



COMPETITIVENESS ENHANCEMENT - A FUNCTION OF STRATEGIC HUMAN CAPITAL IN MOBILE TELECOMMUNICATION COMPANIES IN RWANDA

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Accepted: August 28, 2022

ABSTRACT

One of the most significant elements in every organization is human capital. When managed strategically, human capital will establish attributes of value, rare, inimitable and non-substitutability for the enhancement of competitiveness. This study investigated the relationship between human capital and competitiveness enhancement in mobile telecommunication companies in Rwanda. Human capital factors in this study include knowledge and experience, innovation and creativity as well as skills and abilities. A cross-sectional study conducted in three mobile telecom companies in Rwanda used structured questionnaire filled and returned by 183 respondents. It was discovered that a statistically significant relationship exists between competitiveness enhancement and human capital. Therefore, the researcher recommended that mobile 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 their competitiveness.

Keywords: Human Capital, Strategic, Competitiveness, Innovation, Creativity, Knowledge, Skills, Telecom

CITATION: Irechukwu, E. N. (2022). Competitiveness enhancement - a function of strategic human capital in mobile telecommunication companies in Rwanda. *The Strategic Journal of Business & Change Management*, 9 (3), 447 - 462.

INTRODUCTION

Organizations that seek to resolve business glitches as well as create a competitive advantage and enhance their competitiveness in the dynamic, chaotic and complex business environment need to have collective human expertise in form of human capital in place. Human capital is a combination of intangible resources inherent in human beings and considered as the central element of intellectual capital in organizations. It is the fundamental capital and proficiency for attaining competitive advantages in organizations (Han, Shian & Yeh-Yun et al, 2008). It is principally all the knowledge, talents, skills, abilities, experience, intelligence, training, judgment and wisdom possessed independently by individuals and displayed collectively by groups of people in the workplace. These indwelling properties are the total capacity of the humans that represent some kind of treasure applied and directed for organizational goal accomplishment. They comprise 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 outputs, outcomes and impacts. Different Organizations can influence these resources to gain a competitive enhancement when they own such firm-specific resources that are not easily copied by competitors or costly for the competitors to imitate. The significant contribution of human capital seemed to have been strongly explained by the level to which it creates and sustains a competitive edge for an organization as postulated by Collis and Montgomery (1995).

To heighten organizational competitiveness, it is imperative that organizations truly leverage on the workforce and the inherent resources as a competitive weapon. Organizations should practically spend and devote other resources to ensure that the workforce have the required updated knowledge, skills, relevant experiences, abilities, innovativeness and creative competences they need to work effectively and successfully in a

rapidly changing, chaotic and complex environment. Human capital is important for organizational successful achievement (Crook et al., 2011).

Value and uniqueness are two dimensions of organizations human capital. Employees of a business provide human capital value and uniqueness through the application of skills, expertise, innovativeness and creativity (Maddocks & Meaney 2002; Snell & Lepak, 1999). Organizations specifies that resources are valuable when they improve on effectiveness and efficiency, increase their strength, minimize their weakness, exploit the opportunities and neutralize threats. Value focuses on increasing profits in comparison with the associated costs when viewed in the context of effective and efficient management. In this sense, firm's human capital can add value if it contributes to lower costs and provide increased performances. Hsu et al. (2007) further supported that organizational human capital is very important with respect to firm performance. Evidence shows that the relevance of human capital to organizational performance has become prevalent among the technology-based organizations, and the use of human capital in small technology-based organizations have a great impact on the success of such organizations (Marimuthu, Arokiasamy & Ismail 2009, Shrader & Siegel, 2007). The foregoing argument clearly confirms that Organizational success is dependent on employees' qualification, knowledge, experience, creative activity and to further support the argument, Urbancova (2013) proposed that emphasis be placed on continuous learning, research and development. Marimuthu, Arokiasamy and Ismail (2009), recommended that firms be evaluated using financial and non-financial measures. The financial measures consist of employee productivity, defect rates and market share while non-financial measures comprise workflow improvement, innovation, customer satisfaction and skills improvement (Kaplan & Norton, 2004). Human capital development and enhancement makes organizations to be more creative and innovative for a long-term

sustainability and survival in the international and global markets (Grossman, 2000). Patricia Hewitt, former UK's Secretary of State for Trade and Industry, added in a 2004 report that intangible factors increasingly underpin innovation and the best-performing businesses (DTI, 2004; Marr 2006).

Statement of the Problem

Human capital sets the foundation for an organization to attain a competitive advantage (Coff & Kryscynski, 2011; Ployhart & Moliterno, 2011) and competitive enhancement. Some prior research had shown that human capital is a critical influencer of organizational performance, especially in the areas of financial performance (Hitt, Bierman, Shimizu, & Kochhar, 2001; Reed, Lubatkin, & Srinivasan, 2006), product and service innovations (Subramaniam & Youndt, 2005). Michael et al. (2001) established a curvilinear relationship between human capital and firm performance. A survey conducted by Seleim, Ashour, and Bontis (2007) on the relationship between human capital and organizational performance of software companies found that the human capital indicators had a positive association on organizational performance. The indicators included training attended and teamwork practices, tended to result in megastar performers where more productivity deciphered to positive organizational performance. Most existing statistical tests of the resource based view (RBV) theory have focused on identifying and operationalizing the predictor variable of human capital while the dependent variable, competitiveness enhancement, has rarely been explored. Obviously, competitiveness is traditionally measured by financial performance in the empirical studies, which is not only unpredictable with the RBV theory but also proves to be practically difficult in access to the data. Therefore, this paper aimed to fill this gap by assessing and establishing the function of human capital factors on competitiveness enhancement in telecommunication companies in Rwanda through empirical test. In doing so, the paper contributes

and adds to the empirical research on Resource Based View.

Objective of the Study

The main objective of the research was to determine the relationship between human capital factors and competitiveness enhancement in Organizations with particular attention on establishing how:

- Knowledge and experience relate with competitiveness enhancement in Mobile Telecommunication Companies
- Skills and abilities relate with competitiveness enhancement in Mobile Telecommunication Companies
- Innovation and creativity relate with competitiveness enhancement in Mobile Telecommunication Companies

Research Hypothesis

- H0: There is no significant relationship between competitiveness enhancement and human capital factors in Mobile Telecommunication Companies in Rwanda.

LITERATURE

In a study by Bontis and Fitzenz (2002), a total of 25 organizations 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 improvement 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 suggest that human capital is the most critical component of intellectual capital

when predicting operating performance. 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). These findings were further buttressed by the findings of Ngari, Gichira, Aduda, and Waitutu (2013), who tested three hypotheses on the performance of 31 pharmaceutical companies in Kenya. Their findings show that human capital positively influences business performance. The discoveries of Abdulai, Kwon and Moon (2012) complementarily showed that human capital had a significant relationship with the external and internal competitive capabilities of organizations they investigated. Crook, et al (2011) posits that investments in superior human capital generate better performance for organizations, though, human capital takes time and money to develop or acquire, which potentially offsets its positive benefits. To clarify the hypothesized statements, Crook, et al (2011) meta-analysed the effects drawn from 66 studies of the human capital and organizational performance relationship by investigating three hypothesized moderators. The results affirm that human capital has a strong relationship with organizational performance, especially the human capital that is not easily and readily tradable in labour markets and when researchers use the right operational performance indicators that are not subject to profit attribution and appropriation. Their results suggest that managers should invest in programs that increase and retain specific non-easily and readily tradable organizational human capital, this will in turn lead to enhancement of competitiveness in the organization.

Knowledge and Experience

Human knowledge and experience can make organizations compete for long-term sustainability and survival in the international and local markets. While human knowledge focuses on acquisition of facts and techniques as well as awareness of conditions to perform in the organization, experience extends by practically applying the

known facts, conditions and techniques repeatedly to bring out a competitive performance standard. Knowledge is considered the most complex of all organization's intangible resources, through which other human capital is built and ensures the competitiveness of the business. Organizations will need to invest resources to ensure that employees have the right, dependable knowledge and experience needed to perform effectively and efficiently in a swiftly fluctuating chaotic and complex business environment. While organizations embrace the notion of human capital as a good competitive advantage that will enhance higher performance, Green (1993) declared that the employees' lack of knowledge relates to low competitiveness of the organization. Human capital plays a very central role in the strategic formulation on how to create, enhance and maintain 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 workforce's skill set, depth of expertise and breadth of experience possessed by the organization (Taie, 2014; Ahangar 2011).

Innovation and Creativity

The execution of new and meaningfully improved products, processes, marketing or organizational methods in business practices, workplace or external relations are termed as innovation and creativity (OECD, 2005). 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 industry level, organizations that create and innovate will become more competitive and exhibit faster growth than those that do not. Workforce innovation and Creativity 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. An interesting dimension of Hall's finding portrayed a positive link between size of large firms, innovation and productivity as well as profitability.

The human factor is an indispensable requisite element in the innovation process. Based on analyses of external and internal conditions, people generate ideas that might help organizations through innovation capability to gain competitiveness and thus distinguish it, at least for a certain period, from its competitors (Martín-de Castro, Delgado-Verde, Navas-López, & Cruz-González 2013; Urbancová, 2013). Innovative and strategic initiatives become ineffectively conceptualized, developed and implemented in the absence of diverse, information-rich, insightful and knowledge based inputs from a wide cross-section of organization members. Creativity and innovation require more knowledge of the basic realities of the market place, internal resources and working of the organization (Rastogi, 2000).

Innovation is seen as a critical drive of organizational performance. 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 depends 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 over-taken 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. 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 human capital formation and emphasis on the human capital enhancement could also be viewed in the context of high performance work systems (Hsu et al., 2007).

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 and technical skills in related departments, they are in a position to transform the organization to better performance levels. This is reinforced by Curado and Bontis, (2006) who maintained that employees will become experts and professionals in their respective careers. This sub-variable of human capital in terms of skills and abilities designates 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). Human resource skills and abilities are usually exemplified through teamwork, responsibility, commercial awareness, informed and responsible decision-making, communication, leadership, ethical principles and results orientation. Following the resource based view (RBV), skills and abilities create value that lead to a sustainable competitive advantage and superior financial performance for the firm. They are rare when only some firms have them. They are imperfectly imitable by other organizations; and they are non-substitutable (Barney & Hesterley, 2006; Flatt & Kowalczyk, 2008; Grant, 2005).

METHODOLOGY

Both descriptive and inferential statistics were performed in this study. 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). The quantitative method aimed at extending the quantifiable, empirical research base to generate results that can be used in future studies for verification or replication (Ichrakie, 2013). In this study, a field based survey questionnaire directed to the telecommunication companies in Rwanda, using a five point Likert scale elicited data from 183 management staff ranging from top level to lower level. The assumption that the combination of human capital variables may or may not enhance competitiveness significantly among telecommunication companies in Rwanda was the main focus of this study. The study adopted multiple regression model below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (1)$$

Where: Y represents Competitiveness Enhancement, β_0 represents the model constant

(coefficient of intercept), $\beta_1, \beta_2, \beta_3$ represent the slope coefficients representing the influence of the associated independent variables over the dependent variable. X_1 represents Knowledge and Experience (KE), X_2 represents Skills and Abilities (SA), X_3 represents Innovation and Creativity (IC). ε = Error Term, assumed to be identical, normally distributed with a zero mean and a constant variance

Thus:

$$Y = \beta_0 + \beta_1 KE + \beta_2 SA + \beta_3 IC + \varepsilon \quad (2)$$

RESULTS

Response Rate

Table 1 shows that the properly filled and returned number of questionnaires were 183 out of 248 administered. This represents 73.8% response rate.

Table 1: Response Rate

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

As Mugenda and Mugenda (2003) stipulated, 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.

Reliability and Validity Measurement

For overall analysis on reliability and validity for this study, Cronbach's alpha was computed since it is the most common reliability coefficient that estimates internal consistency by determining the correlation of test with itself. The Cronbach's alpha reliability coefficient ranges between 0 and 1. 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.

Table 2: Reliability and Validity Measurement Results

Factor	N of Items	Cronbach's Alpha Based on Standardized Items	Cronbach's Alpha
INTANGIBLE HUMAN CAPITAL	26		0.850
Knowledge and Experience	9	0.732	
Innovation and Creativity	9	0.812	
Skills and Abilities	8	0.648	
COMPETITIVENESS	16		0.876

Cronbach's coefficient alpha was determined for the whole instrument and was applied to each dimension to ensure inter-item consistency reliability (Sekaran, 2003). Reliabilities ranging from 0.5 to 0.60 are sufficient for exploratory studies (Nunnally & Bernstein, 1994), in the range of 0.70 are acceptable and over 0.80 are good (Sekaran, 2003). The overall alpha for the 26 items of intangible human capital, namely: innovation and creativity (0.812), knowledge and experience (0.732), skills and abilities (0.648) had a Cronbach's alpha of 0.850 indicating good internal consistency. All the 16 items on competitiveness with coefficient

of 0.876 indicate that the items form a scale that has good internal consistency and reliability. All concepts depict that the value of Cronbach's Alpha are above the suggested value of 0.5, hence, the reliability and validity of the study (Nunnally & Bernstein, 1994).

Exploratory Tests of Normality

The standard assumption in multiple linear regression is that the sample distribution is normal. Exploratory data analysis was done by the researcher using graphical normal probability plot and numerical Kolmogorov-Smirnov Test to check for the normality of the data set.

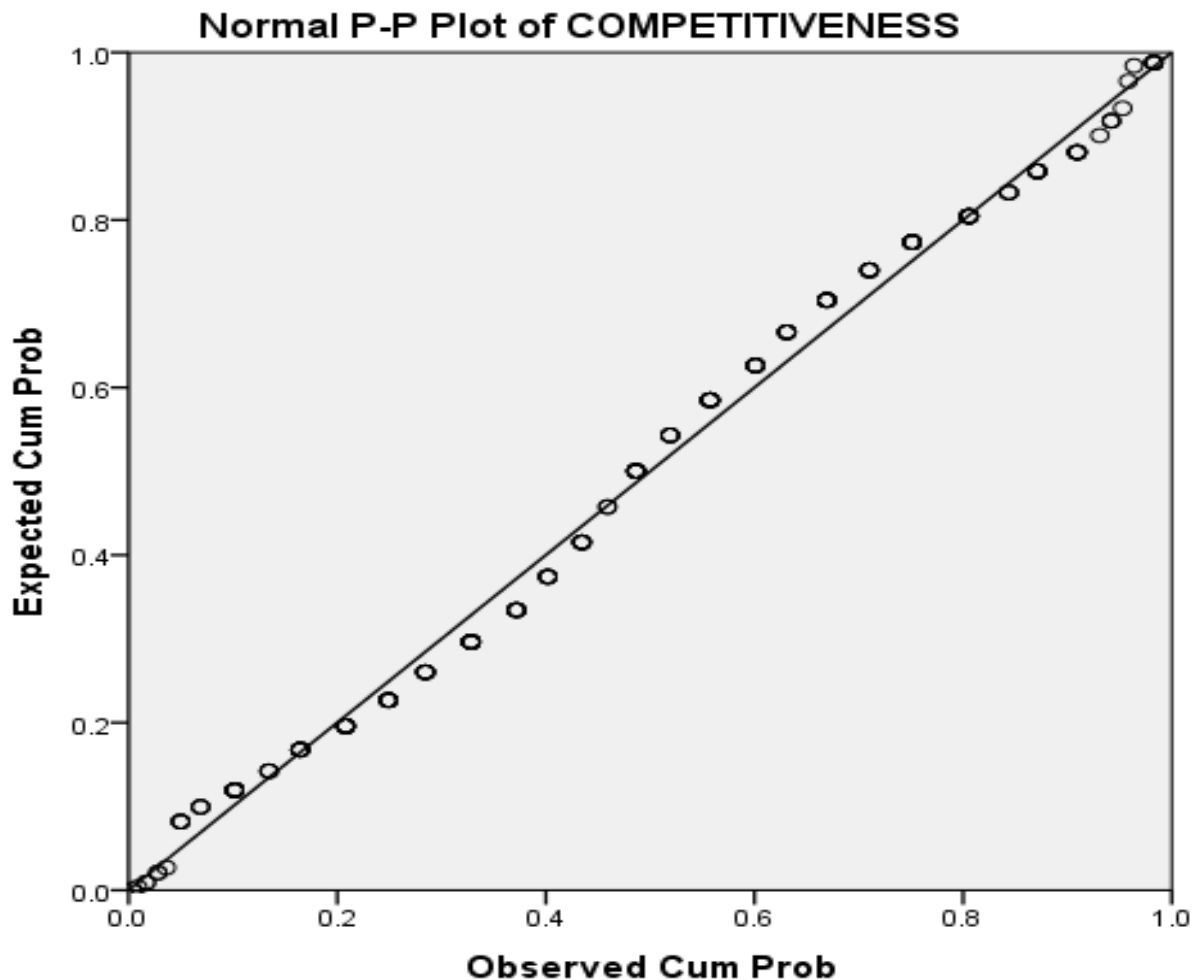


Figure 1: Normal P-P Plot of Competitiveness

Figure 1 shows that the data was analysed to produce a Normal P-P Plot. 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 does not appear to have a non-linear pattern.

Table 3: Kolmogorov-Smirnov Test of Normality

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
COMPETITIVENESS	.059	183	.200*

The numerical normality tests are supplementary to the graphical assessment of normality. The tests compare the scores in the sample to a normally distributed set of scores. 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. The same data was analysed to produce the numerical significant value and since the p value=0.200>0.05, the researcher concludes that the sample data was normally distributed.

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: Knowledge and Experience

Statements	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, the respondents agreed that employees continuously learn from others. This 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 Cabrera (2008) that increased training of employees

may lead to higher productivity. Therefore, companies should continuously enhance the level of knowledge and experience of the employees for competitiveness enhancement of the company. Companies should encourage continuous learning from others including competitors, continuous training programs every year, continuously improve the 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 5: Innovation and Creativity

Statements	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

The mean score of innovation and creativity from highest to the lowest in Table 5 show that 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). The Company's

employees strongly voice their opinions during discussions (mean=3.81, SD=0.907), the Company's employees are considered more creative and innovative compared to competition (mean=3.9, SD=0.969), the employees are satisfied with the company's innovation policies and programs (mean=3.61, SD=0.032).

Table 6: Skills and Abilities

Statements	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 6 reveals that employees consistently perform at their best had the highest mean score =3.84 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 = 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 human capital intangibles in terms of skills and abilities can influence competitiveness enhancement of telecommunication companies in Rwanda.

Correlation between HC 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 7

demonstrates linear relationships and lack of auto-correlation among the variables.

Table 7: Correlation Matrix between HC and Competitiveness Enhancement

Pearson Correlation		KE	SA	IC	CR	IP	MS	CAR
KE	Pearson	1						
	Sig. (2-tailed)							
	N	183						
SA	Pearson	.586**	1					
	Sig. (2-tailed)	.000						
	N	183	183					
IC	Pearson	.489**	.455**	1				
	Sig. (2-tailed)	.000	.000					
	N	183	183	183				
CR	Pearson	.320**	.388**	.272**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	183	183	183	183			
IP	Pearson	.492**	.483**	.416**	.357**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
	N	183	183	183	183	183		
MS	Pearson	.599**	.606**	.449**	.505**	.604**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	183	183	183	183	183	183	
CAR	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).

The evidence from the correlation matrix Table 7 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. Hence, the competitiveness enhancement of telecommunication companies in Rwanda.

Intangible human capital variables affect market share (MS) more as demonstrated in the second column from the right where $r = 0.599, 0.449$ and 0.606 for knowledge and experience (KE), innovation and creativity (IC), skills and ability (SA)

respectively. Customer attraction and retention (CAR) 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 (IP) 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 (CR) 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.

These findings are supported by past studies which link human capital with organizational performance (Zerenler, Hasiloglu & Mete, 2008; Bontis & Cabrita, 2008) and the results of Ngari, Gichira, Aduda, and Waitutu (2013), where three hypotheses tested on the performance of 31 pharmaceutical companies in Kenya showed that human capital positively influences business performance. 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. 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, as well as Chen, Lee, Tung, and Kao (2008) who found that there is a mutually positive correlation between innovative activities and corporate development of Taiwanese publicly listed IT Corporation.

Multiple Regression Analysis

The hypotheses for this study were tested using regression models in order to establish the statistical significant relationship between human capital and competitiveness enhancement of telecommunication companies in Rwanda. Multiple linear regression analysis were conducted at 95 per cent confidence interval ($\alpha = 0.05$). The aggregate mean score of human capital (KE, SA and IC) were regressed on the aggregate mean score of competitiveness enhancement.

Table 8: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.736 ^a	.542	.513	1.62838	1.790

a. Predictors: (Constant), IC, SA, KE

b. Dependent Variable: compete

The Model Summary validates the multiple correlation coefficient which illustrates a strong and positive linear relationship ($R=0.736$) using all the predictors simultaneously. In this study, all the three independent variables (IC, SA, KE) together explain 0.542 (54.2%) of the variability in the dependent variable “competitiveness

enhancement”. The remainder 45.8% could be accounted for by other factors particularly as human beings who possess these independent human capital factors are unpredictable. When they leave the organization, the human capitals leave with them. Therefore, the regression line of the model fits the data.

Table 9: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	537.386	3	48.853	18.424	.000 ^b
	Residual	453.426	179	2.652		
	Total	990.812	182			

a. Dependent Variable: compete

b. Predictors: (Constant), IC, SA, KE

To measure the joint significance between the independent variables *KA*, *SA*, *IC* and the dependent variable “competitiveness enhancement”, the researcher considered the value of probability *F – statistics*(ANOVA) from the coefficient Table

leading to the formation of the following hypotheses:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = 0 \text{ if the probability of } F - \text{statistics is } > 0.05$$

$H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ if the probability of F – statistics is <0.05

In the model used, it is evident that all $\beta_s \neq 0$, thus, a $p < 0.05$ indicates that the combination of the human capital factors: KE, SA and IC have a

statistical significant joint effect on the enhancement of competitiveness in telecommunication companies in Rwanda. Therefore, the hypothesis that there is no significant relationship between human capital and competitiveness enhancement is rejected.

Table 10: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	2.714	.978		2.774	.009		
	KE	.213	.054	.434	3.954	.000	.595	1.682
	IC	.216	.047	.582	4.635	.000	.620	1.614
	SA	.126	.030	.291	4.248	.000	.718	1.393

a. Dependent Variable: compete

The Coefficients illustrate that t value and the Significance columns opposite each independent variable indicates its significant contribution to the equation for predicting competitiveness from the whole set of predictors. As revealed by the unstandardized beta coefficients, the model transforms into

$$CE = 2.714 + 0.213_{KE} + 0.216_{SA} + 0.126_{IC}$$

Thus, it is obvious that a statistically significant relationship exists between these human capital factors and competitiveness enhancement with a high p value of ($p < 0.05$). Tolerance and Variance Inflation Factor (VIF) in the coefficient Table indicate lack of effect of multi-collinearity or lack of overlap between predictors since a $VIF > 5$ and a tolerance < 0.20 are generally considered evidence of multi-collinearity. In this study, the Tolerance for KE = 0.595, IC = 0.620, SA = 0.718 are all above 0.2 while the VIF for KE=1.682, IC=1.614 and SA=1.393 are all less than 5, hence, there is no multi-collinearity.

The regression results conform to the descriptive results earlier discussed. The results support the position of scholars whose findings claimed that human capital lays the micro foundation for a firm to achieve competitiveness (Coff & Kruscynski, 2011; Ployhart & Moliterno, 2011) as well as

enhance its competitiveness. 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; Syed, 2005; Cabrita & Bontis, 2008; Noe et al., 2003; Marimuthu, Arokiasamy & Ismail 2009; Seleim, Ashour, & Bontis, 2007). The findings follow the main assumptions of Resource Based View theory, 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 enhancement and success. Such resources are referred to as strategic assets (Barney & Hesterly, 2006; Barney, 1991; Amit & Schoemaker, 1993; Wernerfelt, 1984).

CONCLUSION AND RECOMMENDATION

The purpose of the study was to establish the existence of a significant relationship between human capital and competitiveness enhancement in telecommunication companies in Rwanda. The results showed that human capital in form of

knowledge and experience; skills and abilities; innovation and creativity can significantly and positively enhance competitiveness.

The study recommended 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 their competitiveness. Human capital is one of the most important elements in telecommunication companies and can better be managed strategically to demonstrate more attributes of value, rare, inimitable and non-substitutability for the enhancement of

competitiveness in the telecommunication and other companies in Rwanda. There should be knowledge and experience adequacy for the competitiveness of the company, continuous training programs and learning from others including competitors, increased ratio of educated employees on average compared with competitors and compared with what should be in the industry. Employees should be encouraged to develop and share innovative and creative ideas, improve their level of specialization and excellent performance in their respective areas. Finally, match the competence level of employees with their work requirements and responsibilities.

REFERENCES

- Abdulai, M. S., Kwon, Y., & Moon, J. (2012). Intellectual capital and firm performance: an empirical study of software firms in West Africa. *The African Journal of Information Systems*, 4(1), 1-31.
- Ahangar, G. R. (2011). The relationship between intellectual capital and financial performance: an empirical investigation in an Iranian Company. *African Journal of Business Management*, 5(1), 88-95.
- Amit, R., & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, Vol 14(1), 33-46.
- Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, Vol. 17, 99-120.
- Barney, J. B., & Hesterley, W. S. (2006). *Strategic Management and Competitive Advantage*. New Jersey: Pearson Education Incorporation.
- Bontis, N., & Fitzenz, J. (2002). Intellectual capital ROI: A current map to human capital antecedents and consequences. *Journal of Intellectual Capital*, vol. 3(3), 223-247
- Cabrita, M., & Bontis, N. (2008). Intellectual capital and business performance in the Portuguese banking industry. *International Journal of Technology Management*, Vol. 43(1-3), 212-37
- Chen, C., Lee, Y., Tung, C. & Kao, K. (2008), The Evidence and insights from Taiwanese Publicly Listed IT Corporations. *The Business Review*, Vol.10(1) 236-245.
- Coff, R., & Kryscynski, D. (2011). Drilling for micro-foundations of human capital-based competitive advantages. *Journal of Management*, vol. 37, 14-29.
- Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., Ketchen, D. J. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology*, Vol 96(3), 443-456
- Curado, C., & Bontis, N. (2006). The knowledge based-view of the firm and its theoretical precursor. *International Journal of Learning and Intellectual Capital*, 3(4), 367-381

- Department of Trade & Industry (DTI) (2004). *Critical Success Factors: Creating Value from your Intangibles. UK Government White Paper*. London: Department of Trade and Industry.
- Fahy, J. (2002) A resource-based analysis of sustainable competitive advantage in a global environment, *International Business Review*, 11, 57-78.
- Galbreath, J. and Galvin, P. (2004). Which resources matter? A fine-grained test of the resource-based view of firm, Academy of Management Best Paper Proceedings, New Orleans, LA.
- Galbreath, J. and Galvin, P. (2006). Accounting for performance variation: how important are intangible resources? *International Journal of Organizational Analysis*, 14(2)
- Galende, J. & De la Fuente, J. (2003). Internal factors determining a firm's innovative behaviour. *Research Policy*, 32(5), 715-736.
- Green, F. (1993). The determinants of training of male and female employees in Britain. *Oxford Bulletin of Economics and Statistics*, 55(1), 103-122.
- Grossman, R. J. (2000). Measuring up: Appropriate metrics help HR prove its worth. *HR Magazine*, 45(1), 28–35.
- Hall, B. H. (2011). Innovation and productivity. *Draft paper for the Nordic Economic, Policy Review, Working Paper No: 17178*
- Han, T., Shian, C., & Yeh-Yun, L. (2008), "Developing human capital indicators: a three-way approach. *International Journal of Learning and Intellectual Capital*, Vol.5 (3/4), pp.387-403.
- Hitt, M.A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, 44(1), 13-28.
- Hsu, I. C., Lin, C. Y. Y., Lawler, J. J., & Wu, S. H. (2007). Toward a model of organizational human capital development: Preliminary evidence from Taiwan. *Asia Pacific Business Review*, 13(2), pp. 251-275.
- Ichrakie, F., (2013). Intangible Resources as Key Determinants of Job Network Providers' Success: A Resource-based Study. *Australian Journal of Business and Management Research Vol.2 (11)*, 43-63
- Khalique, M., Jamal, A.N., Abu, H., & Adel, A. (2011). Relationship of Intellectual Capital with the Organizational Performance of Pharmaceutical Companies in Pakistan. *Australian journal of Basic and Applied Sciences*, Vol. 5(12), 1964-1969
- Longo, Mariolina; Mariani & Marcello M. (2009). The effect of intellectual capital attributes on organizational performance. The case of the Bologna Opera House. *Knowledge Management Research & Practice*, 7(4), 365-376.
- Maddocks, J., & Beaney, M. (2002). See the invisible and intangible. *Knowledge Management*, pp. 16-17.
- Marimuthu, M., Arokiasamy, L., & Ismail, M. (2009). Human Capital Development and Its Impact on Firm Performance: Evidence from Developmental Economics. *The Journal of International Social Research*, Volume 2(8).
- Marr, B. (2006). *Strategic Performance Management: Leveraging and measuring your intangible value drivers*. Boston: Elsevier.

- Martin, G. & Staines, H. (2008). Managerial competencies in small firm. *Journal of Management Development*, 13 (7), 23-34.
- Martín-de Castro, G., Delgado-Verde, M. Navas-López, J. E. & Cruz-González, J. (2013). The moderating role of innovation culture in the relationship between knowledge assets and product innovation. *Technological Forecasting and Social Change*, vol. 80(2), 351-363
- Michael A. H., Leonard, B., Katsuhiko, S. & Rahul, K. (2001). Direct and Moderating Effects of Human Capital on Strategy and Performance in Professional Service Firms: A Resource-Based Perspective. *The Academy of Management Journal*, 44(1), 13-28.
- Montequin, V.R., Fernandez, F.O., Cabal,V.A., and Gutierrez, N.R. (2006). An integrated framework for intellectual capital measurement and knowledge management implementation in small and medium-sized enterprises. *Journal of Information Science*, 32, 525-538.
- Newbert, S. L. (2007). Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research. *Strategic Management Journal*, 28: 121–146
- Newbert, S. L. (2008). Value, Rareness, Competitive Advantage, and Performance: A Conceptual Level Empirical Investigation of the Resource-Based View of the Firm. *Strategic Management Journal*, 29: 745–768
- Ngari, J. M., Gichira, R., Aduda, J., & Waitutu, A. (2013). Analysis of the relationship between intellectual capital accounting and business performance of Pharmaceutical Companies in Kenya. *African Journal of Business and Management*, Vol. 3(3-4)
- Noe, C. F., Hollenbeck, J. R., Gerhart B., & Wright, P. M. (2000). *Human Resource Management – Gaining Competitive Advantage*. New York: Irvin McGraw Hill.
- Norma, J. (2006). The relationship between intellectual capital and new venture performance: an empirical investigation of the moderating role of the environment. *International Journal of Innovation and Technology Management*, 3(4), 1-29.
- OECD. (2005). *Oslo Manual: Guidelines for collecting and interpreting innovation data*, (3rd ed.). Paris: OECD.
- Ployhart, R. E., & Moliterno T. P. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review*, vol.36, pp. 127-150.
- Rastogi, P. N. (2000). Sustaining enterprise competitiveness - is human capital the answer? *Human Systems Management*, No.19, 193–203
- Reed, K. K., Lubatkin, M., & Srinivasan, N. (2006). Proposing and testing an intellectual capital-based view of the firm. *Journal of Management Studies*, 43(1), 867-893.
- Romero, I., & Martine-Roman, J. A. (2012). Self-employment and innovation: Exploring the determinants of innovative behaviour in small business. *Research Policy*, 41(1), 178-189.
- Seleim, A., Ashour, A., & Bontis, N. (2007). Human capital and organizational performance: A study of Egyptian software companies. *Management Decision*, 45(4), 789-801.
- Selvarajan, T. T., Ramamoorthy, N., Flood, P. C., Guthrie, J. P., MacCurtain, S., & Liu, W. (2007). The role of human capital philosophy in promoting firm innovativeness and performance: Test of a causal model. *International Journal of Human Resource Management*, 18(8), 1456-1470.

- Shrader, R., & Siegal, D. S. (2007). Assessing the relationship between human capital and firm performance: Evidence from technology-based new ventures. *Entrepreneurship Theory and Practice*, 4(5), 893-908.
- Snell, S. A., Lepak, D. P., & Youndt, M. A. (1999). Managing the architecture of intellectual capital: Implications for strategic human resource management. In M. A. Wright, L. D. Dyer, J. W. Boudreau, & G. T. Milkovich, *Research in Personnel and Human Resource Management, supplement*, 4(1), 175-193.
- Subramaniam, M., & Youndt, M.A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, 48(1), 450-463.
- Syed, N. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance in context of Commercial Banks of Bangladesh. Retrieved from <http://www.sb.iub.edu.bd/internship/autumn2005/0220175>
- Taie, E. S. (2014). The effect of intellectual capital management on organizational competitive advantage in Egyptian Hospitals. *International Journal of Business and Social Science*, 5(2), 160-167.
- Urbancová, H. (2013). Competitive Advantage Achievement through Innovation and Knowledge. *Journal of Competitiveness*, Vol. 5(1), pp. 82-96.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, Vol. 5(2), 171-180.
- Wolff, J.A. & Pett. T.L. (2006). Small-firm performance: Modeling the Role of Product and Process Improvement. *Journal of Small Business Management*, 44(2), 268-284.