2=62$ at $p<0.05$ between intangible structural capital and competitiveness enhancement of telecommunication companies in Rwanda.

5.2.3 Role of intangible human relational capital on competitiveness enhancement of Telecommunication Companies in Rwanda

The third objective was to determine the role of intangible relational capital on competitiveness enhancement of telecommunication companies in Rwanda. The results show that intangible relational capital with emphasis on relationship with customers, suppliers and competitors can significantly and positively enhance market share, cost reduction, innovative products and customer attraction and retention thereby enhance competitiveness as the correlation coefficient indicates a linear, positive and significant relationship $R=0.779$ at $p<0.05$ between intangible relational capital and competitiveness enhancement of telecommunication companies in Rwanda.

5.2.4 Joint effects of intangible resource variables on competitiveness enhancement of Telecommunication Companies in Rwanda

Accumulation of intangible resources has a positive and significant joint effect on competitiveness of telecommunication companies in Rwanda. The multiple regression analysis revealed that the *p* value of the F-test used to assess the overall regression model was significant. With a p-value of zero to four decimal places, the model is statistically highly significant. The R-squared=0.694, meaning that approximately 69.4% of the variability of competitiveness is accounted for by the variables (IHC, ISC and IRC) in the model. In this case, the adjusted R-squared indicates that 68.9% of the variability of competitive advantage is accounted for by the model, after taking into account the three predictor variables in the model. Since the joint impact of intangible

resources is highly significant, it is a good predictor of competitiveness in Rwanda. The findings of this study revealed a significant *p* value = 0.000<0.05.

Although, the results indicate that the combination of the intangible resource (IHC, ISC and IRC) have a significant joint effect on competitiveness enhancement of telecommunication companies in Rwanda with ($p<0.05$), it was also discovered that when IHC interact with ISC and IRC, it affects competitiveness enhancement more significantly than when isolated.

5.2.5 Moderating role of age on the relationship between intangible resources and competitiveness enhancement of Telecommunication Companies in Rwanda

The fifth objective sought to establish the moderating role of the age of the company on the relationship between intangible resources and competitiveness enhancement of Telecommunication Companies in Rwanda. The fifth hypothesis (H_5) tested to discover the significant moderating effect of age of the company, the results of the multiple regression analysis revealed that age of the company has no statistically significant moderating role on the relationship between intangible resources and competitiveness enhancement of Telecommunication Companies in Rwanda. *B=(-0.136), t* value *(-1.715)* and the Significance *p=(0.088).*

5.3 Conclusions

The results and findings of this study concluded that intangible resources have a significant, positive and linear relationship with enhancement of competitiveness of telecommunication companies in Rwanda.

Intangible Human Capital (IHC) has a positive moderate and significant relationship with competitiveness enhancement among telecommunication companies in Rwanda. In this study, IHC was determined by knowledge and experience; skills and abilities; and innovation and creativity. These sub-variates of intangible human capital are affected by the employees' level of knowledge and experience adequacy for the competitiveness of

the company, continuous training programs and learning from others including competitors, ratio of educated employees on average compared with competitors and compared with what should be in the industry, level of innovation and creative ideas developed and shared by the employees, level of specialization and excellent performance in their respective areas, competence level of employees matched with their work requirements and responsibilities.

Intangible Structural Capital (ISC) has a positive strong and highly significant relationship with competitiveness among telecommunication companies in Rwanda. In this study, ISC was affected by systems and programs; research and development; and corporate reputation. These sub-variables are determined by the level of company's systems provision for succession training programs for every position, company's culture and atmosphere are supportive and comfortable, following bureaucratic principles rigidly, has a well-developed reward system and incentives related to performance, continuous development of work processes and self-re-organization based on R&D, follows up and adopts the latest scientific and technical development around the world, determines appropriate and adequate budget for R&D, management board highly trusts and supports the R&D department. ISC is also affected by generating customer loyalty and continued patronage.

Intangible Relational Capital (IRC) also has a positive strong and highly significant relationship with competitiveness among telecommunication companies in Rwanda. In this study, the sub-variables of IRC: relationship with customers, competitors and suppliers were affected by capitalization on customers' wants and needs by continually striving to make them satisfied, reduction the time it takes to resolve a customer's problem, customers' opinion are greatly taken into consideration. Working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions, Suppliers can help their customers enhance products and product features that will generate additional revenue, The company's suppliers help reduce company's customer complaints and increase customer satisfaction, Relationship with

suppliers can help provide an entry into new markets and with opportunities to acquire and retain customers.

The conclusion on specific objective number four is that intangible resource variables (IHC, IRC and ISC) have a joint positive and significant effect on competitiveness among telecommunication companies in Rwanda. Furthermore, the components that affect IHC in this study (knowledge and experience; skills and abilities; and innovation and creativity) are tacit. They leave the organization as soon as the employee leaves. The elements of intangible structural capital in this study (systems and programs, research and development; and corporate reputation) belong to the organization and may have attracted more focus than intangible human capital.

Also intangible relational capital (relationship with customers, suppliers and competitors) belong to the organization and it was also confirmed in this study that the interaction of IHC with IRC without the presence of ISC, can highly and significantly affect competitiveness. Intangible human and relational capitals are intrinsically linked because it is the people within an organization that create, maintain and nurture the relationships that contribute to daily performance. The most statistically significant predictor of the ratings of competitiveness is an interaction between the intangible relational and structural capitals, followed by intangible relational and human capitals and finally intangible structural and human capitals.

Intangible human capital leads to higher competitiveness when it interacts with intangible relational capital and intangible structural capital. This is because IHC has a precise comprehension of the mechanisms of IRC and ISC. Effective utilization of knowledge, experience, skills, ability, innovativeness and creativity successfully transferred to the relationship between customers, suppliers and competitors will yield an efficient and quicker response to customers' needs and enquiries leading to more customer being attracted and retained, cost reduction, increased market share, innovative products and services. Likewise, effective application of knowledge, experience, skills, ability, innovativeness and creativity applied and successfully

conveyed to the research and development, systems and programs and corporate reputation will lead to more customer loyalty and affecting competitiveness significantly. It was also discovered that age, size and regulations have no indirect mediating effect on competiveness.

Moreover, despite the presence of moderating variable, age of the company, intangible resources stood strong by positively, significantly and directly having relationship with competitiveness enhancement. This means, as the organization's intangible resources escalate, higher overall levels of competitiveness will be experienced. When intangible resources are fundamentally connected, they can be a point of competitiveness for an organization if time is taken to promote and support it. The researcher, therefore, concludes that intangible resources with emphasis on intangible human capital, intangible structural capital and intangible relational capital can significantly, directly and positively enhance market share, cost reduction, innovative products and customer attraction and retention thereby enhancing competitiveness of telecommunication companies in Rwanda.

5.4 Recommendations

Companies should leverage upon the combination of intangible resources to enhance their competitiveness, especially telecommunication companies in Rwanda.

The study shows that as IHC increases, competitiveness also increases, therefore organizations and specifically, telecommunication companies in Rwanda should improve the employees' level of knowledge and experience adequacy for the competitiveness of the company, continuous training programs and learning from others including competitors, ratio of educated employees on average compared with competitors and compared with what should be in the industry, level of innovation and creative ideas developed and shared by the employees, level of specialization and excellent performance in their respective areas, competence level of employees matched with their work requirements and responsibilities. Consequently, the researcher

recommends that telecommunication companies should devote a lot of time, effort and money for the update and enhancement of employees' knowledge, skills, abilities, innovativeness, creativeness and experience for the enhancement of competitiveness.

Since it was discovered that an increase in intangible structural capital (ISC) leads to an increase in competiveness, companies should therefore, enhance their systems and programs; research and development; and corporate reputation by enhancing the level of company's systems provision for succession training programs for every position, ensure supportive and comfortable company's culture and atmosphere, follow bureaucratic principles rigidly, ensure a well-developed reward system and incentives related to performance, ensure continuous development of work processes and self-re-organization based on R&D, ensure continuous follow-up and adoption of the latest scientific and technological development around the world, determine appropriate and adequate budget for R&D, ensure continuous trust and support of the R&D department. Enhancing and ensuring the foregoing elements will lead to enhancement of competitiveness.

Increasing Intangible Relational Capital (IRC) also has a positive strong and highly significant relationship with competitiveness among telecommunication companies in Rwanda. These companies should increase relationship with customers, competitors and suppliers by capitalizing on customers' wants and needs, by continually striving to make them satisfied, reducing the time it takes to resolve a customer's problem, greatly considering customers' opinions. Working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions. Suppliers can help them enhance products and product features that will generate additional revenue. The company's suppliers help reduce company's customer complaints and increase customer satisfaction. Relationship with suppliers can help provide an entry into new markets and with opportunities to acquire and retain customers.

These intangible resources (IHC, ISC and IRC) are very important elements in telecommunication companies and can better be managed strategically to demonstrate more attributes of value, rare, inimitable and non-substitutable for the enhancement of competitiveness among the telecommunication and other companies in Rwanda. Companies, especially telecommunication companies in Rwanda should enhance and use these resources jointly for the enhancement of competitiveness since they portrayed a strong and significant joint effect on competitiveness.

Intangible human capital has a positive linear relationship however the impact is not direct. IHC needs the other intangible resources (structural or relational capital) to achieve the enhancement of competitiveness. The ability of IHC to lead to competitiveness enhancement depends on whether it is valued in the market, unique, costly to imitate, readily substitutable, and is built with the existence of ISC and IRC.

The findings of the study indicate that this complexity must be managed in conjunction with other internal company resources IRC and ISC to facilitate the significant influence of intangible human capital on competitiveness enhancement. It also points to the fact that organizations should allow the interaction between intangible human capital and intangible relational capital or intangible structural capital since the study proved that their interaction plays a highly significant role in the enhancement of competitiveness.

The study also proved that the most statistically significant predictor of the ratings of competitiveness enhancement is an interaction between the intangible relational and structural capitals, followed by intangible relational and human capitals and finally intangible structural and human capitals. It is imperative to elucidate that skills and abilities, knowledge and experience, innovativeness and creativity contribute tremendously in the success of relational and structural capitals towards enhancement of competitiveness.

Therefore, as the organization's intangible resources intensifies, higher overall levels of competitiveness will be experienced. Fundamental connection, application and

integration of intangible resources can be a point of competitiveness for telecommunication companies (MTN, Tigo and Airtel) in Rwanda if time is taken to promote and support these intangible resources. This has nothing to do with age of the telecommunication companies since this moderating variable did not deposit any significant effect on competitiveness.

5.4.1 Implications of the Study

In this study, systems and programs, research and development, corporate reputations are important measures for ISC. Relationship with customers, suppliers and competitors are measures of IRC. Knowledge and experience, skills and abilities and innovation and creativity are important measures of IHC. Consequently, the telecommunication companies in Rwanda should consider paying special attention and efforts on managing all the three components of intangible resources in order to enhance competitiveness of their companies.

In comparison with the results from other countries and industries, it is important to note that intangible human capital had the lowest impact on competitiveness and this calls for telecommunication companies in Rwanda to improve the employees' level of knowledge and experience adequacy for the competitiveness of the company, continuous training programs and learning from others including competitors, ratio of educated employees on average compared with competitors and compared with what should be in the industry, level of innovation and creative ideas developed and shared by the employees, level of specialization and excellent performance in their respective areas, ensure that competence level of employees matches with their work requirements and responsibilities.

Hence, the researcher recommends that telecommunication companies should devote a lot of time, effort and money for the update and enhancement of employees' knowledge, skills, abilities, innovativeness, creativeness and experience for the enhancement of competitiveness.

5.4.2 Theoretical Implications of the Study

The theoretical implication of this study is that it supports and extends the RBV of competitive advantage by illustrating the need for systematic management of intangible resources towards attaining competitiveness enhancement. The Intangible Resource Model (IRM) presented in this current study emerged as an outcome of careful analysis of the empirical literature, resource based view theoretical framework and the hypotheses used in this study. The IRM below offers a solid and useful framework from which researchers can begin to understand its influence on competitiveness enhancement, not only among telecommunication companies in Rwanda, but to other organizations and countries.

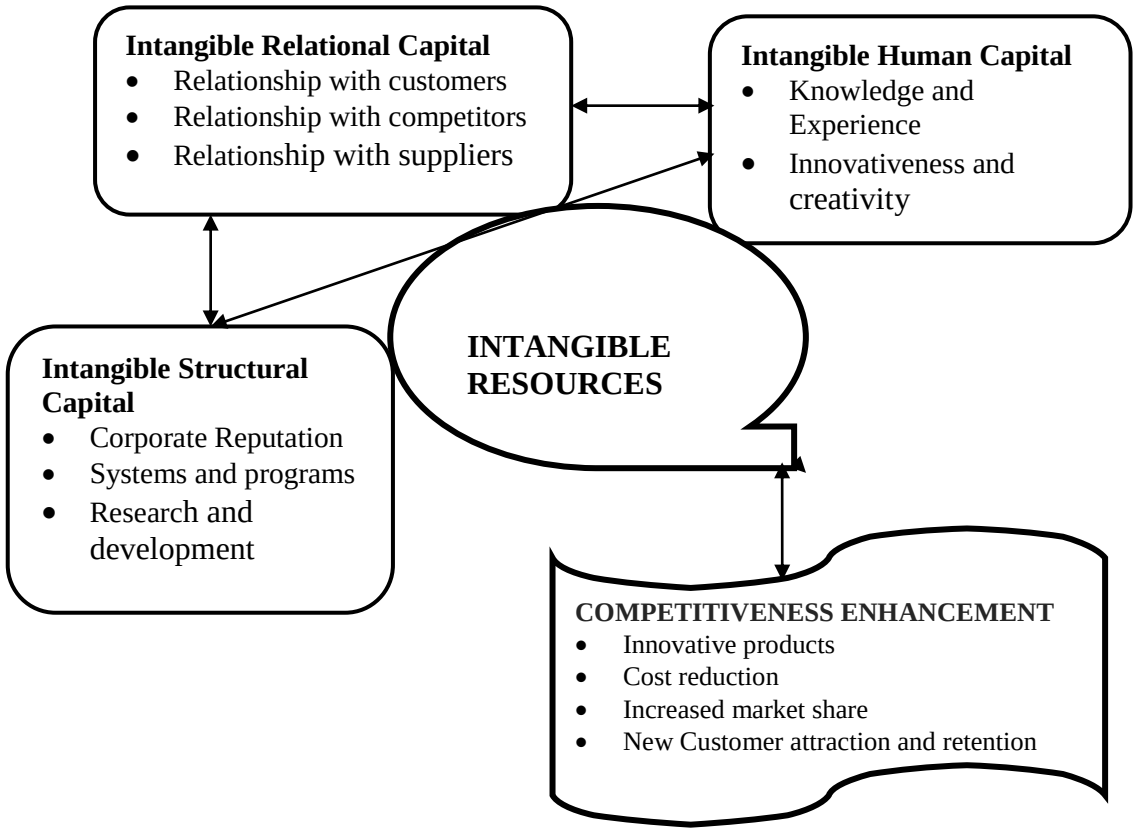

Figure 5.1 Intangible Resource Model (IRM)

Important interactions of intangible resources as shown by the study and the model in figure 5.1 can be a point of competitiveness enhancement for telecommunication companies (MTN, Tigo and Airtel) in Rwanda if time is taken to promote and support these intangible resources. In this study, Intangible Resource Model (IRM) refers to the interactions between Intangible Human Capital (Knowledge and Experience, Innovativeness and creativity, Skills and abilities). Intangible Structural Capital (Corporate Reputation, Systems and programs, Research and development). Intangible Relational Capital (Relationship with customers, Relationship with competitors, Relationship with suppliers).

The interactions between the three intangible resources will lead to the enhancement of competitiveness among telecommunication companies in Rwanda. In addition, it was recognized that the competitiveness of the telecommunication companies could be considerably dependent upon the application and integration of IHC to the ISC and IRC of these companies. This demonstrates that competitiveness is the result of the network effect of utilizing various intangible resources: human, structural and relational resources. Competitiveness in this study refers to a company's ability to maintain and gain increased market share, cost reduction, customer attraction and retention, as well as innovative products in an industry.

5.5 Areas for Further Research

The study focused on the telecommunication industry and therefore there is an opportunity to study other knowledge intensive industries in Rwanda. More research is needed to be conducted in telecommunication companies using this topic. Further empirical work is needed to test the degree to which the findings can be generalized to other industries in Rwanda. There is an opportunity for other scholars to make use of other intervening variables such as management of intangible resources, political, legal and socio-cultural influences to establish whether the findings can be generalized.

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APPENDICES

Appendix 1: Introductory Letter To Survey Respondents

Dear Respondent,

I am a PhD student in Business Administration (Strategic Management) at Jomo Kenyatta University of Agriculture and Technology and currently conducting a study on "The Role of Intangible Resources on the Competitiveness Enhancement of Telecommunication Companies in Rwanda".

It is my pleasure to inform you that you have been identified as one of the respondents to the survey questionnaire of the study. Please, feel free and confident to give unbiased responses, as your input is very important to the report. Your answers will be treated with utmost confidentiality and used only for academic purposes.

Thank you.

Yours faithfully,

Eugenia Nkechi Irechukwu

Appendix 2: Questionnaire For Survey Respondents

This questionnaire is to collect data for purely academic purposes. The study seeks to investigate the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire.

Answer all questions as indicated by either filling in the blank or ticking the option that applies.

SECTION A: PERSONAL INFORMATION

Please note that this is not an examination and there is no right or wrong answer. Feel free to respond to the issues elicited as your responses will go a long way in the achievement of the study purposes.

Please Tick only one option:

a. Name of your Company:

1. MTN
2. TIGO
3. AIRTEL

b. Your current status:

1. Executive
2. Director
3. Manager
4. Assistant Manager

5. Administrator

c. Your level in the Company

1. Top level
2. Middle level
3. Lower level

c. Your highest level of education falls under:

1. PhD.
2. Masters' Degree
3. Bachelors' Degree
4. Diploma
5. Secondary School Certificate
6. Others (specify)……

d. Relevant working experience:

1. 1-5
2. 6-10
3. 11-15.
4. 16-20.
5. 21 and above

SECTION B: QUESTIONNAIRE ITEMS

The following items will be used to survey the role of intangible resources on the competitiveness enhancement of telecommunication companies in Rwanda. Please, answer these questions based on actual and current situation and not on beliefs.

INTANGIBLE HUMAN CAPITAL

From the following list of intangible Human capital resources, kindly tick any of the following (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) based on how you feel about the statement.

Knowledge and experience	**1**	**2**	**3**	**4**	**5**
The level of knowledge and experience of employees are adequate for the competitiveness of the company					
Employees continuously learn from others including competitors					
Employees undergo continuous training programs every year					
The ratio of educated employees is on average compared with competitors and compared with what should be					
Company devotes a lot of time, effort and money to update and develop employees' knowledge and experience					
Employees' knowledge and experience affect new customer attraction and retention					
Employees' knowledge and experience affect cost reduction of our products and services					
Employees' knowledge and experience affect company's market share					
Employees' knowledge and experience affect innovative products					
Innovation and creativity	**1**	**2**	**3**	**4**	**5**
Company's employees are considered more creative and innovative					

compared to competitors.					
Company's employees are strong to voice their opinions in discussions.					
Large numbers of new products have been introduced compared to competitors.					
Employees continuously bring new knowledge and ideas to the business and share their knowledge with their colleagues.					
Employees are satisfied with the company's innovation policies and programs.					
Employees' innovation and creativity affect company's innovative products					
Employees' innovation and creativity affect company's market share					
Employees' innovation and creativity affect company's cost reduction					
Employees' innovation and creativity affect new customer attraction and retention					
Skills and abilities (Competencies)	**1**	**2**	**3**	**4**	**5**
Employees are specialists in their respective areas					
Employees consistently perform at their best					
The competence of company's employees matches with their work requirements and responsibilities					
The company has the lowest costs for products and services due to the competencies of the employees					
Employees' competence affect company's innovative products					
Employees' competence affect company's market share					
Employees' competence affect company's cost reduction					
Employees' competence affect new customer attraction and retention					

INTANGIBLE STRUCTURAL CAPITAL RESOURCES

From the following list of intangible structural capital resources, kindly tick any of the following (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) based on how you feel about the statement.

Systems and programs	**1**	**2**	**3**	**4**	**5**
The company's systems provide for succession training programs for every position					
The company's culture and atmosphere are supportive and comfortable					
The company has a well-developed reward system and incentives related to performance					
Staff has sufficient influence over decisions made within the company					
The company follows bureaucratic principles rigidly					
Company's systems and programs affect innovative products					
Company's systems and programs affect new customer attraction and retention					
Company's systems and programs affect cost reduction					
Company's systems and programs affect market share					
Research and development	**1**	**2**	**3**	**4**	**5**
The company is considered a research leader.					
The company continuously develops work processes and re-organizes itself based on R&D.					
The company follows up and adopts the latest scientific and technical development around the world.					
The company determines appropriate and adequate budget for R&D.					
The company's management board highly trusts and supports the R&D department.					
Company's R&D affects company's innovative products					

Company's R&D affects company's market share					
Company's R&D attracts new customers and retain them more than competitors					
Company's R&D affects company's cost reduction					
Corporate Reputation	**1**	**2**	**3**	**4**	**5**
The company is free to put higher tariffs and price tags on its products and services and customers will be willing to pay such prices					
Customers will prefer to patronize the products and services of the company even when competitors' products are available at comparable quality and price.					
The company attracts and retains good job candidates/employees					
The company generates customer loyalty and continued patronage					
Customers easily recommend this company to a friend or colleague					
Corporate Reputation affects company's innovative products					
Corporate Reputation affects company's market share					
Corporate Reputation attracts new customers and retain them more than competitors					
Corporate Reputation affects company's cost reduction					

INTANGIBLE RELATIONAL CAPITAL

From the following list of intangible relational capital resources, kindly tick any of the following (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) based on how you feel about the statement.

Relationship with customers	**1**	**2**	**3**	**4**	**5**
Many of the company's customers are loyal to the company, and would indicate that they are generally satisfied.					
Company's customers have increasingly chosen company's products					

compared to competitors' customers over the past few years.					
The company capitalizes on customers' wants and needs by continually striving to make them satisfied.					
The company has greatly reduced the time it takes to resolve a customer's problem.					
The company feels confident that the customers will continue to do business with it.					
Customers' opinion are greatly taken into consideration					
Relationship with customers affect company's cost reduction					
Relationship with customers affect innovative products					
Relationship with customers affect company's market share					
Relationship with customers affect company's new customer attraction and retention					
Relationship with competitors	**1**	**2**	**3**	**4**	**5**
Good relationships with competitors, help to grow the business in new areas, both geographically and in market segments					
sharing ideas and knowledge together with competitors helps to be innovative and raises the level of professionalism					
In working and sharing, the company has passed on to others many organizational skills, processes, information and more					
Relationship with competitors help to best serve the customers					
Networking with other industry professionals; supervisor trainings and educational seminars; and regular meetings in industry related subjects ultimately strengthen the company.					
Relationship with competitors affect company's cost reduction					
Relationship with competitors affect innovative products					
Relationship with competitors affect company's market share					
Relationship with competitors affect company's new customer attraction and retention					

Relationship with suppliers	1	2	3	4	5
Company maintains long standing relationship with suppliers					
The company has relatively complete data about the suppliers.					
Customer-supplier relationship quality can drive success.					
Working jointly with suppliers to develop new technologies expands the capabilities of internal new product development functions					
Suppliers can help their customers enhance products and product features that will generate additional revenue					
The company's suppliers help reduce company's customer complaints and increase customer satisfaction					
Relationship with suppliers can help provide an entry into new markets and with opportunities to acquire and retain customers					
Relationship with suppliers affect company's cost reduction					
Relationship with suppliers affect innovative products					
Relationship with suppliers affect company's market share					

INFORMATION ON COMPETITIVENESS ENHANCEMENT

How do you rank your company compared to the competitors? Kindly tick any of the following (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) based on how you feel about the statement.

Cost Reduction	1	2	3	4	5
The company has the lowest costs for products and services compared to competitors					
Customers are in constant demand of your products and services since it is lowest among other competitors					
When customers think of this company, they think of the lowest cost of service compared to competitors					
Innovative products	**1**	**2**	**3**	**4**	**5**

The company continuously develops and launches new products and services more and faster than competitors					
The company is a leader in innovative products compared to competitors					
When customers think of this company, they think of the highest speed of service compared to competitors					
Increased Market share	**1**	**2**	**3**	**4**	**5**
Market share has tremendously grown over the past few months compared to competitors					
Employees have enough knowledge about the company's target market					
Company's market share needs to improve continuously					
Customer attraction and retention	**1**	**2**	**3**	**4**	**5**
The company provides after sales support					
There is constant availability of customer information about products and services					
The company is extremely quick in resolving customers' problems and complaints					
The company attracts customers more than it retains					
The company retains customers more than it attracts					
Zero-defects and error-free delivery process of products and services					
The company regularly calls to appreciate customers and regularly collects service feedback					

Please list some of the innovative products/services offered by your company

_____
_____
_____

MODERATING VARIABLE

How do you consider the age of the company as having moderating effect between intangible resources and competitiveness enhancement of your company? Kindly tick any of the following (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) based on how you feel about the statement.

Cost Reduction	**1**	**2**	**3**	**4**	**5**
The company has stayed long in the country					
The length of the company affects competitiveness of the company					
The company's age is a positive trend between our resources and competitiveness enhancement					