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TABLE OF CONTENTS

FAIR TRADE CERTIFIED COFFEE COOPERATIVES AND SOCIO - ECONOMIC DEVELOPMENT OF FARMERS IN RWANDA

A CASE STUDY OF MARABA COFFEE COOPERATIVE

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ABSTRACT

Coffee is the most valuable and widely traded tropical agricultural product, but many of farmers fail to earn a reliable living from coffee. Farmers are frequently reported to be trapped in the vicious cycle of lack of profitability and lack of access to finance. This study entitled "Fair Trade Certified Coffee Cooperatives and Socio - Economic Development of Coffee Growers in Rwanda.

A Case Study of Maraba Coffee Cooperative" was conducted with the main objective of assessing the benefits of Coffee fair trade cooperatives and their impact on socio-economic development of its members. To achieve this, the research applied both qualitative and quantitative methods. The target population includes all the members of Maraba Coffee Cooperative who have been members for at least one year before certification that is from 2001.

The researcher applied Yamane's formula to determine the sample of 94 respondents from the total population of 1,450, selected using simple random technique. Data collecting instruments comprised questionnaire and documentation. The study found that cooperative members greatly benefited from the fair trade status of the cooperative, and this has significantly contributed to the improvement of socio-economic situations of members. Comparing monthly revenues of members before and after their cooperatives gained fair trade status, it was found that the amount of revenues monthly earned after the cooperative gained fair status increased.

The correlation coefficient was 0.558, interpreted as positive moderate correlation. Basing the decision on p-value (.000), it was found that it was less than the alpha (0.05) (significance level), leading

to rejection of the null hypothesis,and considering the alternative hypothesis (H1): There is a positive relationship between fair trade activities of MARABA Coffee cooperative and the improvement of socio-economic situation of its members. It was mainly recommended to the management of MARABA Coffee Cooperative to ensure that cooperative members are regularly trained to increase production.

The Government of Rwanda through the Ministry of Commerce was also recommended to intervene in negotiating foreign markets for coffee to increase the number of Cooperative customers at the international level.

GENERAL INTRODUCTION

Background to the Study

Rwanda Cooperative Agency-RCA (2013) classifies cooperative in Rwanda in terms of agricultural marketing cooperatives, workers' cooperatives, crafts (handicraft) cooperatives, housing cooperatives, fisheries cooperatives, multi-purpose cooperatives, production or marketing cooperatives, consumer cooperatives, and saving & credit cooperative (SACCO). Coffee cooperatives are classified under agricultural marketing cooperatives.

According to Gisaro, *et al.* (2013), coffee has been grown by individual farmers since it was introduced in the country in 1904. After the liberalization of the coffee sector in 1998, the quantity and quality produced are steadily decreasing which affects the price and the income of coffee growers. To remedy the situation, the Rwandan government has striven to consolidate coffee growing cooperatives in different parts of the country by building coffee washing stations with a view to help coffee growing cooperatives produce high quality coffee which is competitive on the international markets, given that coffee is seen as the main source of income for a large number of households and provides major foreign currencies for the national economy.

Fair Trade Certified coffee is a socially and environmentally responsible way to conduct trade between developed and developing countries.

According to Valkila & Nygren (2008), Fair Trade represents one of the fastest growing segments within the global coffee sector. The farmers learn about the democratic process through the democratically run cooperatives. As for Common Fund for Commodities - CFC (2012), Current coffee market reviews report that less than ten percent (10%) of certified coffee comes from the Eastern African region including Rwanda. However, as Mujawamariya (2007) mentions, despite cooperatives' efforts to attract members through the provision of inputs, technical advice and other incentives to farmers, membership adherence is low and slows.

As Fair Trade USA (2015) reports, their coffee entered the specialty market as Rwanda Maraba Bourbon, proudly the "world's first single origin Rwanda Coffee" and the "world's first Fair Trade product from Rwanda," which was certified in 2002. With help from the NGO Project PEARL, *Abahuzamugambi* opened their own banking branch in 2003, which offers members a variety of banking services.

Their first washing station was constructed in 2002 and in 2007 they completed their fourth–allowing cherries to be processed within hours of picking, helping maintain more of its original qualities. Other projects funded with Fair Trade premiums include training sessions for women, medical insurance for members and academic scholarships for members' children.

Problem Statement

According to Fair trade International (2011), many farmers produce less than 50% of what is considered a reasonable yield and some are even substantially below that level. After 2 decades of price crisis many farms are de-capitalized, farmers are still indebted, trees are aged and the farmers are trapped in the vicious cycle of lack of profitability and lack of access to finance. Organic production is often limited by the lack of soil fertility and the limitations regarding the use of external nutrients. As Fair Trade Foundation (2015) reports**,** coffee is the most valuable and widely traded tropical agricultural product, but many of farmers fail to earn a reliable living from coffee**.**

Several cooperatives of coffee exportation are struggling to comply with the international quality standards, and fair trade status was designed as a solution to overcome such obstacle, however till today no optimization to international quality standards. It is against this background that this study is conducted to see how Fair Trade Cooperatives in Rwanda helps their members to earn living by empirically studying   the impact these cooperatives have on socio-economic development of their members, like overcoming their difficulties to have a shelter, savings, accessing medical care, children's education and by producing an excess quantity for the international market, taking MARABA Fair Trade Coffee Cooperative as a case study.

Research Objectives

This research comprises general and specific objectives which must be achieved for the present research to be performed effectively. The general objective of this research is to assess the benefits of fair trade cooperatives and their impact on socio-economic development of its members, while specific objectives are formulated as follows:

a) To study the benefits of fair trade activities done by MARABA Coffee Cooperative.

b) To find out whether the socio-economic situation of members has improved after their cooperative has obtained fair trade status.

c) To analyze the relationship between fair trade activities of MARABA Coffee cooperative and the improvement of socio-economic situation of its members.

Research Questions

This study attempts to find answers to the following research questions:

a) What are the benefits of fair trade activities done by MARABA Coffee Cooperative?

b) Have the socio-economic situation of members improved after their cooperative has obtained fair trade status?

c) Is there any relationship between fair trade activities of MARABA Coffee cooperative and the improvement of socio-economic situation of its members?

Hypotheses

The study intends to verify the following null hypothesis:

Ho: There is no significant relationship between fair trade activities provided by MARABA Coffee cooperative and the improvement of socio-economic situation of its members.

H1: There is a significant relationship between fair trade activities provided by MARABA Coffee cooperative and the improvement of socio-economic situation of its members.

CONCEPTUAL PERSPECTIVES

The conceptual perspective endeavours to present in a schematic way key concepts which makes the pivot of this research, as well as their relationship expressed in terms of dependent and independent variables. In other words, it indicates the major variables that the researcher attempts to assess, and the impact that independent variables has on dependent variables.

Independent variable   **Dependent variable**

Cooperative Fair Trade Status   Socio-Economic
Development Indicators

Cooperative Fair Trade Status	Socio-Economic
- Fair prices and premiums - Training and support - Increase of investment capital - Direct selling to importers - Partnership with other institutions - International acceptance	- Revenues - Employment - Health - Education - Housing

Figure 2.1: Conceptual Framework

As shown through the figure above, independent variables to be assessed include fair trade benefits in terms of fair prices and premiums; training and support increase of investment capital; direct selling to importers; partnership with other institutions; and international acceptance, while dependent variables to be assessed include socio-economic development whose indicators include revenues; employment; health; education and housing. Further market environment will be assessed the intervening variable between independent and dependent variables.

RESEARCH METHODOLOGY

Profile of the case study

Maraba coffee plants are the Bourbon Variety species grown on fertile volcanic soils on high altitude hills. When genocide broke out in Rwanda in early April 1994, coffee farmers around the small town of Maraba had just begun the harvest. Early pickings were underway, and the coffee cherries were in their final weeks of maturation. Three months later the genocide had run its course, and thousands of smallholder farmers returned from refugee camps to find their farms in ruins. The Genocide had devastated the country's agricultural sector, and in the years that followed, producers struggled to rebuild.

Research design

According to Saunders, et al., (2007), research design is a general plan about how the research questions would be answered. It constitutes a conceptual structure within which research is conducted. According to Burns and Grove (2003:201), descriptive research "is designed to provide a picture of a situation as it naturally happens". It may be used to justify current practice and make judgment and also to develop theories. For the purpose of this study, descriptive research design was used to obtain a picture of farmers' opinions of the linear relationship between the dependent and independent variables of this study.

This research applied both qualitative and quantitative research. According to Newman and Benz (1998), qualitative and quantitative methods have an interactive continuum. Both methods coexist in the mode of inquiry. As Wyse (2011) explains, qualitative research is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. It is also used to uncover trends in thought and opinions, and dive deeper into the problem. Quantitative research is used to quantify the problem by way of generating numerical data or data that can be transformed into useable statistics. It is used to quantify attitudes, opinions, behaviours, and other defined variables and generalize results from a larger sample population.

In this regard, quantitative approach was used to quantify data in terms of percentages, means, standard deviation, and correlation. Qualitative design was used to describe the views of respondents on fair trade activities performed by Maraba Coffee Cooperative, and how they contribute to the improvement of socio-economic development of members.

The population of the Study

For this particular study, the target population includes all the members of Maraba Coffee Cooperative who have been members for at least one year before certification, that is from 2001, all being equal to 1,450.

Sampling Framework

As Kothari (2004) says, "the selected respondents constitute what is technically called a 'sample' and the selection process is called 'sampling technique'.

Sample size

The researcher applied Yamane's formula (cited by Clenn, 2009) to determine the sample of 94 respondents from the total population of 1,450 persons as follows:

Where **n**= sample size, **N**= study population, and **e**= margin of error.

Hence, the sample size is = 93.5, it is rounded to 94.

Sampling technique

As for the sampling technique, the researcher used simple random technique by selecting randomly 94 members, among 1450. According to Lund Research Ltd (2012), a simple random sample is defined as a subset of a statistical population in which each member of the subset has an equal probability of being chosen. It is meant to be an unbiased representation of a group.

Data Collection Techniques and Tools

Questionnaire

As Lanthier (2002) says, the questionnaire is a set of questions given to a sample of people with the purpose to gather information about the people's attitudes, thoughts, behaviours, and so forth. As he also mentions, of all the data collection methods, questionnaires are a widely used method of collecting information, and they can be a cost-effective way to reach a large number of people or a geographically diverse group.

The questionnaire format comprised four sections: Section A contains the profile of respondents. Section B assesses fair trade benefits as independent variable; section "C" assesses moderating variables in terms of market environment, while section "D" assesses members' socio-economic development as dependent variable. Section "B", "C" and "D" of the questionnaire use a scale ranging as follows: 4= agree, 3= tend to agree, 2=tend to disagree, 1= disagree. The researcher used the following interpretation scale on perception issues using

Likert four point scales as follows:

Table 3.1: Likert four-point scale

Weight scale	Interpretation
4	Agree
3	Tend to agree
2	Tend to disagree
1	Disagree

Source: Vanek (2012),

According to Vanek (2012), Likert scale is quite useful for evaluating a respondent's opinion. The scores can be used to create a chart of the distribution of opinion across the population.

Validity and reliability

The validity of instruments was used to test validity of the instruments to be used. This includes item analysis that is carried out with the aid of the supervisor, research experts knowledgeable about the themes of the study. The process involved examining and assessing each item in each of the instruments to establish whether the item brings out what it is expected to do.

Item analysis was conducted using the scale that runs from relevant(R), neutral (N), to irrelevant (IR). This assessment gave a content validity ratio (CVR) for each instrument which was computed using the formula:

CVR=R/(R+N+IR), where CVR, R, N, and IR are as mentioned above. When computing CVR, using excel R was found to be 201, N=2, and IR=3. Hence, CVR= 201/ (201+2+3) =201/206= 0.97, which is equal to 97%. As this ratio is greater than 0.5,

this implied that the instruments were valid. Results from the pilot study conducted on 15 people from COCAGI provided the internal consistence coefficient of 0.980, implying that the internal consistence of the questionnaire was excellent.

Table 3.2. Reliability Statistics

Cronbach's Alpha	N of Items
.980	201

Source: Researcher, 2016

RESEARCH FINDINGS

Table 4.1: Perceptions of respondents on fair prices and premiums

Statements	N	Min	Max	Mean	Std. D	Comment	
						Mean	Std Dev.
We are paid a significantly higher price for coffee compared with the mainstream market	94	1	4	3.85	0.46	Strong	Homogeneity
we are guaranteed a minimum price to cover costs of production as a safety net when market prices fall down	94	1	4	3.80	0.41	Strong	Homogeneity
We receive additional premium to enhance productivity and quality	94	3	4	3.96	0.20	Strong	Homogeneity
Grand mean				**3.87**		**Strong**	

As table 4.1 displays, 94 members perceive payment of a significantly higher price for coffee compared with the mainstream market with a strong mean score of 3.85 and a standard deviation of 0.46 (showing homogeneity of responses with a minimum answer scale of 1 and maximum of 4) ; guarantee of a minimum price to cover costs of production as a safety net when market prices fall down with a strong mean score of 3.80 and a standard deviation of 0.61(heterogeneity of responses with a minimum answer scale of 1 and maximum of 4); and reception of additional premium to enhance productivity and quality with a strong mean score of 3.96 and a standard deviation of 0.20(homogeneity with a minimum answer scale of 3 and maximum of 4). The grand mean accorded to fair prices and premiums is 3.87 (perceived as strong with homogeneity of responses), which leads to affirm that cooperative members are paid higher prices and premium compared to the main stream market, and are given premiums to cover production costs when prices fall down and to enhance productivity. From this, it is worth concluding that being a member of a fair trade coffee cooperative is more advantageous as far as selling prices and premiums are concerned.

Table 4.2: Perceptions of respondents on training

Statements	N	Min	Max	Mean	Std. D	Comment Mean	Comment Std Dev.
We are regularly trained about farming techniques that help to increase the quantity and quality of our coffee	94	1	4	3.71	0.65	Strong	Heterogeneity
We are regularly trained about how to adapt better to changing climate and weather conditions	94	1	4	1.19	0.59	Very weak	Heterogeneity
We are regularly trained about how to manage our agricultural business and compete in the global marketplace	94	2	4	3.15	0.41	Weak	Homogeneity
Grand mean	94			2.68		**Weak**	

As displayed through table 4.2, respondents perceive their regular training about farming techniques that help to increase the quantity and quality of their coffee with a strong mean score of 3.71 and a standard deviation of 0.65; regular training about how to adapt better to changing climate and weather conditions with a very weak mean score of 1.19 and a standard deviation of 0.59 ; and regular training about how to manage their agricultural business and compete in the global marketplace with a weak mean score of 3.15 and a standard deviation of 0.41.

These data lead to conclude that the cooperative members are regularly trained about farming techniques to enhance coffee quality and quantity. However, the training about agricultural business management is perceived as weak (with a mean score of 3.15), while the training on methods to adapt to changing climate and weather conditions is perceived as very weak (1.19). Generally speaking, training is perceived as weak (with a mean score of 2.68) given that there are other areas of training not given too much attention, such as agricultural business management and adaptation to weather conditions. This is perhaps due to the fact that such trainings require trainers with special skills whose related costs would be hard to afford.

Table 4.3: Perceptions of respondents on investment capital

Statement	N	Min	Max	Mean	Std. D	Comment Mean	Comment Std Dev.
I have received financial lending for pre-financing coffee farming investment activities to be paid back without interests after selling	94	1	4	3.85	0.49	Strong	Homogeneity
I have been facilitated to access other bank loans at low interest rates for coffee farming extension	94	1	4	3.77	0.59	Strong	Heterogeneity
I have received financial grants for improving coffee processing activities	94	3	4	3.87	0.34	Strong	Homogeneity
Grand mean				**3.83**		**Strong**	

As depicted from table 4.3, 94 respondents perceive reception of financial lending for pre-financing coffee farming investment activities to be paid back without interests after selling with a strong mean score of 3.85 and a standard deviation of 0.49 ; facilitation to access other bank loans at low interest rates for coffee farming extension with a strong mean score of 3.77 and a standard deviation of 0.59 ; financial grants for improving their coffee processing activities with a strong mean score 3.87 and a standard deviation of 0.34 . Given that all the variables assessed are perceived by members as strong with a strong means score of 3.83, it is concluded that cooperative members enjoy the benefits of gaining capital to invest their coffee farming activities through financial grants

and easy access and payment of bank loans.

Table 4.4: Perceptions of respondents on direct selling to importers

Statements	N	Min	Max	Mean	Std. D	Comment Mean	Std Dev
The cooperative markets our harvests through direct contracts with international buyers	94	1	4	3.87	0.45	Strong	Homogene-ity
The cooperative markets our harvests through long-term contracts with international buyers	94	1	4	1.38	0.86	Very weak	Heteroge-neity
We always sell directly to import-ers not through intermediaries	94	1	4	3.93	0.39	Strong	Homogene-ity
Grand mean				**3.06**		**Weak**	

It is shown through table 4.4 that the marketing of members' harvests by the cooperative through direct contracts with international buyers is perceived by respondents with a strong mean score of 3.87 and a standard deviation of 0.45 ; the marketing of members' harvests by the cooperative through long-term contracts with international buyers with a very weak mean score of mean of 1.38 and a standard deviation of 0.86 ; and always selling directly to importers not through intermediaries with a mean score of 3.93 and a standard deviation of 0.39. From these data it is noted that the cooperative does not sign long-term contracts with international buyers. Even though this very weak score has reduced the grand mean

score to weak scale (3.06), this cannot lead to conclusion that the cooperative sell directly to importers with such a weak score. It is simply because buyers do not sign long term contracts with the cooperative, given that they buy where they want according to quality preferred

Table 4.5: Perceptions of respondents on partnership with other institutions

Statements	N	Min	Max	Mean	Std. D	Comment	
						Mean	Std Dev
Our cooperative has partnered with many other institutions	94	1	4	3.90	0.42	Strong	Homogene-ity
Partnership helped to improve the coffee quality to standards required by the specialty coffee market	94	1	4	3.87	0.47	Strong	Homogene-ity
Partnership helped to gain appropriate technology	94	2	4	3.91	0.32	Strong	Homogene-ity
Grand mean				**3.90**		**Strong**	

It is observed from table 4.5 that respondents perceive the cooperative's partnership with many other institutions has a strong a mean score of 3.90 and a standard deviation of 0.42; improvement of the coffee quality to standards required by the specialty coffee market (thanks to partnership) with a strong mean score of 3.87 and a standard deviation of 0.47; and gaining of appropriate technology though partnership

with a strong mean of 3.91 and a standard deviation of 0.32. It is noted that the grand mean score is strong (3.90) and all responses are homogeneous. This means that the cooperative members enjoy fair trade partnership which other institutions whereby they benefit from them in many regards, such as enhancing their coffee quality up to international required standards and improvement of technology in their coffee farming and precession activities.

Table 4.6: Perceptions of respondents on international acceptance of their coffee quality

Statements	N	Min	Max	Mean	Std. D	Comment	
						Mean	Std dev.
Our coffee is well known at the inter-national level	94	2	4	3.94	0.29	Strong	Homoge-neity
There is increasing consumer interest at the international level in issues of quality	94	1	4	3.93	0.39	Strong	Homoge-neity
Our fair-trade mark provides in-ternational trust in our coffee quality	94	2	4	3.94	0.29	Strong	Homoge-neity
Grand mean				**3.93**		**Strong**	

As depicted from table 4.6, respondents perceive their coffee as well known at the international level with a strong mean score of   3.94 and a standard deviation of 0.29; increasing consumer interest at the international level in issues of quality with a strong mean of 3.93 and a standard deviation of 0.39; fair-trade mark providing international trust in their coffee quality with a strong mean of   3.94 and a standard deviation of 0.29.

The grand mean score for all the variables assessed is 3.93(perceived as strong with homogeneity of responses). This means that Maraba coffee has gained international acceptance, and this acceptance is interpreted as another advantage enjoyed by fair trade coffee cooperative members given that their coffee fair trade mark is recognized internationally due to its quality which attracts increasing interests of international buyers.

Table 4.7: Perceptions of respondents on the increase of their revenues

Statement	N	Min	Max	Mean	Std. D	Comment	
						Mean	Std Dev.
I have a well functioning savings accounts	94	1	4	3.91	0.41	Strong	Homogeneity
My savings account is regularly credited	94	1	4	3.85	0.46	Strong	Homogeneity
I am able to obtain quick cash whenever I want to make any payment	94	3	4	3.93	0.26	Strong	Homogeneity
Grand mean				**3.90**		**Strong**	

From table 4.7, it is seen that respondents affirm that they have well functioning savings accounts with a strong mean of 3.91 and a standard deviation of 0.41 ; their savings accounts are regularly credited with a strong mean of 3.85 and a standard deviation of 0.46 ; are able to obtain quick cash whenever they want to make any payment with a strong mean of 3.93 and a standard deviation of 0.26.

The grand mean for increase of revenues is strong (3.90, with homogeneity of responses).

This implies that after the cooperative gained fair trade status, Cooperative members are able to obtain cash, given that their accounts are well functioning because they regularly credited by fair trade customers. When they export their products, it is well understood that they are paid higher prices as seen earlier. Moreover, given that they are given premiums and bank loans (as seen above, table 4.7), it is obvious that their fair trade status provide them with revenue opportunities.

Table 4.8: Perceptions of respondents on starting a new business

Statements	N	Min	Max	Mean	Std. D	Comment	
						Mean	Std dev.
I am self-employed and live on the income generated by the cooperative	94	1	4	2.90	0.59	Weak	Hetero-geneity
I have made some investments from the income generated by the cooperative	94	2	4	3.78	0.51	Strong	Hetero-geneity
I have employed other people and they live on the wages earned from the job I provide	94	3	4	3.93	0.26	Strong	Homoge-neity
Grand mean				**3.54**		**Strong**	

As results from table 4.8 show , respondents   perceive that they are self-employed and live on the income generated by the cooperative with a weak mean score of 2.90 and a standard deviation of 0.59 ; have made some investments from the income generated by the cooperative with a strong mean

score of 3.78 and a standard deviation of 0.51 ; and that they have employed other people and live on the wages earned from the job they provide with a strong mean score of 3.93 and a standard deviation of 0.26. The grand mean for employment is perceived as strong (3.54).

From these data, it is noted that employment within members of the cooperative is at a good rate and other people have been employed by members of the cooperative. However, self-employment and living on the income generated by the cooperative has been given a weak mean score. This can be explained by the fact that respondents may have some incomes other than those from the cooperative.

They often use the capital from the cooperative income and invest in other income generating activities whereby they do not live on only by the income from the cooperative. This is why they affirm (with a strong mean and homogeneity of responses) that they have employed other people and they live on the wages earned from the job they provide.

Table 4.9: Perceptions of respondents on health improvement

Statements	N	Min	Max	Mean	Std. D	Comment Mean	Std Dev.
I am able to pay health insurance	94	4	4	4.00	0.00	Strong	Homoge-neity
I Can afford medical costs	94	3	4	3.95	0.23	Strong	Homoge-neity
My food security and nutrition have improved	94	3	4	3.98	0.15	Strong	Homoge-neity
Grand mean				**3.98**		Strong	

From table 4.9, it is found that all respondents affirm that they are able to pay health insurance with a mean of 4.00 and a standard deviation of 0.00; afford medical costs with a mean of 3.95 and a standard deviation of 0.23; and that their food security and nutrition have improved with a mean of 3.98 and a standard deviation of 0.15 The grand mean score for health improvement is strong (3.98, with homogeneity of responses).

What is remarkably noticed from these data is that all respondents affirm unanimously that they are able to pay health insurance.   As for the affordability of medical costs, there is no contradiction with the ability to pay medical costs if all respondents are not unanimous over this statement. This can be justified by the fact that they may find money to pay for health insurance, but they may incur some extra costs depending on various factors, such as type of illness, type

of health establishment, or types of drug stock in the health establishment. But generally speaking, data show that health within members has considerably improved.

Table 4.10: Perceptions of respondents on affordability of education costs

Statements	N	Min	Max	Mean	Std. D	Comment Mean	Comment Std Dev.
I can pay schools fees for my children/ relatives in public primary and secondary schools	94	2	4	3.90	0.33	Strong	Homogeneity
I can afford the costs required in private secondary schools	94	1	3	2.83	0.48	Weak	Homogeneity
I can afford the costs required in higher schools	94	1	4	2.85	0.49	Weak	Homogeneity
Grand mean				**3.20**		**Weak**	

As depicted from table 4.10, respondents perceive that they can pay schools fees for their children/ relatives in public primary and secondary schools with a strong mean score of 3.90 and a standard deviation of 0.33; afford the costs required in private secondary schools with a weak mean of 2.83 and a standard deviation of 0.48 ; and can afford the costs required in higher schools with a weak mean of 2.85 and a standard deviation of 0.49. The grand mean for all the variables assessed under education is perceived as weak (3.20, with homogeneity of responses). These findings lead to notice that respondents in general can afford costs involved in primary and secondary

public schools, but they cannot well afford costs required in private secondary and higher education. This can be justified buy their revenue ranges as depicted in table 4.19.

Table 4.11: Perceptions of respondents on housing and estate condition

Statements	N	Min	Max	Mean	Std. D	Comment Mean	Std Dev.
I have been able to build a good house/ or renovated the existing one	94	2	4	3.86	0.40	Strong	Homogene-ity
I have been able to purchase new and modern house furniture	94	2	4	3.77	0.54	Strong	Heteroge-neity
I have been able to purchase new land	94	1	4	3.79	0.51	Strong	Heteroge-neity
Grand mean				**3.80**		Strong	

As table 4.11 shows, respondents affirm that they have been able to build good houses/ or renovated the existing ones with a strong mean score of 3.86 and a standard deviation of 0.40; have been able to purchase new and modern house furniture with a strong mean score of 3.77 and a standard deviation of 0.54; and have been able to purchase new pieces of land with a strong mean score of 3.79 and a standard deviation of 0.51. The grand mean for all the variables assessed under "housing and estate condition" is strong (3.80).

From these data, it is observed that cooperative members have been able to improve their housing conditions. As results show, they have been able to build new houses or innovate the old ones. They have also been able to purchase furniture thanks to revenues obtained through the cooperative. Further, they succeeded in securing new pieces of land, and this is fortunate as they can be able to extend their coffee farming activities on a wider space.

Table 4.12: Distribution of respondents by monthly income before and after the cooperative gained fair trade status

Before the cooperative gained fair trade status			After the cooperative gained fair trade status		
Monthly income	Frequency	Per-cent	Monthly income	Frequen-cy	Per-cent
Less than 10,000	8	8.5	Less than 10,000	0	0
11,000 -30,000	5	5.3	11,000 -30,000	0	0
31,000-50,000	77	81.9	31,000-50,000	0	0
51,000-80,000	4	4.3	51,000-80,000	85	90.4
81,000-100,000	0	0	81,000-100,000	9	9.6
Total	**94**	**100**	**Total**	**94**	**100**

It clearly showed though table 4.12 that, among 94 respondents,   those who were gaining less than 10,000 as a monthly income before the cooperative gained fair trade status were 8.5 %. After the Cooperative gained fair trade status, no one is still belonging to this range of monthly revenue. The

same is true for those who were gaining between 11,000 -30,000 (who were 5.3%) and those who were gaining between 31,000-50,000(who were amounting to 81.9% and made the majority). It is fortunate to find that those who were gaining between 51.000 and 80,000   rose from 4.3% before the Cooperative gained fair trade status to 90.4% after (now constituting the majority).

Also no one was in the range between 81,000 and 100,000, but now 9.6% are belonging to this range of monthly revenue.

Table 4.13: Perceptions of respondents on socio-economic development after the cooperative gained fair trade status

Main variables	Mean	Comment
Economic Indicators		
Savings - Functioning savings accounts - Savings account regularly credited - Ability to obtain quick cash	3.90	Strong
Employment - self-employment - Starting small business - Employing other people	3.54	Strong
Socio development		
Health - Ability to pay health insurance - Affordability of medical costs - Food security and nutrition	3.98	Strong
Education - Ability to pay public schools fees - Affordability of the costs of private secondary schools - Affordability of the costs in higher schools	3.20	Weak

Housing and estate condition		
- Ability to build a good house/renovate a house - Ability to purchase new and modern house furniture - Ability to purchase new land	3.80	Strong
Grand mean	**3.68**	**Strong**

As shown in table 4.13, the economic development was assessed through the increase of revenues and employment as selected indicators. The revenue increase which was assessed in terms of functioning savings accounts, savings account regularly credited, and the ability to obtain quick cash was given a strong mean score of 3.90. As for employment, which was assessed through self-employment, starting small business and employing other people, was given a strong mean score of 3.54.

Selected social development indicators included health improvement, education and housing and estate condition. Health improvement (assessed though the ability to pay health insurance, affordability of medical costs and food security and nutrition) was given 3.98. As for education(measured through the ability to pay public schools fees, affordability of the costs of private secondary schools and affordability of the costs in higher schools) was given a weak mean score of 3.20. Housing and estate condition(assessed in terms of the ability to build a good house/renovate a house, ability to purchase new and modern house furniture and the ability to purchase new land) were given a strong mean score of 3.80.

As these data show, except education which was given a weak mean score due to the fact that Cooperative members cannot well afford education costs in private secondary schools and in high education, all other variables are perceived by respondents as strong, the stronger score being health improvement. The grand mean score accorded to socio-economic situation after the cooperative gained fair trade status is strong (3.68). In other words, the socio-economic situations of members have improved after the cooperative gained fair trade status. This has also been proved though table 4.19 above, comparing monthly revenues of members before and after their cooperatives gained fair trade status.

Hypotheses testing

It is worth reminding that this research intended to verify the following hypothis:

Ho: There is no significant relationship between fair trade activities provided by MARABA Coffee cooperative and the improvement of socio-economic situation of its members. This relationship was measured using inferential statistics, and Pearson Correlation was used (whose coefficients are detailed in chapter three). Table 4.16 serves to present correlation results between Fair trade activities and socio-economic development of members**.**

Table 4.14: Correlation between Fair trade activities and socio-economic development of cooperative members

<table>
<tr><td colspan="4" align="center">Correlations</td></tr>
<tr><td></td><td></td><td>Fair trade Activities</td><td>Socio-economic development</td></tr>
<tr><td></td><td>Pearson Correlation</td><td>1</td><td>.558**</td></tr>
<tr><td></td><td>Sig. (2-tailed)</td><td></td><td>.000</td></tr>
<tr><td></td><td>N</td><td>94</td><td>94</td></tr>
<tr><td>Dependent</td><td>Pearson Correlation</td><td>.558**</td><td>1</td></tr>
<tr><td></td><td>Sig. (2-tailed)</td><td>.000</td><td></td></tr>
<tr><td></td><td>N</td><td>94</td><td>94</td></tr>
<tr><td colspan="4">**. Correlation is significant at the 0.01 level (2-tailed).</td></tr>
</table>

As table 4.14 shows, the correlation between fair trade activities and socio-economic development of members is 0.558. With reference to table 3.3 (in chapter three), this coefficient falls between $0.5 < r < 0.7$, interpreted as positive moderate correlation. Basing our decision on p-value (.000), we find that it is less than the alpha (0.05) (significance level). **Therefore, the null hypothesis is rejected and alternative hypothesis is accepted.**

This means that there is a moderate positive relationship between fair trade activities of MARABA Coffee cooperative and the improvement of socio-economic situation of its members. As seen earlier, cooperative members benefited significantly from the fair trade status of the cooperative, and this led to the improvement of their socio-economic situations after the cooperative gained fair trade status.

The strengths of correlation being moderate is due to the fact that the degree to which the change in each score on fair trade variables does not perfectly change with each score on variables assessed under socio-economic development of members. This is consistent with Steinberg's (2010) statement that "although we sometimes find perfect relationships in the physical sciences, relationships are rarely perfect in the social sciences. With human beings, most variables are only moderately related".

CONCLUSION

This study was conducted to see how Fair Trade Cooperatives in Rwanda helped their members to earn living by empirically studying   the impact these cooperatives have on socio-economic development of their members, taking MARABA Fair Trade Coffee Cooperative as a case study. The objectives of this study have been achieved. It was found that members of Maraba Coffee Cooperative have significantly benefited from its fair trade status. A positive change has been noted in their socio-economic situation after their cooperative gained this fair trade status.   When comparing their monthly revenues before and after the cooperative gained fair trade status, it was appreciable to find that their monthly revenues after gaining this status.

However, it was remarked some pitfalls needing to be addressed for further improvements. The weak points identified include lack of training about how to adapt better to changing climate and weather conditions, and training about how to manage members' agricultural business and compete in the global marketplace.

Also, the government does not intervene in negotiating foreign markets for coffee. This may be the reason why international buyers do not sign long term-contracts with the cooperative. The fact that all members' products exported are not always bought on cash presents another pitfall. Also, the biggest part of members not being self-employed and live on the income generated by the cooperative implies their preference to find an alternative source of income to satisfy their needs. Similarly, members' incapacity to afford the costs

required in private secondary schools and in higher schools suggests that they still have further some steps further ahead to be economically fit.

RECOMMENDATIONS

Given the pitfalls presented above, it is worth formulating set recommendations addressed to parties concerned:

- The management of MARABA Coffee Cooperative should ensure that cooperative members are regularly trained about methods of coping with changing climate and weather conditions for the increase of production. In this framework, the Cooperative Board of Directors should develop a clear training policy, because training of members is one of the principles governing cooperatives in Rwanda.

- Moreover, it is up to the duties and responsibilities of the cooperative management to think about strategies to train members about how to manage members' agricultural business to make it a profession which can cater for members' needs, such as affording education of their children at all levels of education, as it was found that they can hardly afford education costs in private and higher learning schools.

- Given the contribution of Maraba Coffee Cooperative to the increase of foreign currency, the Government of Rwanda through the Ministry of Commerce should intervene in negotiating foreign markets for coffee to increase the number of Cooperative customers. Such

an intervention can also foster long-term contracts with international buyers. Further, this intervention can also contribute to the resolution of the problem of selling on credit; given that the cooperative will get an increased number of   customers brought buy the Government's hand in the marketing of the Cooperative products.

SCOPE FOR FURTHER STUDIES

The scope of this study was at microeconomic level, given the capacity of the researchers, but there are needs to extend research activities at macroeconomic level to provide factual findings able to inform decision makers as regards the role played by fair trade of coffee nationwide based on statistics, such as per capita net coffee incomes provided by fair trade, fair trade coffee yield at national level, poverty alleviation, coffee certification as organic and its contribution to sustainability, etc. In this regard, further studies are suggested in the following areas:

- Fair Trade coffee cooperatives and the economic development of Rwanda.

- Coffee certification and poverty alleviation in Rwanda

- Rwanda Coffee certification as organic and its contribution to SDGs

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INTERDISCIPLINARY APPROACH BETWEEN LAW AND SCIENCE TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT OF JUSTICE IN RWANDA: A NEW LEGAL PERSPECTIVE

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ABSTRACT

The human intellect, since the commencement of this world has brought about development in science and technology. Science and technology have developed based on human interest to answer particular questions or to make human life easier and happier inventing new techniques and methods by applying them on various fronts of life. The innovative development done with the help of information technology, genetic engineering, biotechnology, natural science has made the life of human being contented but at the same time came with its dark sides of new categories of crimes, ethical, legal and human rights challenges.

These challenges have eventually led to rapid necessity of having modern law regulating such development. Science is double edged sword; it needs to be used prudently. For instance, cyberspace has added new dimension in the investigation of virtual or cybercrime. The structured approach of cybercrime investigation involves various tasks such as gathering of digital evidence about intruder. Additionally, the use of genetic based evidence such as DNA in investigation and prosecution process brings into collaboration of various disciplines of science and law, which have their own institutional needs, standards and requirements. This requires the investigator to do things different from the way it used to be done.

It necessitates an Investigation to bridge the law with current technological development.

The present paper intends to elucidate how difficulty if not impossible to attain sustainable development of justice without interdisciplinary approach between law and science technology. It also seeks to

bring about awareness among legal community on the need of interdisciplinary approach between law and science technology for sustainable development of justice in Rwanda through providing rigorous academic and profession teaching, legal practice and interdisciplinary analysis related to current development in law, science and technology. The arguments in the present paper are based on results of the non-doctrinal PhD research carried out in Republic of Rwanda in the year of 2013.

Since the scope of present paper is restricted on interdisciplinary approach between law and science technology for sustainable development of justice in Rwanda, the Author finds appropriate to introduce the findings of only two questions which were designed and administered to test whether respondents have been taught about DNA Evidence and whether DNA evidence should be a subject in law curriculum. The findings revealed that 40% of all respondents stated that they have not been taught about DNA evidence and 60.7% support that DNA technology should be a subject in law curriculum. The author emphasizes that law should not lag behind rather it should go hand in hand with such development.

Keywords: Interdisciplinary Approach, Science Technology, Sustainable Development

1. INTRODUCTION

All technological development generate social change and affect in varying degrees of individuals lives, groups, institutions, etc. The inevitable development of science and technology across an intricately connected globe raises new questions of legality, human rights and ethics. The modus operandi of crime is nowadays very complex in the modern scientific era. It is acknowledged that law must not be static but dynamic in its approach and must be in harmony with the society. Additionally, the discipline of law and medicine, information technology law, forensic science, intellectual property law, biotechnology, genetic engineering, etc. are relatively new one and necessitate to be entrenched among legal community.

In essence the issues which arise in relation to medical treatment have not changed over those decades, yet the scenarios in which these issues are encountered have altered considerably. In addition, cyberspace has added new dimension in the investigation of virtual or cybercrime.

The structured approach of cybercrime investigation involves various tasks such as gathering of digital evidence about intruder, establishing the motive behind selecting the victim's computer, ascertaining the modus operandi, identifying the source of computer from which an attack was made. Furthermore, the forensic use of genetic based evidence such as DNA in investigation and prosecution process brings into collaboration of various disciplines of science and law, which have their own institutional needs, standards and requirements.

But, combination of these two disciplines (law and science) is broadly geared toward ensuring justice for various cases (criminal and civil) without competing and relinquishing their autonomy. Modern scientific advances of DNA technology play an important role in providing legal protections and promoting law and order.

The widespread use of DNA data to detect and prosecute offenders and protect the rights of an innocent (that is exonerating the wrongly accused) is one of the most remarkable examples of such advancements and revolutionary impact of DNA technology. The identification and conviction/punishment of offenders and the protection of innocent suspects are two of the main goals for ensuring justice. The development of DNA technology has provided means to gather and manipulate genetic information and a new concept of privacy has therefore evolved.

This requires the Investigator and Prosecutor to conduct investigation and prosecution different from the way it used to be done. This needs an Investigator and Prosecutor who bridge the law with current technological development.

The challenge is that, whilst technology and science have advanced at a starting rate, the law has lagged behind and this creates a level of uncertainty which is far from desirable. When courts have become activists and there have been tremendous advances in science and technology, there is a need for sharpening the evidentiary techniques, train all actors of justice in different angles on the emerging challenges.[4]

4   Dr. Bhakare Jyoti; Convergence between Science Technology and Law in Arun B. Prasadn Dr. Monica Rao (ed.) Law, Science & Society: Dynamic, Dilemmas, Disparities, Nirma University, Institute of Law, India, 2011, p.

Some challenges need special attention in view of the interface between science technology and law.

- Is the legal system fitted out to go hand in hand with the advance of science and technology?
- How would the advancement of science and technology benefit justice delivery system in Rwanda?
- Is Rwandan society in particular ready to embrace ethical and social challenges brought up by advancement of science and technology?[5]

The Author argues that to deal with these questions a bundle of mechanisms and legal measures are needed to be done such as training, refresher courses, workshop, introduction of subject of law and science technology, enacting related laws and awareness program.

Nowadays, training of actor of justice is of paramount importance in terms of development of law, improving, advancing and enhancing justice system in Rwanda. In this perspective, the Government of Rwanda has sensed the technological emerging threats in the area of law and has established the Institute of Legal Practice and Development (ILPD) which was mandated to develop justice sector in Rwanda. This institution has recognised the importance of interdisciplinary approach between law and science to tackle threats brought by development of science and technology in

5   Ibid, These types of queries such as surrogacy (Surrogacy is where doctors grow your baby in another woman's womb, who has agreed to carry your baby), IVF, human cloning, use of animals in biomedical research, xenotransplantation, etc have also been raised by former President of India Dr. A.P. Abdul Kalam in the conference hosted by Centre for DNA Fingerprinting and Diagnostics (CDFD) and NALSAR University of Law, Hyderabad (India) in 2009.

the justice sector. This institution organises professional training for instance in the area of Forensic Science and law[6], Cybercrime Investigation, Intellectual Property Law, etc. This is an excellent step ahead one can appreciate towards revolutionary progress and acquisition of an integrated approach between law and science technology for sustainable development of justice. The intersection of law and science technology provides actors of justice with new tools and methodologies for discovering the truth. In this paper the Author has focus on some legal issues requiring interdisciplinary approach to bridge law and science technology in virtual word with special emphasizes of findings of empirical research done on DNA technology.

1.1. Research Methodology

Every research method has a different line of sight directed toward the same point. Therefore, each method reveals slightly different facets of the same reality, but a combination of multiple methods or mixed methods provide a better picture of studied area.

According to *Bruce Berg*;

> "*By combining several lines of slight or methods, researchers obtain better, more substantive picture of reality, a richer, more complete array of symbols and theoretical concepts and a means of verifying many of these elements. The use of*

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6   *From 18th to 22nd August, 2014, ILPD Organized the training of Prosecutors, JPO, Judges, Forensic Scientists, Victims & Witness Protection Officers on "The Use of DNA Technology in the Administration of Justice" and From 20th to 24th Mach, 2017, ILPD organized also a Training of Prosecutors, JPO, Judges, Forensic Scientists, on "High End Investigation and Forensic Science".*

multiple lines or methods is called triangulation".[7]

Triangulation or establishing reality via a mixed method approach (questionnaire, interview, and observation) allows a better understanding of the research phenomenon. In this regard, taking into consideration the paramount importance and value of the research, the Author has conducted an empirical research to ascertain the reality of two questions of:

    a. *Whether targeted respondents have been taught about DNA evidence and*

    b. *Whether DNA evidence should be a subject in law curriculum.*

Since the topic of research is still new addition in the books and the rareness/lack of information in relation to the legal system in Rwanda, the researcher has decided to carry out empirical research to collect primary data in order to acquire a proper understanding of the same. The researcher has utilized questionnaire, interview and observation method to acquire views/outlooks from the entire stakeholder in the justice system to obtain a proper perspective of the said concept from the field.

2. Intervention of Science and Technology in the Field of Law and Vice Versa

The Courts todays deal with multifaceted cases relating to high-tech crimes. During the process of criminal investigation and prosecution, DNA collection and test, post-mortem, narco-analysis tests are conducted quite often. DNA fingerprinting tests are conducted for identification of a person or determining paternity.

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7   *Bruce Berg, Qualitative Research Methods for the Social Sciences, (Allyn and Bacon,) 4th ed., 2001, p4*

New methods like lie-detection, trial by video conferencing have not remained a new affair. There are various ways, wherein the courts have no choice expert resorting to the intervention of a scientific expert to arrive at correct verdict. For instance in a case of pregnancy as result of child defilement, rape and abortion, case of medical termination of pregnancy, impotency, sterility, determining the cause of death (autopsy), cybercrimes and intellectual property, etc.

The entire disciplines happened to be known as medical jurisprudence. In the other hand legal professionals come across with cases wherein there is a need of intervention of laws to regulate science and technology.

For example, the case of surrogate motherhood, medical malpractice,[8] violation of law relating to drugs, medicine, pharmaceutical experimentation, cloning for therapeutic purpose, genetic engineering to name few. In these cases legal professionals need to be acquainted in the concerned fields in order to get suitable discernments of the subject.

2.1. Medical Technologies and Law

The discipline of medical law makes the laws governing the accessibility of medical treatment extremely essential due to the advancement of medical technology that have occurred in

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[8]   *Adam Peter in his book mentioned that the involvement of the medical profession in everyone's lives renders a big consideration of the law regulating the provision of medical treatment very significant. For more detail see, Adam Peter Bunting, Guiding Principles In Medical Law: The Ability To Treat, A thesis submitted to The University of Birmingham, School of Law for the degree of Master Of Laws, April 2005, p.*

recent decades.[9] The challenges is that when the science and technology have been developed it did go hand in hand with law, rather the latter has lagged behind and has created the loophole and ambiguity in legal system.[10] The law, and precisely the courts, are faced with challenges of having to answer these questions brought by science and technology and deliver guidelines, if not, one may doubt their ability and competency to admit the evidence put before them in any particular case involving intervention of science or technology.

The issue is whether at this era, actors of justice are all well acquainted with this advancement of science and technology or scientific community is aware of the law regulating their scientific works. Many in the medical arena, have hard approaches about intervention of law and courts in matters of professional ethics. They have a legal justification for that approach.

Actors of justice know little about science and technology principally the borderline of science of biomedical research.[11] Nevertheless; law cannot totally be ignored or circumvented whenever technology can be abused and manipulation and exploitation can happen in the name of experimentation or embracing the benefit brought by science technology.

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9   K. Paterson, 'Introduction' in K. Paterson (ed.) Law & Medicine (Bundoora, Australia: La Trobe University Press, 1994), pp.1-2

10   J.D.J. Harvard, 'Legal Regulation of Medical Practice – Decisions of Life and Death: A Discussion Paper' (1982) J Roy Soc Med 351, p.354

11   Bryant G. Garth, Science and the Law: A Relationship in Transition; American Bar Association Judge Journal, Vol. 44 (5), Fall 2005, p1

2.2. Intervention of Science Technology in Law

As medical practice assumes the character of service sector or even as industry at times, more and more ethical norms will change to legal rights and duties enforceable through civil and criminal courts. This is what is happening now in the fields of organ transplantation, assisted reproductive technologies (surrogacy[12]) and clinical trials of drugs, devices and medical procedures, etc. Therefore, the major question is whether the legal community is well equipped with the laws to regulate the use of such technologies.

The concerned of exposure on issues of science and technology should also be sensed by various legal education and introduce the subject of law, science and technology in their curriculums to cope up with this menace brought by the development of science and technology. It should be carried out comprehensively during the course of all law schools with certain intervals by organizing refresher courses, guest lectures at a various levels. The awareness of the law students and eventually future's legal professionals in regard of science technology and related law will be unblemished if there is steady and reliable interdisciplinary bond of the law fraternity with the various branches of science.[13]

2.3. Forensic Medicine and Medical Jurisprudence

Forensic or legal medicine deals with medical aspects of law. It is concerned with application of medical knowledge to help in

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12   *Surrogacy is where doctors grow your baby in another woman's womb, who has agreed to carry your baby.*

13   *Supra, 2, p.5.*

administration of justice by the legal authorities for solving legal problems. Medical jurisprudence deals with legal aspects of practice of medicine. It is concerned with legal responsibilities of doctor arising out from doctor-patient relationship.[14] Likewise, the terms Forensic Medicine, Legal Medicine, and Medical Jurisprudence have been used inter-changeably to mean those branches of medicine and jurisprudence which have to deal with the applications of medical knowledge to help court to arrive at the conclusion of a case involving science. Medico-legal science thus, comprises all subjects concerning members of the legal and medical professions.

They seek information of one another, each in its own professional capacity. It consists of two distinct branches that treating of medical law, to which the designation of Medical Jurisprudence properly applies; and that relating to the application of medical, surgical, or obstetrical knowledge to the purposes of legal trials. The term medicine, which is sometimes mistakenly used as identical with forensic medicine, applies to a more extended field of medical inquiry; for instance, to all application of medical knowledge for public safety.[15]

Forensic medicine is an applied science, partly legal, partly medical, calling for information and investigation in widely

14   D.K Ganguly, Medical Jurisprudence & Toxicology: Principles, Practices & Procedure, edition 2007, Dwivedi publishing company, Allahabad, 2007, p.3

15   R. A. WITTHAUS, A.M. & Tracy C. Becker, Medical Jurisprudence, Forensic Medicine & Toxicology, Press of Publisher's Printing, Vol.1, New York. Online reading. Available at http://www.archive.org/stream/Medicaljurisprudence. Accessed on 23rd October, 2010

different lines and becoming more closely separated with the progressive advances in medical knowledge and in those sciences of which medicine is itself an application.

Medical jurisprudence had reached a high development during the Roman Empire.[16] Although the literature of modern medico-legal science is largely written from the medical point of view and by physicians, its earlier history is to be found in fragmentary form, somewhat in medical literature, but principally in the writings of historians, in the earlier criminal codes, and in the early records of legal proceedings.

In the earliest historical periods the functions now exercised by the priest, the lawyer, and the physician were performed by the same person, who, presumably, made use of what medical knowledge he possessed in the exercise of his legal functions. Among the Egyptians at a very early period it is certain that medical questions of fact were considered in legal proceedings, and that the practice of medicine was subject to legal regulation.

2.4. Medical Jurisprudence: Its Benefits in Legal system

The introduction of medical jurisprudence has enormously benefited both the medical and the legal system. A better understanding and cooperation has resulted and facilitated a smoother working of both disciplines. Previously; unsolvable cases are now solved easily with the advancement of forensic science. It can be used in different ways such as to determine the parentage of a child and in determining the identity of human

16   *Ibid.*

bodies, which have been mutilated, burned beyond recognition in accidents like bomb blasts, factory explosions etc. In the field of evidence, it can be used to solve cases involving murder, rape etc.

Medical jurisprudence techniques like autopsy can also be used to identify the cause of death after the person has died. Nevertheless, even though their benefits to the field of law are acknowledged and remarkable techniques of medical jurisprudence are not treated as primary evidence till date in Rwandan legal system. At present, under Rwandan Law Relating to Evidence and Its Production of 2004, scientific evidences are treated as circumstantial evidence.

Although, the said law impliedly authorizes evidence by expert or expert opinion, still the techniques of forensic science are not fully recognized by legal system due to the fact that evidence by circumstance has acquired false connotation for being less powerful and little cogency compared to physical evidence.[17] Additionally, the situation seems surprisingly awkward only as regards DNA test report, which have been given the status of circumstantial evidence.

However, this situation will persist till Law, Science and Technology program is introduced as subject in law curriculum of all law schools and all actors of justice get trained on the overriding role and magnitude of scientific evidence in justice system.

17   For more detail see Murangira B. T. (2016). Improving Rwandan Criminal Justice through Forensic DNA Evidence: An Appraisal. Beijing Law Review, 7, 400-419.p. 4-6, available at   http://dx.doi.org/10.4236/blr.2016.74032.

The importance attached to them remains subjective and varies from case to case. The complete benefit of the convergence between science and law can be enjoyed in maximum and given the credit it deserves once all actors of justice are well conversant with the interdisciplinary approach of law and science.

3. Theory of Principlism and Scientific Technology Progress

Principlism theory was first recognized in Belmont Report on April 18, 1979 as a moral decision-making approach by the National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research (NCPHSBBR).[18] The theory of principlism, considers that scientific progress should be characterised and driven by the good for humanity, coupled with a concern to protect individual and group rights that may be threatened by advancement of science in the course of scientific progress.

It seeks to establish principles that science and technology should be built upon traditional principles of professionalism and ethics. Applying this theory in this paper for instance in the usage of DNA technology, it connotes that DNA evidence can be admitted as evidence in the court whenever it meets the criteria of usefulness and helpfulness, which is important in administration of justice, hence to the humanity. This means that, for instance adoption of DNA technology in administration

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18   *Tom L. Beauchamp and James F. Childress. Principles of Biomedical Ethics, 6th ed., Oxford University Press, 2008.P 417. Available at: http://ukcatalogue.oup.com/ product/9780195335705.do#.UT3awVf4TEw. Accessed on 5th March, 2013.*

of justice and adoption of surrogacy method for procreation, should be applied at the same time while taking care of basic ethical principles and fundamental rights of the individuals. This is not only cases where this theory can be applied, the Author has only picked these two examples (DNA technology & Surrogacy method of procreation) just to elucidate this principle of principlism to show how science and technology should be develop bearing in mind the protection of ethics and human rights and the betterment of humanity in general.

4. Assisted Procreation Technologies

Another example, where interdisciplinary approach is needed is in medical assisted procreation technologies which is possible nowadays. The evolution of science and technology has attained achievement in countless area including health and family procreation/reproduction. These technologies have wiped tears of infertile couples who could not get the chance to have children due to various health problems. This technological advancement has enabled many infertile couples to exercise their right of production when natural reproduction method does not succeed. This technologies have helped in moving towards new forms of motherhood. This artificial methods have led to the growth of In Vitro Fertilization (IVF)[19] and surrogacy[20] method.

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19   Where the sperm from the father and the egg from the mother are mixed together in a petri dish in the laboratory, and the sperm is allowed to fertilize the egg, producing a "test-tube baby." The fertilized egg is then returned to the biological mother's womb where it develops, and nine months later the baby is born.

20   Surrogacy is where doctors grow a baby in another woman's womb, who has agreed to carry your baby.

This method was introduced in order to cope up with the advancement of science and technology and permit people to benefit from modern science. The introduction of new reproductive technologies generally called IVF and embryo transfer raises various medical, ethical, legal and social issues, not only for the persons directly concerned but also with community. Medically assisted reproduction is legalized within the meaning of article 254 of Rwandan law regulating persons and family, so long as there is a consent between the couple.[21] It states that reproduction occurs naturally between a man and a woman or it is medically assisted.

Medically assisted procreation must be by mutual consent of the concerned couple. Medical assisted reproduction technologies for example should be applied at the same time while taking care of basic ethical principles and fundamental rights of the individual. It includes the principles which are; respect for consent, autonomy and beneficence, non-malfeasance, and justice.[22] These and related principles and are already enforced in legal and regulatory frameworks dealing with human rights. The application of these principles in the field of law is seen as an extension of existing concepts to cover a field of science and technology.

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21   Art. 254 of Law Nº32/2016 of 28/08/2016 Governing Persons and Family, Official Gazette nº37 of 12/09/2016.

22   Australian Law Reform Commission and Australian Health Ethics Committee, Protection of Human Genetic Information, DP 66 (2002), ALRC, Sydney, 291–292. Available at: http://www.alrc.gov.au/publications/6-ethical-considerations/ balancing-ethical-consideration. Accessed on 27th February, 2013.

5. Findings of Empirical Research

Findings stems from empirical PhD research[23] conducted in Rwanda in 2013. Among respondents including *Judges, Prosecutors, Polices, Advocates/Lawyers, Law Teachers/Students and Others*.[24] The researcher framed various types of questions for Judges, Prosecutors, Polices, Advocates/Lawyers, Law Teachers/Students and Others. Although the said research was limited to the actors of justice, the researcher found it indispensable to collect the views of law teachers and students through distribution of questionnaires as they are considered future actors of justice.

Since the scope of present article is restricted to the need of an interdisciplinary approach between law and science technology for sustainable development of justice in Rwanda. As it was explained earlier in this paper, the Author finds appropriate to introduce the findings of two questions which were designed to test whether respondents have been taught about DNA Evidence and whether DNA evidence should be a subject in law curriculum.

Findings are linked to this paper in sense that forensic science (medical jurisprudence) in general and DNA technology in particular show the intervention of science and technology in legal system.

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23   Murangira, B. Thierry, Impact of DNA Technology on Administration of Justice: A Critical and Comparative Study of Legal and Ethical Issues between USA, India and Rwanda. PhD Thesis, Faculty of Law, Pune: University of Pune, 2013.

24   As per the researcher, "Others respondents" would mean, Medical Practitioners, Member of Parliament, Forensic Laboratory's Staffs and any other person who is interested in DNA technology.

This intervention of science and technology in law indicates the convergence between law and science technology. Thus, the Author finds useful and appropriate to share the outcome of the research with legal professionals to elucidate the need of interdisciplinary approach between law and science technology.

**Total Number of Respondents in Each Category**
   Table No. 1

S/ No	Respondents	Number
1	Judges	58
2	Prosecutors	62
3	Police	88
4	Advocates	20
5	Law Teachers/Students	18
6	Others	30
	Total number of respondents	**276**

5.1.   Analysis, Interpretation of Data and Findings

The graphs below indicate responses of the respondents. The Author has placed the question which the respondents were responding inside the graph on top, the percentage of the responses on left side to facilitate easy understanding and attract the attention of the reader.

**Question Number One aims at testing "w***hether Respondents have been taught about DNA Evidence".*

Graph No. 1: Respondent Judges

Graph No. 1: Respondent Judges: Have you been taught /trained about DNA Evidence?
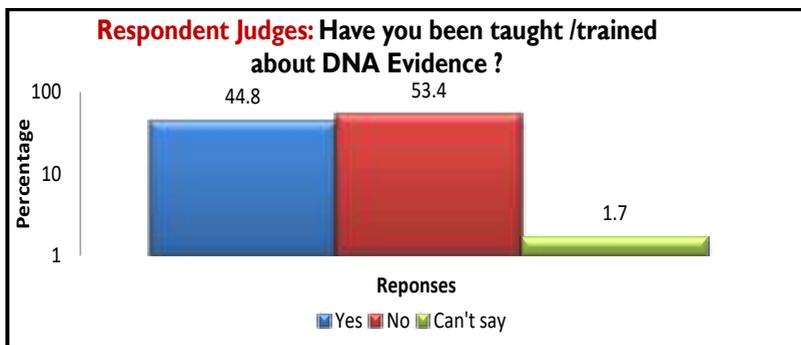
As it is represented in graph No. 1 above, 44.8% of respondent judges were of opinion that Judges have been taught or trained about DNA evidence and whilst 53.4% of respondent Judges said no, to mean that they have not been taught about DNA evidence. Making a cumulative total of percentage together, findings of research shows that 55.1% of respondent Judges have never been taught or trained about DNA evidence.

However, 44.8 % is a very less percentage especially amongst Judges as they should be aware and would be expected to have been taught or trained about the concept because they are expected to do justice with fairness and neutrality. If DNA evidence is a method in search of the truth, it means that scientific understanding, and thinking should be the pursuit of every Rwandan Judge who seeks the truth. If Rwandan Judges keep overlooking scientific evidence (DNA) it is not fair to expect Rwandan society to benefit from scientific innovation in justice delivery. At the very least, every Judge in Rwanda should have a fundamental understanding of important scientific concept of DNA technology.

Graph No. 2: Respondent Prosecutors
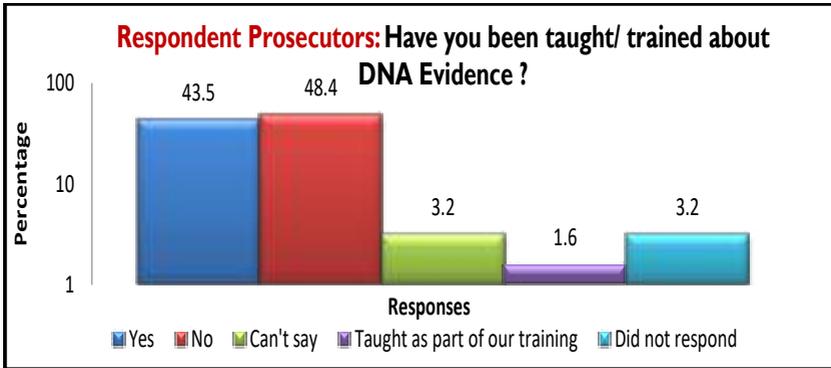
As per graph No. 2, 43.5 % of respondent Prosecutors pointed out that Prosecutors have been taught or trained about DNA evidence and another 48.4% of respondent Prosecutors have not been taught or trained about DNA evidence. Almost, 51.6% (no + can't say) of respondent Prosecutors have not been thought or trained about DNA evidence and 46.7% (yes + taught as part of our training) of respondent Prosecutors have been taught or trained about DNA evidence. *As per the interaction with respondents Prosecutors, the main reason for having less number of Prosecutors who have been taught or trained about DNA evidence is lack of awareness and law governing DNA evidence. The Author humbly submit that, as the Courtroom is a quasi-battlefield upon which law and science seemingly wage war; no pride can be taken in a finding that more than 51% of Prosecutors in Rwanda have not been taught or trained about DNA evidence. Prosecutors should be taught or trained about the awesome power of scientific evidence in general and DNA evidence in particular to deliver a conviction or an acquittal in the court of law.*

Graph No. 3: Respondent Police
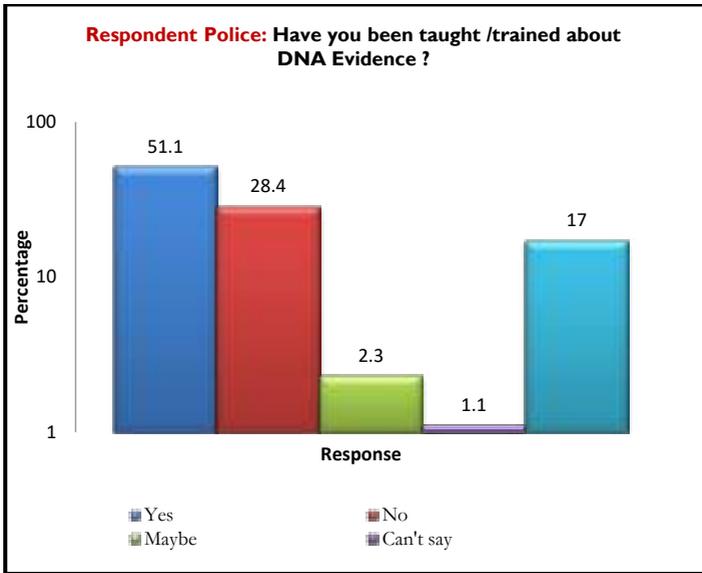
Graph No. 3 reveals that, 51.1% of respondent Police were of opinion that Police have been taught or trained about DNA evidence while 28.4% said that no, Police have not been taught or trained about DNA evidence. As a result, 70.4% of respondent Police (yes + maybe + taught as part of training) confirmed that police have been taught or trained about DNA evidence; whereas 29.5% stated that police have not been taught or trained about DNA evidence.

As per the Author's point of view, the Police in Rwanda are up to the task to fight crimes especially those committed in sophisticated manner, hence this may be the reason why there is more than fifty percentage of Police who have been taught or trained about DNA evidence. Crime scenes frequently contain an extensive variety of biological evidence, most of which can be subjected to DNA testing.

Even though not always visible to the naked eye, such evidence often helps in investigation and leads in solving crime, obtaining conviction, or exonerating the wrongly accused. For instance, during a sexual assault, the perpetrator may leave blood, hair, saliva, semen, and skin cells on the victim's nail, etc. at the scene of crime. A branch of Rwandan Police such as the Anti-Gender Based Violence & Child Protection (GBV) has been trained to fight crimes committed against women such as rape, molestation and protection of child. In that sense Police Investigators have been trained about the proper use of DNA evidence in investigation and during trial this can help to seal a conviction or secure exoneration. It is, therefore, very significant that Police Investigators know how to handle and secure crime scenes in order to make sure DNA evidence is collected properly.

Graph No. 4: Respondent Advocates
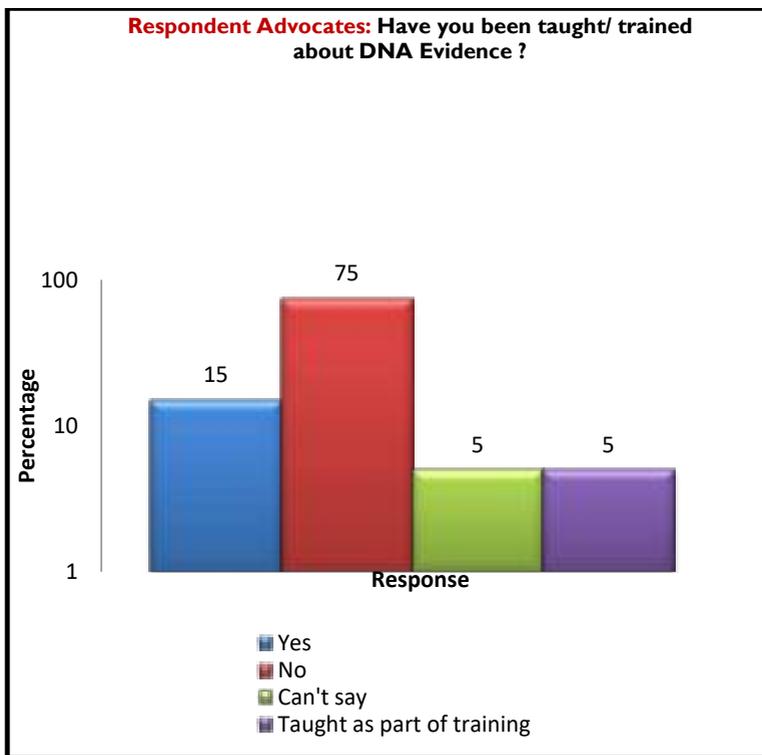
As per the results of the research represented in graph 4 above, almost 15% of respondent Advocates were of opinion that Advocates have been taught or trained about DNA evidence, while 75% of respondent Advocates said that Advocates have not been taught or trained about DNA evidence. Almost 20% (yes + taught as part of training) of respondent Advocates stated that yes Advocates have been taught or trained about DNA evidence. Another 80% (no + can't say) said that they have not been taught or trained about DNA evidence.

According to the Author's point of view, the major problem is lack

of awareness of DNA evidence in Rwandan legal system. DNA technology is one field in which both the Advocates and Prosecutors must stay abreast of existing development in science and technology in order to perfectly assess the scientific evidence presented in court and conduct effective cross-examination. The ability of Advocate to understand/ comprehend how forensic science and how DNA works, and to be bright to fight for acquittal for his client successfully using knowledge of science and technology is of greatest value. It is self-assuring when a well- informed Advocate cuts the Prosecutor's argument into pieces due to the lack of knowledge of forensic science. Therefore, Rwandan Advocates should have a proper understanding of DNA evidence to be able to represent a client well and settle a case by use of scientific evidence such as DNA.

Graph No. 5: Respondent Law Teachers/Students
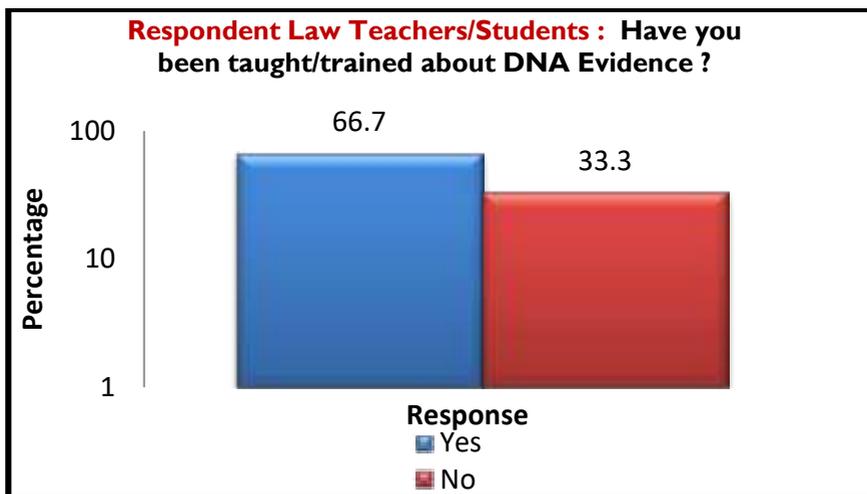
As per graph No.5, 66.7% of respondent law Teachers/Students have been taught about DNA evidence while another 33.3 % of law Teachers/Students have not been taught about DNA evidence.

However, the Author respectfully submits that, the reality is different as Law Teachers are fearful to admit that they are lagging behind with the advancement of technology, wherein Teachers of law are the ones who are expected to have an update and deep knowledge regarding law and advances in science and technology which help to shape the legal field.

The Author is of the view that, such a high percentage of respondents could not have been taught about DNA technology especially in law school, unless they would have learnt about the same outside Rwanda. The reality is that majority have studied in Rwanda, DNA technology is not a subject in the syllabus in any law schools. If they would have learnt about DNA technology; they are from a science stream/ background before joining law. Thus, the Author is of opinion that maybe they were shy to accept that they had not been taught about DNA evidence and considering the fact that some are senior and respected lecturers.

Graph No.6: Respondent Others

Respondent Others: Have you been taught /trained about DNA Evidence ?

As graph No. 6 above illustrates, 63.3 % of respondent others have been taught about DNA evidence, while 23.3% of respondent others answered that they had not been taught or trained about DNA evidence. Therefore, 73.3% (yes + maybe + taught as part of training) of respondent others are of view that they have been taught about DNA evidence, while the remaining 26.6% of respondent said to have not been taught or trained about DNA evidence.

The high percentage of respondent others who are aware about DNA evidence is mostly because they are from science background and have been taught the fundamentals and utility of DNA technology. With such a high percentage of respondent others having been taught about DNA evidence they should be enrolled to teach the Judges, Advocates, Prosecutors, i.e. the major stakeholders about DNA technology and in particular DNA evidence. If the stakeholders are appraised about the

utility and importance of DNA evidence as a tool in search of truth, then it can be easily employed in the judicial field and its impact would be noticed and felt in helping decide cases conclusively in law courts.

Cumulation of Responses of all Respondents

Graph No. 7: Cumulation of Responses of all Respondents
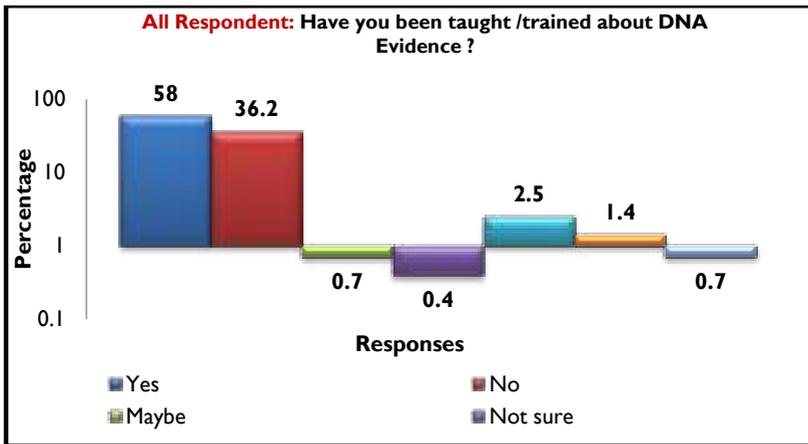
Graph No. 7 which represents cumulation of responses of all respondents, reveals that, 58% of all respondents were of opinion that all respondents have been taught or trained about DNA evidence while 36.2 % said no, they have not been taught or trained about DNA evidence. Almost, 0.7% of all respondents thought that maybe they have been trained about DNA evidence while 0.4% of all respondents were not sure and 2.5% of all respondent could not say if they have been taught or trained about DNA evidence. Another 1.4% of all respondents stated that they have been taught as part of training and finally, 0.7% of all respondents did not respond.

Thus, a cumulative total of 60.1% (yes+ maybe + taught as part of training) of all respondents stated that they have been taught or trained about DNA evidence; whereas 39.1% (no +not sure + can't say) of all respondents stated that they have not been taught or trained about DNA evidence. Almost 60.1% of all respondents state that they have been taught about DNA evidence.

As per the Author's point of view, this seems highly untenable for the reasons stated from graph 5. However, if this is valid then it is a way forward, though lot of things needs to be done to make DNA evidence to be resorted to in most cases that can be resolved by the use of DNA evidence. Almost 40% of all respondents state that they have not been taught about DNA evidence. This is a large percentage of respondents that are not aware of the potential benefits and utility of DNA evidence at this era. This leaves a lot to be desired. There is need to introduce the same in the curriculum besides making it acceptable as evidence in Rwandan legal system to further the interests of justice and truth.

Question Number two aims at testing*"Whether DNA Evidence should be a Subject in Law Curriculum".*

Graph No. 8: Respondent Judges

Graph No. 8: Respondent Judges: Should DNA Evidence be a Subject In The Law Curriculum?
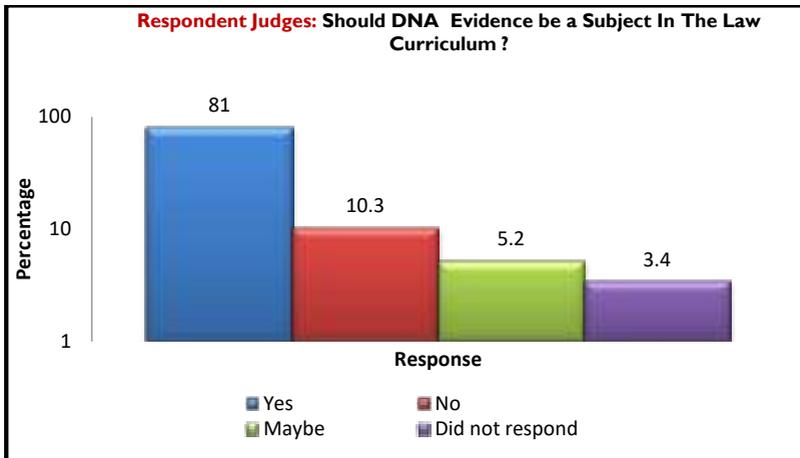
As per graph No. 8, 81% of respondent Judges, support that DNA technology should be a subject in the law curriculum, 10.3% of respondent Judges stated they did not support that DNA technology should be subject in the law curriculum. Therefore, 86.2% (yes + maybe) of respondent Judges opined that DNA technology should be a subject of law curriculum.

As per interaction with respondent Judges, It was suggested that DNA technology should be taught at Law Colleges as soon as possible to stop continued legal problems resulting from lack of awareness of the usefulness of scientific evidence in administration of justice. Rwandan legal system should have Judges with broader understanding of the use of scientific evidence; hence to provide knowledge of DNA technology in judiciary. It was added that, the lack of awareness of the importance of interdisciplinary approach of law and science technology can only be broken through introducing DNA technology in law curriculum.

Graph No. 9: Respondent Prosecutors

Respondent Prosecutors: Should DNA evidence be a Subject in the Law Curriculum ?
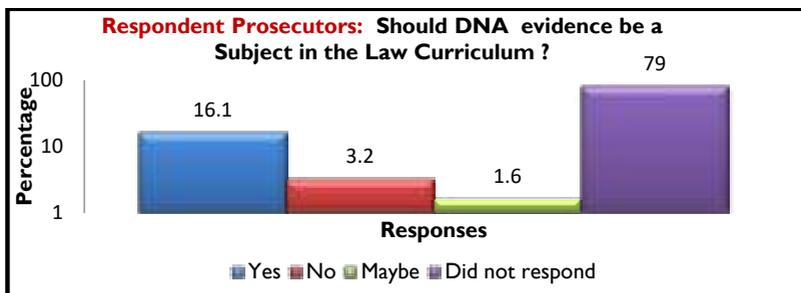
As graph No. 9 above demonstrates, 16.1 % of respondent Prosecutors support that DNA technology should be introduced in law curriculum in Rwanda, while 3.2 % of respondents were of opinion that DNA technology should not be introduced in law curriculum. Therefore, 17.7 % (yes + maybe) of respondent Prosecutors are of view that DNA technology to be introduced in law curriculum will be best choice, while the remaining 79% of respondent did not respond.

As per informal interaction with some of respondent Prosecutors they mentioned that it is not their concern to suggest whether DNA technology should be introduced in law curriculum. This is the main reason why the percentage of respondents who did not respondent is high compared to other percentages. The respondent Prosecutors being major players in the justice system they would be expected to appreciate advances in science and technology which are beneficial for them. Due to this, the Author emphasizes on sensitization of the need of DNA evidence and more so the importance of teaching the same in law schools to be able to reap the benefits brought by the advance of science and technology in Rwandan legal system.

Graph No. 10: Respondent Advocates
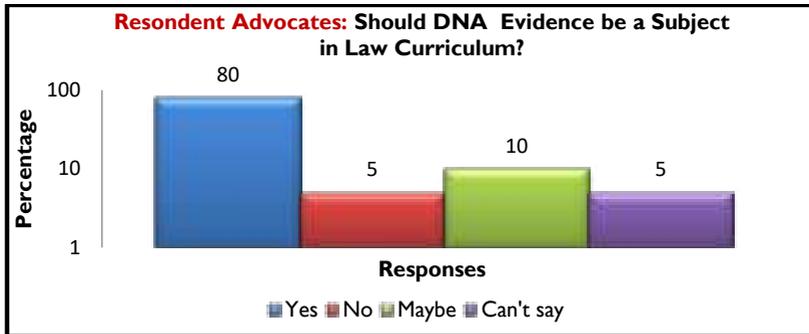
As graph No. 10 above demonstrates, 80 % of respondent Advocates support that DNA technology should be a subject in law curriculum, 5% did not support the idea. Almost, 90% (yes+ maybe) support that DNA technology should be a subject in law curriculum while remaining 10% (no + can't say) responded that DNA technology should not be a subject in law curriculum. *As per the researcher, the reason why Advocates support the idea of introducing DNA evidence as subject in law curriculum with a high percentage, is because the academic knowledge which will be provided to the actors of justice in general and Advocate in particular would make them competent in their daily jobs. Competent representation requires the legal knowledge, scientific skills, carefulness and preparation necessary for the representation of their client. An advocate shall be updated with a great scientific tool that will help establish guilt or exonerate the client in reasonable/speedy manner. Besides also learning about interdisciplinary approach between law and science technology; there are lots of material and they can understand the interrelationship and interlink between the same. The key is to understand who is teaching /who will teach these courses, and if there are enough qualified personnel who are up to the task.*

Graph No. 11: Respondent Law Teachers/Students

Respondent Law Teachers/Students: Shoud DNA Evidence be a Subject in Law Curriculum?
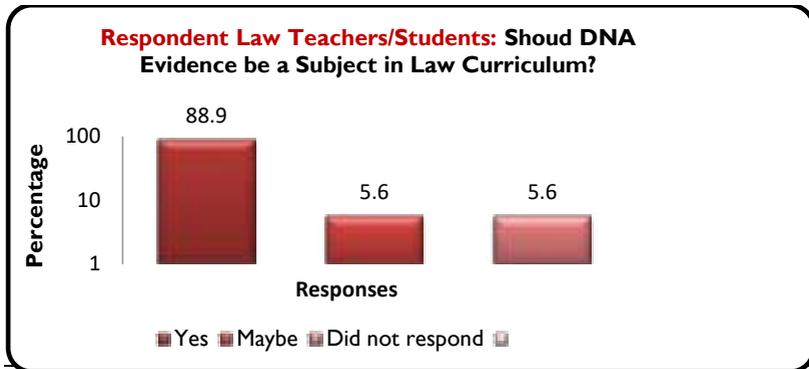
As graph No. 11 above reveals, 88.9 % of respondent Law Teachers/ Students support that DNA technology should be a subject in law curriculum. Almost, 94.5% (yes+ maybe) support that DNA technology should be a subject in law curriculum while remaining 5.6% of Respondent Law Teachers/ Students did not respond.

As per Author's views, the number of qualified teachers who can teach science, technology and law (DNA technology) as a subject is very low in Rwanda. There is perception that teaching legal aspect of forensic science in Rwanda appears to be difficult compared to other subjects of law. As per the interview with law teachers, they have expressed that they do not feel qualified to teach law, science and technology. Another need, according to the research's findings is to equip law teachers for the purposes of teaching law, science and technology at the law colleges/ universities. With the advances in science and technology, it cannot be expected that the teachers will understand and then teach law students about the DNA technology if they themselves do not have a solid foundation of law, science and technology or nexus of the same.

Therefore, this lack of professional knowledge of DNA technology has a direct impact on the introduction of DNA technology in law curriculum. Without doubt, Rwanda will need Judges, Prosecutors, Police, Advocates, Lawmakers (all actors of justice) who have solid scientific understanding and if they have that, then they might be interested and proud to settle the matters which have connection with science. Again, law schools/universities need better instructors in DNA technology and teachers who know how to draw the nexus between science technology and law and inject more science and technology into law curriculum.

Cumulation of Responses of all Respondents

Graph No. 12: Cumulation of Responses of all Respondents
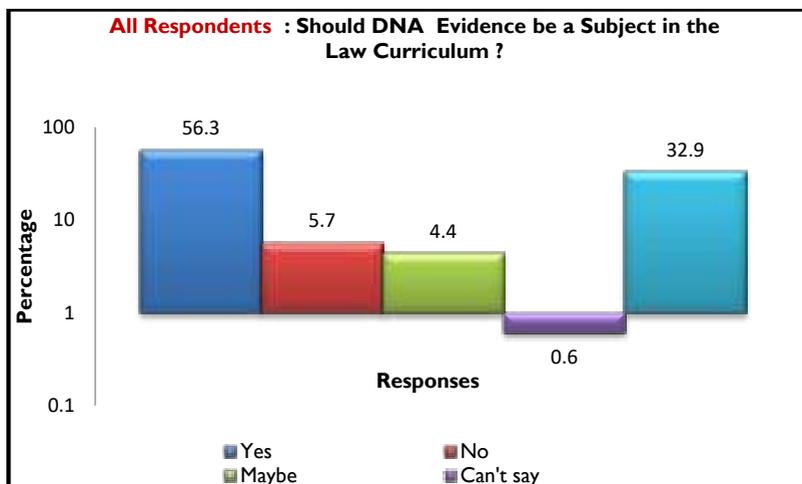
As graph No. 12 above demonstrates, 56.3 % of all respondents support the opinion that DNA technology should be a subject in law curriculum, 5.7 % of all respondents did not support the opinion that DNA technology should be introduced as subject

in law curriculum whilst 4.4% of all respondents stated maybe DNA technology should be introduced as a subject in law curriculum and 0.6% of all respondent could not say if DNA technology should be introduced as subject in law curriculum and 32.9% of all respondents did not respond.

Cumulatively, almost, 60.7% (yes+ maybe) support that DNA technology should be a subject in law curriculum while 6.3% (no + can't say) of all respondents were of opinion that DNA technology should not be introduced as a subject in law curriculum. *Thus, the Author humbly submits that, there should be introduction of law, science and technology as a subject in law curriculum. Besides this there is need of capacity building i.e. teachers to be taught on the same so that they can teach the subject better.*

5.2.   Scope for Further Research

The journey of this research paper that began with research questions which have been addressed and assessed in all section of this paper are now resolved. This is not the end, because there are neither ever really any beginnings nor any ends. At the end of this research paper, some new issues have been discovered which generate enough scope to pursue other avenues of interdisciplinary approach between law and science technology for sustainable development of justice in Rwanda. Findings presented in this paper are results of the research conducted in 2013 in Rwanda.

It is almost four years after the research has been conducted. The Author points out that the situation must have been changed positively. Through the establishment of CID School

at Musanze Police College and through training offered by ILPD Nyanza in 2014 and 2017 in the area of forensic science and investigation. There is a silver-lining that the situational awareness have been improved. These for sure have increased some percentage of awareness. But still more research need to be conducted to test awareness and assess how this has been entrenched by legal community. More works also need to be done such as enacting specific law admitting scientific evidence, establishing awareness program and to educate on importance of interdisciplinary approach between law, science and technology for development of justice in Rwanda; to embrace and introduce the same for speedy and conclusive disposal of cases. The more there is awareness the more the concept will be entrenched in administration of justice and its advantages and utility will trickle down in pursuit of truth. Hence, the Author is of view that this topic can be an on-going interdisciplinary research from the point of view of social scientists.

6. CONCLUSION

As science advances, law has to go hand in hand with that advancement but with distinctive objective. Law is driven by policy concerns and respect and protection of human rights protection behind it, wherein the case brought before the court present ambiguity. Law is sometimes confused, persistently shifting as new cases arise, new laws are passed, and the current state of any legal doctrine is only an appellate-court decision away from being altered. However, as Feldman pointed out, it is precarious to think that science itself lacks the capacity to answer the questions that law must address.

Law is not a process to be replaced by science, but the two independent fields must meet in the middle, and law should be embraced for what it is, not stifled by science. Additionally, the Author submits that, lack of adequate interaction between science and law affects some legal decisions. In countries where convergence between law and science have been fully embraced; it has yield remarkable positive results. The role played by science in law and the role played by law in science should not be overlooked in anyways. Without doubt this interdisciplinary approach is of paramount importance in sustainable development of justice.

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EFFECTS OF CUSTOMER SATISFACTION ON FINANCIAL PERFORMANCE OF FINANCIAL INSTITUTIONS:

Case of BPR, Nyamagabe Branch(2013-2015)

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ABSTRACT

This work is entitled "*The effects of customer satisfaction on financial performance of financial institutions with special focus on BPR Nyamagabe Branch 2013-2015*". This was a mixed-methods research and used a descriptive approach. Various data collection techniques were also used: desk review, questionnaire and interviews. The purpose of this study was to examine the level of customer satisfaction in BPR Nyamagabe Branch. To assess the level of financial performance of BPR Nyamagabe Branch and to establish the relationship between customer satisfaction and financial performance. A sample size of 96 customers and 7 employees of BPR Nyamagabe branch was drawn conviniently.

The main tool for data collection was a structured questionnaire. Data were analyzed and presented by means of frequency distributions, percentages and tables. For the first specific objective customer retention was revealed to be high considering the grand mean of 3.50 interpreted as high mean. For customer loyalty it was found that the level of loyalty is good considering the grand mean of 3.71 interpreted as high mean. Regarding word of mouth also it was revealed that it is good with the grand mean of 3.84 interpreted as high mean, and finally service quality was also rated good with the grand mean of 3.80 interpreted as high mean. To the second objective of this study it was revealed that BPR Nyamagabe has excelled in the following: performance in terms of the decreases of reporting negative income considering the mean of 4.57 interpreted as very strong mean, increase of interest revenues with the mean

of 3.86, increase of dividends from investments with the mean of 3.86, increase of discount from received payment with the mean of 3.43, decreases of operating expenses in general with the mean of 3.29, and having positive net income with the mean of 3.86. To the third objective that leads to the conclusion of the study it was revealed that there is a positive relationship between customer satisfaction and financial performance with the correlation coefficient of 0.487 interpreted as weak and this was found to be statistically significant. In the end researchers suggests that BPR Nyamagabe branch should quickly capitalize on these findings and then make some products accessible to all the clients. These products, if fully introduced will help raise the satisfaction levels of their clients and also entice new ones as it can serve as an avenue for BPR Nyamagabe branch to gain a competitive edge over its competitors.

Key Words: Customer Satisfaction, Financial performance, Financial Institutions

LIST OF ABBREVIATION AND ACRONYMS

AROA: Adjusted Return On Assets

ATM: Automated Teller Machine

BPR: Banque Populaire du Rwanda

CR: Credit Risk Exposure

Dr: Doctor

FP: Financial Performance

FSS: Financial Self-Sufficiency

GAAP: Generally Accepted Accounting Principles

GSSs: Guest Comment Cards

IFAD: International Fund for Agricultural Development

LLR: Loan Loss Reserve

MFIs: Micro-Finance Institutions

NFP: Non-Financial Performance

OISL: Opportunity International Savings and Loans Limited

PAR: Portfolio At Risk

RC: Risk Coverage Ratio

RDB: Rwanda Development Board

ROA: Return On Assets

ROE: Return On Equity

SDI: Subsidy Dependence Index

SERVQUAL: Service Quality

SPSS: Statistical Package for Social Sciences

TSQ: Technical Service Quality

TVET: Technical Vocational Education Training

UK: United Kingdom

WOM: Word Of Mouth

WOR: Write Of Ratio

1. INTRODUCTION

Satisfaction is a serious and primordial way for satisfying and retaining the customers of the enterprise and consequently the performance of financial institutions. Given that the satisfaction is crucial, it is important to identify factors and causes of satisfying and/or non satisfying consumers for better improvement of the performance of financial institution. Therefore, this study has been conducted to determine the level of satisfaction with the quality of services and the level of performance of BPR Nyamagabe Branch in order to improve the performance of financial institution. This introductive part is going to describe the background of the study, statement of the problem, objectives of the study, research questions, and significance of the study, limitations and scope of the study.

1.1. Background to the study

Customers became very vital in business during the marketing era of the 1950s when companies could produce what they can sell and not just selling what they can produce as it was during the production era. Customer satisfaction has been a subject of great interest to organizations and researchers alike. The principal objective of organizations is to maximize profits and to minimize cost. Profit maximization can be achieved through increase in sales with lesser costs. One of the factors that can help to increase sales is customer satisfaction, because satisfaction leads to customer loyalty, recommendation and repeat purchase (Wilson A., Zeithaml V.A., Bitner M. J., Gremler D. D., 2008)

Customer satisfaction with a product presumably leads to repeat purchases, acceptance of other products in the same product line, and favorable word of mouth publicity. Therefore, knowledge about factors affecting customer satisfaction is essentials to marketers.

Since the beginning of the consumption era in marketing, the focus on customers/consumers has increased more as the consumption era also shifts to post-consumption; where organizations are obliged to render more services in addition to what they provide as offers to their customers, (David Armano, 2009). What are the qualities of these services provided to customers? Are the customers satisfied with these services? Thus, this research originated from the fact that customers/ consumers are the key to business.

In fact, customer satisfaction is the most important tool that helps to increase sales and generate profits in the business environment. Moreover, the importance of customer satisfaction and quality of service has been proven relevant to help improve the overall performance of organizations (Magi, A. & Julander, C. R., 1996).

From the view of operations management, it is obvious that customers play important roles in the organizational process (Lee, J. K. & Ritzman, L. P., 2005). Before the placement of strategies and organizational structure, the customers are the first aspect to be considered by management. The questions asked in the strategic planning range from who will need to consume these offers, where are they and for how much can

they buy to how to reach the customers. After these questions, the organization will then design the product, segment the markets and creates awareness. This does not only show the importance of customers in the business environment but also the importance of satisfying them.

Customers are always aiming to get maximum satisfaction from the products or services that they buy. Winning in today's marketplace entails the need to build customer relationship and not just building the products; building customer relationship means delivering superior value over competitors to the target customers (Kotler P., Armstrong G., Saunders J. Wong V., 2002). Whether an organization provides quality services or not will depend on the customers' feedback on the satisfaction they get from consuming the products, since higher levels of quality lead to higher levels of customer satisfaction (Kotler, P. and Keller, K. L., 2009).

Most companies are adopting quality management programs which aim at improving the quality of their products and marketing processes, because it has been proven that "*quality has a direct impact on product performance, and thus on customer satisfaction*" (Kotler P., Armstrong G., Saunders J. Wong V., 2002). The reason for this is to satisfy the customers by studying the factors of customer satisfaction. But, are the customers satisfied because of the products or quality of service? i.e, there are the companies providing the actual qualities perceived by the customers/consumers or there are other factors.

1.2. Problem statement

Customer satisfaction has been studied in different directions, from measurement to its relationships with other business aspects. Some researchers have provided possible means of measuring customer satisfaction (Levy, 2009; NBRI, 2009). Others like (Wilson A., Zeithaml V. A., Bitner M. J., Gremler D. D., 2008) demonstrated some determinants of customer satisfaction such as product and quality of service, price, personal and situational factors. Some researchers have looked into the relationship between total quality management and customer satisfaction (Wen-Yi S. Keng-Boon O., Binshan L., & Chong. A. Y., 2009).

The importance of customers in the business process has made it vital to always conduct research about customers. There has always been the need for customer research before, during and after sales, because of changes that may occur in the business process. It has been proven by authors that "*an organization that consistently satisfies its customers, enjoys higher retention levels and greater profitability due to increase customer loyalty*" (Wicks, A. M., & Roethlein, C. J., 2009). For this reason every company works hard daily to win the hearts of customers by satisfying them so that they become loyal customers to their brands in order to increase sales and profit.

To confirm the fact, researchers are still working on customer satisfaction especially on its relationship with quality of service. Just of recent, Gera (2011) investigated the link between quality of service, value, satisfaction and behavioral intentions state

that "*Quality of service was found to significantly impact on customer satisfaction and value perceptions*". Among the articles search for past studies on the relationship between customer satisfaction and quality of service, few studies have been conducted to evaluate quality of service then relating it with customer satisfaction and other marketing, or business aspects. Very few or none of the studies have been conducted on the relationship between customer satisfaction and other factors than quality of service.

To confirm the fact that customer satisfaction especially its relationship with quality of service has impact on the financial performance, it is important to conduct such research in the field of banking. The research has been conducted under the following objectives:

1. To examine the level of customer satisfaction in BPR Nyamagabe Branch.
2. To assess the level of financial performance of BPR Nyamagabe Branch.
3. To establish the relationship between customer satisfaction and financial performance at BPR Nyamagabe Branch.

1.3. Research questions

The research question is like a conductor file to the researcher. With the aim of demonstrating the Customer satisfaction at BPR Nyamagabe Branch, this work tries to exploit the following research questions:

1. To which level are customers satisfied with the services of BPR Nyamagabe Branch?

2. What is the level of financial performance of BPR Nyamagabe Branch?
3. Is there any significant relationship between the customer satisfaction and financial performance of BPR Nyamagabe Branch?

1.4. Hypothesis of the study

This study is going to have different hypotheses:

H_0: There is a significant relationship between customer satisfaction and the financial performance of financial institutions.

H_1: There no significant relationship between customer satisfaction and financial performance of financial institutions.

1.5. Conceptual framework

The conceptual framework is the narrative outline of the study which shows the relationship between variables. The conceptual framework of this study is grounded by the assumption that the decision of customers to adhere to a financial institution is influenced by their satisfaction of the offered services. Therefore if customers are satisfied with the quality of services given, it is expected that the result have been an increase of the performance of financial institution.

Figure 1.1.: Conceptual framework

Independent variables   **Dependent variables**

Customer satisfaction	Financial performance
• Customer loyalty • Customer retention • Positive words of mouth • Service quality	• Financial profitability ratios • Efficiency ratios • Credit risk exposure ratios • Liquidity ratios
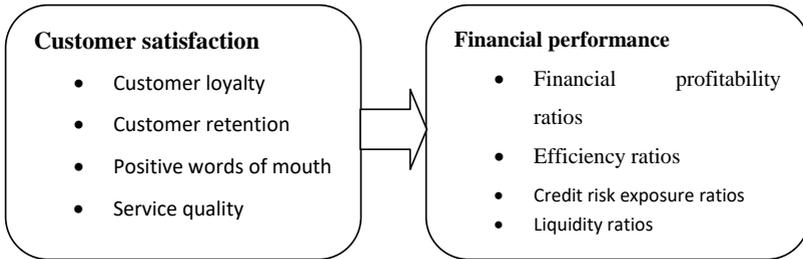
Source: Researchers generated model, 2016.

2. LITERATURE REVIEW

2.0. Introduction

This literature review has described some concepts which related to this study such as: Customer Satisfaction, Customer Satisfaction and Banking Sector, Customer Satisfaction and Service Quality, five dimensions of service quality and customer satisfaction, customer service and satisfaction, product availability and customer satisfaction, Consumer Perceptions and behavior: relationships between service satisfaction, benefits of customer satisfaction, the indicatotors of financial performance such as profitability, efficiency and credit risk exposure.

2.1. Customer satisfaction

A significant level of customer satisfaction is among the most critical indicators of the business's future. Customers who are satisfied are also loyal and this ensures a consistent cash flow for the business in the future. In addition, satisfied customers are often characterized by fewer prices sensitive and they are more partial to spend more on the products they have tried and tested before. Moreover, stability in business relations is also beneficial where the positive quality image minimizes the cost for a current customer (Matzler et al., 1996).

2.2. Customer satisfaction in banking sector

Among many studies in literature dedicated to customer satisfaction in banks, Al-bro's (1999) involved asking customers various questions concerning their satisfaction with the banks. Data collected was utilized to benchmark customer satisfaction scores of banks participating in the financial client satisfaction index. The findings revealed that the most significant attributes that results in satisfaction include human interaction issues like 'correcting errors promptly', 'courteous employees' and 'professional behavior'.

Moreover, the findings also revealed that the provision of good, personal service is considered by the clients as more important more than convenience or products. The above findings were consistent with (Wan et al., 2005) findings. The latter study was also conducted in Washington and it revealed that customers taking the customer satisfaction survey bought more products compared to the control group that were not participants to the

survey. According to the authors, survey participation is what led the customers to develop more positive perceptions towards the company and it convinced them that the firm values and cares about its customers and their feedback.

2.3 Financial performance

The present part is going to discuss the indicators of financial performance such as profitability ratios including return on Asset, return on equity, efficiency ratio and credit risk exposure.

2.3.1 Financial Profitability

Return on Assets (ROA) falls within the domain of performance measures and tracks MFIs' ability to generate income based on its assets. The ratio excludes non-operating income and donations. ROA provides a broader perspective compared to other measures as it transcends the core activity of MFIs namely, providing loans, and tracks income from operating activities including investment, and also assesses profitability regardless of the MFIs funding structure. ROA is expected to be positive as a reflection of the profit margin of the MFI, otherwise it reflects non-profit or loss. In banks and other commercial institutions, the commonest measures of profitability are Return on Equity (ROE), which measures the returns produced for the owners, and Return on Assets (ROA), which reflects that organization's ability to use its assets productively.

X100

These are appropriate indicators for unsubsidized institutions. But donor interventions more typically deal with institutions that receive substantial subsidies, most often in the form of grants or loans at below-market interest rates. In such cases, the critical question is whether the institution have been able to maintain itself and grow when continuing subsidies are no longer available. To determine this, normal financial information must be "adjusted" to reflect the impact of the present subsidies. Three subsidy-adjusted indicators are in common use: Financial Self-sufficiency (FSS), Adjusted Return on Assets (AROA), and the Subsidy Dependence Index (SDI).

2.3.1. Efficiency

Efficiency of MFIs is measured by the share of operating expense to gross loan portfolio in most cases. The ratio provides a broad measure of efficiency as it assesses both administrative and personnel expense with lower values indicating more efficient operations.

The debt equity ratio is a member of the asset/liability management ratios and specifically attempt to track MFIs leverage. This measure provides information on the capital adequacy of MFIs and assesses the susceptibility to crisis. Microfinance investors mainly rely on this ratio as it helps to predict probability of an MFI honoring its debt obligations. However its use should always be contextualized as high values could lead to growth of MFIs.

The Operating Expense Ratio is the most widely used indicator of efficiency, but its substantial drawback is that it will make an MFI making small loans look worse than an MFI making large loans, even if both are efficiently managed. Thus, a preferable alternative is a ratio that is based on clients served, not amounts loaned:

If one wishes to benchmark an MFI's Cost per Client against similar MFIs in other countries, the ratio should be expressed as a percentage of per capita Gross National Income (which is used as a rough proxy for local labor costs).

2.3.2. Credit Risk Exposure

The credit risk exposure (CR) is measured by the sum of the level of loans past due 30 days or more and still accruing interest namely Portfolio at Risk (PAR-30). In robustness tests we include further measures of credit risk by estimating various econometric specifications for three additional different explanatory variables; the write-off ratio (WOR) which is the value of loans written off during the year as uncollectible, as a percentage of average gross loan portfolios over the year. An additional measure of credit risk is the Risk Coverage Ratio which is measured as the Adjusted Impairment Loss Allowance/ PAR>30 Days and finally Loan Loss Reserve Ratio (LLR). This is measured as the ratio of loan loss reserves to gross loans or simply put as Loan loss reserve/Value of loans outstanding. It is an indicator of how much of the gross loan portfolio has been provided for but not charged off. It is important to note that only WOR and LLR are measures of default, while PAR is a measure of risk of default.

2.4. The relationship between Customer Satisfaction and Financial Performance

Customer satisfaction is a subject that has long received attention in the human resources as well as accounting and marketing literatures. The construct is generally conceived of as transaction specific or an overall measure of consumers' approval of goods or services over a period of time Anderson, Fornell, & Lehman, (1994: 55). Anderson, et al. indicate that overall customer satisfaction is a better indicator of a firm's future performance and, further, that "high customer satisfaction should indicate increased loyalty for current customers, reduced price elasticities, insulation of current customers from competitive efforts, lower costs of future transactions, reduced failure costs, lower costs of attracting new customers, and an enhanced reputation for the firm".

Customer satisfaction and financial performance are among the last links in the service-profit-chain. The former is proposed to drive the latter through increased repeat business, customer retention, and referral of new customers (Heskett, et al., 1994). Empirical work indicates, however, that the relationship between these two constructs may be less simple than one might expect.

3. RESEARCH METHODOLOGY

This chapter aims at discussing the methodologies that have been used during this research. It includes the research design, the population of the study, the sample size and sampling technique, research instrument and data analysis procedures.

3.1. Research design

The researchers endeavored to show general information of the topic that is being studied in relation to BPR, Nyamagabe Branch. Christensen (1991: 269) defines research design as the outline plan, or strategy specifying the procedures, to be used in seeking an answer to the research questions. It specifies such things as how to collect and analysis the data. The study design adopted for this research was a case study design. He also asserts that a case study is an intensive description and analysis of a single individual, organization or event, based on the information obtained from the variety of sources such as interviews, documents, test results and archives records.

This is a mixed research method. Both qualitative and quantitative research designs have been employed to accomplish the stated objectives of the study. The researchers used qualitative research methods to collect data from customers on whether they are satisfied with available services and products in BPR Nyamagabe branch and also to generate new ideas on how service would be improved. The quantitative research method has been used to interpret data from the fields.

The researchers also employed correlative research design to evaluate the relationship between service quality and customer satisfaction and the relationship between customer satisfaction and financial performance.

3.2. Study population

According to Grinnell Williams (1990:118), a population is a totaling of person or objects within which a study was conducted. The target population was 2473 clients and 24 employees of BPR Nyamagabe branch.

3.3. Sample size

Martins (1999) notes that the correct sample size in a study is dependent on the nature of the population and the purpose of the study. The sample size usually depends on the population to be sampled. The formula below has been used for the calculation of the sample size. The Slovin formula below has been used to determine the sample size of this study:

Where: **S** is sample size
N is the population
d is the error estimate with a confidence interval of 90%
So, the sample size was determined sector wide as flows:

= 96.1 ≈ 96 respondents
The following table summarizes the sample size and sampling technique to be used

Table 3.1. Sample size and sampling technique

Level of respondents	Number of responrdents	Selected samples	Sampling tecnique
Clients	2473	= 96	Convinience sampling
Employees of BPR	24	7	purposive sampling
Total	2497	103	

Primary data, 2016

3.4. Sampling techniques

Both convinience sampling and purposive sampling were used as the respondents were homogeneous.

3.4.1. Convenience sampling

Convenience sampling that is the investigator chooses the closest live persons as respondents. Usually, it cannot claim that a sample is representative. Much less complicated, less expensive and can be done at the spur of the moment. Can take advantage of whoever is available. This means that customers were selected due to the ease with which they could be contacted. One of researchers visited the branch twice to distribute questionnaires to present cusmers.

3.4.2. Purposive sampling

In this study, researchers used purposive sampling to select the employees of BPR Nyamagabe Branch who were expected to have relevant information than others. These populations included 1 Recovery Officer, 3 Commercial Officers and 3

Tellers.

3.5. Research instruments

The researchers used a questionnaire for data collection and respondents responded to items on five-point Likert Scale ranging from 1-5 (Strongly disagree to strongly agree). The questionnaire included both open and closed ended set of questions to be distributed to all the subjects. The tool provided space for the respondents to write down the answers freely at their given time.

For this study purpose, a set of questions has been prepared to collect information relating to the objectives of the study. This technique was found relevant because the selected sample has been given time to respondent to the questionnaire and later the researchers came back to collect them. The tool provides space for the respondents to write down the answers freely at their given time.

3.6. Data analysis

Data collected from the clients through questionnaires were analyzed, summarized, and interpreted accordingly with the aid of descriptive statistical techniques such as total score and simple percentage. For the second objective which is to measure the level of profitability, culculations of profitability and efficiency ratios have been calculated based on Qualitative as well as quantitative methods which were used in the analysis of the primary data collected. The quantitative data was analyzed using Statistical Package for Social Sciences 20 (SPSS 20). The findings were presented in the form of tables.

4. DATA ANALYSIS AND DISCUSSION OF FINDINGS

The objective of this chapter is to present, analyze and discuss about the findings on the role of customers' satisfactions to the financial performance of BPR Nyamagabe branch. The number of questionnaires distributed were 96, and respondents targeted responded positively giving a response rate of 100% and that all questionnaires were correctly answered. This confirms at some points that results are reliable.

4.1. Demographic Profile of Respondents

This section shows the demographic profile of the respondents. That profile is comprised of gender, marital status, age, academic qualification, and years of in service with BPR Nyamagabe branch, and they are described with more details here below:

4.1.1. Respondents by Age

To establish the number of respondents that fall in different age brackets, respondents were asked to show their age and the findings are as in the table below.

Table 4.1: Respondents by age intervals

Age intervals	Frequency	Percentage
Between 20-29	6	6.2
Between 30-39	36	37.5
Between 40-49	42	43.8
Between 50-59	12	12.5
Total	**96**	**100.0**

Source: *Field data, November 2016*

From the table 4.1 above, it is seen that the majority of the respondents are in the interval of 40-49 years old (43.8%) and between 30-39 years old (37.5%). These data imply that the responses are not biased by young judgements and old people are trustworth.

4.1.2. Respondents by Gender

Demographic data about respondents were also disaggregated by sex. And the reason for this was to know how male and females use the services and products provided by BPR Nyamagabe.

Table 4.2: Respondents by gender

Gender	Frequency	Percentage
Male	52	54.2
Female	44	45.8
Total	**96**	**100.0**

Source: Field data, November 2016

From table 4.2 above, it is shown that 52 respondents representing 54.2% were males and 44 representing 45.8% were females. This could be attributed to the fact that in most Rwandan household, the males are economically active and therefore are able to save more as compared to their female counterparts who are mostly occupied by household chores which are not financially rewarding.

4.1.3. Respondents by Marital status

Marital status was considered in order to know how married and single people are distributed in BPR Nyamagabe and this helped to know views of different categories of respondents on

customer satisfaction.

Table 4. 3: Descriptive respondents by martal status

Martal status	Frequency	Percentage
Single	34	35.4
Married	62	64.6
Total	**96**	**100.0**

Source: Field data, November 2016

From table 4.3 above, the majority of the respondents was married 62 (64.6%) and followed by single respondents with 34 (35.4%). This implies that married people provided reliable responses and also the majority of BPR Nyamagabe branch are married.

4.1.4. Respondents by level of education
Table 4 .4: Respondents by level of education

Level of education	Frequency	Percent
Primary studies	46	47.9
Secondary	8	8.3
University	38	39.6
TVET	4	4.2
Total	**96**	**100.0**

Source: Field data, November 2016

It can be clearly seen from the table 4 .4 that 46 respondents representing 47.9% had completed primary studies, 8 representing 8.3% hold secondary studies certificate, 38 representing 39.6% are university graduates in all levels, 4 representing 4.2% are TVET certificate holders. These data indicated that BPR customers are heterogeneous.

4.1.5. Respondents occupation

In this study respondents were requested to provide their occupation. The importance of this was to know which category of respondents is more satisfied than others.

Table 4. 5: Respondents of the occupation of respondents

Occupation of the respondents	Frequency	Percentage
A businessman	32	33.3
Civil servant	58	60.4
A private sector operator	4	4.2
Others	2	2.1
Total	**96**	**100.0**

Source: Field data, November 2016

From the table 4.5 above, it is shown that 60.4% of the respondents were civil servants, 33.3% of the respondents were in business, 4.2% were in private sector operations while 2.1% of the respondents were in other domains. From these data, the more different occupation is, the more the level of satisfaction and appreciation differs. So, this gave hope to get a balanced information of this research.

4.1.6. Profile of employees

In this study both customers and employees participated. Below table shows the demographic characteristics of employees who have participated in this study. They include gender, position, and experience at work.

Table 4 .6: Demographic characteristics of BPR Nyamagabe Branch employees

Value	Frequency	Percent
Gender of employees		
Male	4	57.1
Female	3	42.9
Total	**7**	**100.0**
Experience of employees		
Below 5 years	2	28.6
5-10 Years	4	57.1
Above 10 Years	1	14.3
Total	**7**	**100.0**
Position of employees		
Teller	3	42.9
Commercial officer	3	42.9
Recovery Officer	1	14.3
Total	**7**	**100.0**

Source: Field Data, November, 2016

Table 4. 6 shows the distribution of demographic characteristics of employees who have participated in this study; those include age, experience and position of respondent.

According to gender majority of respondents who have participated in this study were found to be male on the percentage of 57.1% while female were participated on the percentage of 42.9%. The reason of this is that men are more quick to be familiar with the field work than women since in BPR it is requirement to be on field several times in order to understand the needs and wants of customers as well as to

make analysis for those who need credit or short terms loans.

According to experience, it was found that majority of participants have experience ranging between 5 to 10 years with the percentage of 57.1%. This is advantage to the bank where this implies that worker with long experience know the ethics of customer satisfaction.

Table 4.6 also shows the distribution of respondents by their position in BPR Nyamagabe. Majority of respondents who have participated in this study were tellers and commercial officers where each category holds 42.9%. This was advantageous because they know the aspirations of customers regarding the services they get from bank.

4.2. Level of customer satisfaction in BPR Nyamagabe

The first specific objective of this study was to assess the level of customer satisfaction in BPR Nyamagabe. To reach this objective, they key respondents were the users or customers of BPR. They provided their opinions referring to indicators of customer satisfaction as there were cited in the literature review. Those are customer retention, customer loyalty, word of mouth, and service quality.

4.2.1. Customer retention at BPR Nyamagabe

Customer retention refers to the ability of a company or product to retain its customers over some specified period. High customer retention means customers of the product or business tend to return to, continue to buy or in some other way not defect to another product or business, or to non-use

entirely. Selling organizations generally attempt to reduce customer defections.

Customer retention starts with the first contact an organization has with a customer and continues throughout the entire lifetime of a relationship and successful retention efforts take this entire lifecycle into account (Mehta et al, 2016). A company's ability to attract and retain new customers is related not only to its product or services, but also to the way it serves its existing customers, the value the customers actually generate as a result of utilizing the solutions, and the reputation it creates within and across the market place (Mehta et al, 2016).

Table 4. 7: Customer retention in BPR Nyamagabe

Customer retention	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Mean	SD
I have never changed this bank since I have joined it	---	---	17 16.5%	56 54.4%	30	4.13	.667
I don't have the intention to quit this bank	---	9 8.7%	27 26.2%	38 36.9%	29	3.84	.937
The products of this bank are superior comparing to other banks	1 1.0%	17 16.5%	30 29.1%	38 36.9%	17	3.51	.989

I stay in this bank because of the interest rate if favor-able	6 5.8%	29 28.2%	44 42.7%	14 13.6%	10 9.7%	2.93	1.022
This bank gives value to customers by offering promotion and discount on loan	9 8.7%	17 16.5%	37 35.9%	33 32.0%	7 6.8%	3.12	1.051
Grand mean						**3.5068**	**.49135**

Source: Field Data, November, 2016

Table 4.7 shows the perceptions of respondents on different practices or indicators of customer retention in BPR Nyamagabe. Regarding the results it was found that participants in this study have used the same bank since joining it considering the mean of 4.13 interpreted as strong mean and this is not far away the frequency data where they show that the mean results from 54.4% of respondents who have agreed with that and 29.1% of respondents who has strongly agreed with that. Secondly respondents revealed participants in this study don't have the intention to quit the bank considering the mean of 3.84 interpreted as high mean and this is in line with majority of respondents who showed the agreement tendency where 36.9% of respondents were agreed with that and 28.2%.

The third indicator of retention as it was reported by respondents was found to the superiority of products of products of the bank (BPR) Nyamagabe comparing to other banks. However the remaining sub-indicators of retention were lowly rated

by customers; those include staying using bank because of favorable interest rate on loan considering the mean of 2.93 interpreted as moderate mean with 42.7% of respondents who were not sure and 28.2% of respondents who have disagreed with that. It was also revealed that the bank does little things to offer promotion in terms of discounts considering the mean of 3.12 interpreted as moderate mean.

In conclusion, the level of customer retention practices in BPR Nyamagabe is moderate considering the grand mean of 3.50 interpreted as moderate mean. Here is to say that the bank has to apply appropriate strategies for retaining more customers since this is indicate the positive reputation of companies specialized in service industry like banks.

Table four shows the results in combination way about the perceptions of participants on customer retention but it didn't showed the difference between what customers think on customer satisfaction and what employees think about that. Below table shows the differences in perceptions between customers and employees and determine if there is significant difference among their perceptions.

Table 4. 8: Perceptions of customers and employees on customer retention

	Category of respondents	N	Mean	SD	P-value
Customer retention	Customers	96	3.4958	.49925	.404
	Employees	7	3.6571	.35989	

Source: Field Data, November, 2016

Table 4.8 helps to differentiate the perceptions of customers and employees regarding customer retention in BPR Nyamagabe. It was revealed that customers have moderate perception on the practices of customer retention in BPR Nyamagabe with the mean of 3.49 interpreted as moderate mean while employees stated that the employees have positive perceptions on practices of customer retention in BPR Nyamagabe with the mean of 3.65 interpreted as strong mean. However, that difference was found to be not statistically significant since the p-value computed using independent t-test was found to be 0.404 which is less than the p-alpha of 0.05.

4.2.2. Level of customer loyalty in BPR Nyamagabe

Day (1969) opined that customer loyalty is perceived as the combination of repeat purchases from one service provider or brand coupled with the customers' psychological attachment toward the provider.

Newman and Werbel (1973) defined it as a characteristic of those who repurchased a brand, considering only that brand, without seeking any information related to it. In this study customer loyalty was taken as an indicator of customer satisfaction and the researchers intended to explore how customers and employees are loyal to services offered by BPR Nyamagabe.

Table 4.9: Customer loyalty in BPR Nyamagabe

Customer loyalty	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Mean	SD
I will always use this Bank in every my bank activities/ transactions	---	3 2.9%	18 17.5%	65 63.1%	17 16.5%	3.93	.675
I will Say positive things about the bank to other people	---	3 2.9%	17 16.5%	52 50.5%	31 30.1%	4.08	.763
I seldom consider switching away from this bank	---	8 7.8%	38 36.9%	45 43.7%	12 11.7%	3.59	.798
I will never change this Bank even I found another bank	2 1.9%	19 18.4%	41 39.8%	33 32.0%	8 7.8%	3.25	.915
Grand mean						**3.7125**	**.40082**

Source: Field Data, November, 2016

Regarding the results in the above table it was revealed that the loyalty of customers in BPR Nyamagabe is explained by relaying on BPR for in banking activity and transaction considering the mean of 3.39 interpreted as high mean and this is resulting from 63.1% of respondents who have agreed with that and 16.5% of respondents who have strongly agreed with that, saying positive things about the bank to other people considering the mean of 4.08 interpreted as strong mean with 50.5% of

respondents who have agreed with that, always considering switching away with BPR services considering the mean of 3.59 interpreted as strong mean with 43.7% of respondents who have agreed that and 11.7% of respondents who have strongly agreed with that. However it was found there a moderate perception about staying with the bank considering the moderate mean of 3.25 interpreted as moderate mean with below the half of the respondents who shoed the tendency of agreement on that.

In conclusion the grand mean of 3.71 shows that the bank has an opportunity of having more loyal customers. This is due to the time by which the BPR has been created where in different parts of the country especially in rural areas it was seen as monopoly for financial services. It was also revealed that the bland of BPR is more influencer to the majority of Rwandans.

The below table intends to show the difference in perceptions on the loyalty of customers in BPR where that difference is for customers and employees.

Table 4.10: Perceptions of customers and employees on customer loyalty

	Category of respondents	N	Mean	SD	P-value
Customer loyalty	Customers	96	3.6125	.36800	.000
	Employees	7	4.3143	.22678	

Source: Field Data, November, 2016

Table 4.10 shows the difference in perception on the loyalty to BPR Nyamagabe. Customers revealed that they are loyal on

high level with strong mean of 3.61 while employees showed high advance on that with the strong mean of 4.31 interpreted as very high mean. Those results from customers and employees are not critical but the advance of employees has the basis since they get more advantages from the bank in order to be more loyal to it, here also employees act as marketers in the same time. That difference was found to be statistically significant since the p-value of 0.0 is less than the p-alpha of 0.05.

4.2.3. Word of Mouth in BPR Nyamagabe

Early studies on WOM have shown that it has an important impact on customer decisions (Allsop et al., 2007), and helps to present a good post-purchase wakefulness. Word-of-Mouth might have different kinds of special effects in the present world. Initially, it could be optimistic or unconstructive effects. Secondly, it could have an effect on the product, the brand, the service or even the employees' performance within the company (McGriff, 2012). In this study, this was taken as the sub-indicators of customer satisfaction. The aim of this was to know the extent by which users of BPR Nyamagabe appreciate the brand of BPR comparing to other financial institution with the same services. Below table shows the perceptions of participants on general view of word of mouth from BPR Nyamagabe.

Table 4.11: Word of mouth toward BPR Nyamagabe

Word of mouth	Strong-ly dis-agree	Dis-agree	Not sure	Agree	Strong-ly agree	Mean	SD
I recommend this bank to other people	---	7 6.8%	39 37.9%	51 49.5%	6 5.8%	3.54	.711
I always speak the good side of this compa-ny	3 2.9%	8 7.8%	17 16.5%	50 48.5%	25 24.3%	3.83	.981
I am proud to say that I use this bank	---	4 3.9%	15 14.6%	48 46.6%	36 35.0%	4.13	.800
I recommend other people to use ser-vices of this bank	---	---	25 24.3%	60 58.3%	18 17.5%	3.93	.646
I always say positive things to this bank	---	8 7.8%	27 26.2%	46 44.7%	22 21.4%	3.80	.867
Grand mean						3.8466	

Source: Field Data, November, 2016

Table 4.11 shows the perceptions of participants in this study on word of mouth toward the brand of BPR referring to Nyamagabe branch. On the first place it was revealed that majority of participants revealed that they feel proud while saying they use the brand of BPR is their most preferable with the mean of 4.13 interpreted as strong mean and resulting from large number of respondents who have agreed with that with 46.6% and 35% of respondents who have strongly agreed with that. On the

second place respondents revealed that the participants in this study use to recommend other people to work with BPR with the strong mean of 3.93 interpreted as high mean resulting from 58.3% of respondents who have agreed with that and 17.5% of respondents who have highly or strongly agreed with that. Thirdly respondents revealed that they always say good things to bank in order to encourage any person who is willingly to use BPR services considering the mean of 3.83 interpreted as strong mean and resulting from 48.5% interpreted as high mean and 24.3% of respondents who have strongly agreed with that.

Fourthly, it was revealed that majority of participants in this study avoid saying negative situation of the bank by speaking only positive things with the mean of 3.80 interpreted as strong mean and finally it was revealed that the bank users and employees recommend other people to join it.

In conclusion to this it is to say that the bank has adequate reputation from customers and employees considering the grand mean of 3.84 interpreted as high mean and this is an advantageous to the bank since those users may boost the level of marketing and this reduces the costs for that.

Here the researchers also were intended to know if the customer says same things like those provided by employees regarding word of mouth. Below table help in knowing differently what was provided by customers and employees who have participated in this study on word of mouth toward BPR branch Nyamagabe.

Table 4.12: Perceptions of customers and employees on word of mouth in BPR

	Category of respondents	N	Mean	SD	P-value
Word of mouth	Customers	96	3.8292	.42051	.122
	Employees	7	4.0857	.41404	

Source: Field Data, November, 2016

Table 4.12 shows the difference on word of mouth on the brand of BPR branch Nyamagabe. The perceptions of customers fall on the mean of 3.82 interpreted as high mean and the perceptions of employees fall on the mean of 4.08 also interpreted as high mean. The p-value of 0.122 shows that that little difference is not statistically significant since it is below 0.05 which considered as p-alpha.

4.2.4. Service quality delivery in BPR Nyamagabe

In competitive world especially in business related to service delivery the level of quality service is considered as the main weapon to retain customers and satisfy them. In this study it was taken as sub-indicators in order to focus mainly on the perceptions of customers but also employees provided their perceptions.

Table 4.13: Quality service delivery in BPR Nyamagabe

Service Quality	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Mean	SD
Employees are quick to help customers	3 2.9%	11 10.7%	27 26.2%	45 43.7%	17 16.5%	3.60	.984
Employees shows characteristic of friendship to customers	---	3 2.9%	23 22.3%	53 51.5%	24 23.3%	3.95	.759
Employees show politeness toward customers	5 4.9%	1 1.0%	17 16.5%	61 59.2%	19 18.4%	3.85	.901
There is fairness in service delivery	---	6 5.8%	30 29.1%	45 43.7%	22 21.4%	3.81	.841
Grand mean						3.8025	.49540

Source: Field Data, November, 2016

Table 4.13 shows the perceptions of respondents on quality service delivery in BPR Nyamagabe basing on the perceptions of participants in this study. It was revealed that quality service delivery in BPR Nyamagabe is interpreted by the following: quickness of employees to help customers with the mean of 3.60 interpreted as high mean resulting from 43.7% of respondents who have agreed with that and 16.5% of respondents who have strongly agreed with that. Secondly it was found that employees shows the characteristics of friendship toward customers with the mean of 3.95 interpreted as high mean and this is resulting

from majority of respondents who showed the tendency of agreement with 51.5% of agreements and 18.4% of strong agreement. Thirdly the delivery of quality service delivery is explained by the politeness of employees toward customers with the mean of 3.85 interpreted as high mean. Fourthly it was revealed that the employee of BPR Nyamagabe are fair while delivering service to all customers without discrimination with the mean of 3.81 interpreted as high mean. In conclusion it is to say that BPR Nyamagabe excels in delivering quality service to customers considering the grand 3.80 interpreted as high mean.

As it was done early on the independent variable both employees and customers were participated in this study. But the above table didn't distinguished the perceptions of customers and those of employees; however below table help to clarify that.

Table 4.14: Perceptions of customers and employees on word of mouth in BPR

	Category of respondents	N	Mean	SD	P-value
Service Quality	Customers	96	3.7937	.49200	.036
	Employees	7	4.2000	.40000	

Source: Field Data, November, 2016

Table 4.14 shows that the perceptions of customers differ with those of employees where customers revealed that quality services delivery in BPR Nyamagabe is good considering the mean of 3.79 while employees who have participated in this study revealed that the quality of service they deliver is good on the mean of 4.20 interpreted as high mean but the p-value

shows that that difference is statistically significant since the p-value is 0.036 is less than 0.05.The reason of this it to because the employees can't criticize themselves on the way they deliver quality services.

4.3. Financial performance of PBR Nyamagabe

The second specific objective of this study was to examine the level of financial performance of BPR Nyamagabe. Generally it is known that the best measures of financial performance are financial ratios but here in this study both financial ratios and qualitative information were used in order to be able to respond the main objective of this study where it is not possible to measure the correlation between variables with different kinds of data. To reach qualitative results the researchers relied on the opinions of employees basing on their recent knowledge about different indicators of financial performance. Below table shows details on that.

Table 4.15: Perceptions of respondents on financial performance of BPR Nyamagabe

Financial performance	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Mean	SD
The bank has known an increase of Interest revenues	---	---	2 28.6%	4 57.1%	1 14.3%	3.86	.690
Dividends from investment have been increased	---	1 14.3%	1 14.3%	3 42.9%	2 28.6%	3.86	1.069

Money from commission fees has been increased	---	2 28.6%	1 14.3%	4 57.1%	---	3.29	.951
Discounts received from payment has been increased	---	1 14.3	3 42.9	2 28.6%	1 14.3%	3.43	.976
Operating expenses have been decreased	---	1 14.3	3 42.9%	3 42.9%	---	3.29	.756
There has been a decrease of expense on interest	---	2 28.6%	3 42.9%	1 14.3%	1 14.3%	3.14	1.069
There has been a decrease in operating expense in general	---	---	2 28.6%	5 71.4%	---	3.71	.488
The bank has known a positive net income	---	1 14.3%	1 14.3%	3 42.9%	2 28.6%	3.86	1.069
The ability of having nega- tive net income has decreased	---	---	---	3 42.9%	4 57.1%	4.57	.535
Grand mean						**3.6667**	**.34546**

Source: Field Data, November, 2016

Table 4.15 shows the perceptions of respondents on financial performance of BPR Nyamagabe in qualitative way. It was revealed that the bank has known the excellent performance in terms of the decreases of reporting negative income considering the mean of 4.57 interpreted as very strong mean.

Secondly the opinions of respondents show that the bank has known high performance on the following: increase of interest

revenues with the mean of 3.86, increase of dividends from investments with the mean of 3.86, increase of discount from received payment with the mean of 3.43, decreases of operating expenses in general with the mean of 3.31, and having positive net income with the mean of 3.86.

On the third place it was revealed that the bank has known the average performance on the following: increase of money from commission with the mean of 3.29 interpreted as moderate mean, decrease of operating expenses with mean of 3.29, and decrease of operating expenses on the mean of 3.14. By concluding it is to say that the bank has known a great performance since the grand mean was found to be 3.66 interpreted as high mean.

4.4. The level of profitability of BPR Nyamagabe branch

To examine the level of profitability of BPR Nyamagabe branch, the following ratios were culculated based on the financial statement of three years namely 2013, 2014 and 2015. Sometimes of financial statements that were used are summarized below:

Table 4.16: BPR Nyamagabe branch summary of financial statements 2013, 2014 and 2015 (RWF)

Items	2013	2014	2015
Current asset	298,301,000	349,096,000	412,503,000
Current liabilities	75,076,000	71,009,000	67,650,000
Quick assets	250,050,000	28,0845,000	315,778,000
Net profit	28,204,000	42,864,000	57,802,000
Net sales	30,698,000	27,008,000	25,033,000
Total assets	946,301,000	984,096,000	1,034,803,000

Source: Financial statements of BPR Nyamagabe branch, 2013, 2014, and 2015

From the table above, it is clear that BPR Nyamagabe branch has managed well the current assets from 2013 up to 2015. The current assets had increased considerably. In addition, the current liabilities had decreased in recent years. Net profit, quick asset and total asset had also increased while net sales had decreased.

Table 4.17: Liquidity ratio calculation

	2013	2014	2015
Current ratio	3.97	4.92	6.10
Quick ratio	3.33	3.96	4.67

Source: Table 4.16 above

A Current ratio of 2:1 is considered ideal. If the ratio is less than two, it may be difficult for a firm to pay current liabilities. If the ratio is more than two, it is an indicator of idle funds. A quick ratio of 1:1 is considered satisfactory. The quick ratio supplements current ratio.

Based on the table above, the results of BPR Nyamagabe branch show a good picture. According to the ratio standards which are international, to have a good ratio, a company should have at least a ratio of 2:1 to be sure that the firm is doing well and having a quick ratio position of 1:1 BPR Nyamagabe branch has met the standard, and this put the organization in a good position of having enough liquidity. A firm without liquidity is a dead firm. It was shown form the table above that each year the liquidity of this organization keeps dropping up taking example of current ratio which was in 2013 (3.97%), 2014 (4.92%) and 2015 (6.10%). The situation is good and it should

be looked upon before being late. Also checking the quik ratio, in 2013 (3.33), in 2014 (3.96) and in 2015 (4.67) which is the good situation.

Table 4.18: Profitability ratio

	2013	2014	2015
Net profit ratio	92%	159%	231%
Return on total asset	3%	3%	2%
Return on equity	9%	14%	18%

Source: Financial statements of BPR Nyamagabe branch, 2013, 2014 and 2015

From the table aboveis it clear that, BPR Nyamagabe Branch, has increased its net profit during the years 2013, 2014 and 2015 from 5% to 7% respectively. If BPR Nyamagabe branch increases 1 Rwf in 2013 of net sales that means that net profit will increase by 5%, increase 1 Rwf in 2014 of net sales shows that net profit will increase by 7% the same as 2015.

In 2013, 2014 and 2015 the figures of tables abovereleaved that 1 Rwf of return on assets give us 3%, 4% and 6% respectively. It is means that BPR Nyamagabe branch gain little money compare the money invested. On return on equity ratio, when BPR Nyamagabe Branch owned 1 Rwf on return on assets means that it will get 9%, 14 % and 18% of net profit.

4.5. Relationship between customer satisfaction and financial performance

This section helps to respond the third objective of this study and verifying the hypothesis of this study. To achieve this

correction method which is known as a statistical technique to measure the relationship between variables was used. Simply it is said that if the correlation value is positive the relationship between variables is said to be positive and vice-versa. After that, the following task is to confirm whether the correlation is statistically significant or not. To this, two famous p-alphas (0.01 and 0.05) are used where the calculated or tabulated p-value is compared to them. If the tabulated p-value is below to one among of them the relationship is said to be statistically significant and if it is above the relationship is said to be not statistically significant.

Table 4.19: Correlation between indicators of customers satisfaction and financial performance

			Financial performance	Comments
Spear-man's rho	Customer retention	Correlation Coefficient	.234	Positive correlation
		Sig. (2-tailed)	.613	Not statistically significant
		N	7	
	Customer loyalty	Correlation Coefficient	.561	Positive correlation
		Sig. (2-tailed)	.190	Not statistically significant
		N	7	
	Word of mouth	Correlation Coefficient	.764*	Positive correlation
		Sig. (2-tailed)	.046	Statistically significant
		N	7	
	Service Quality	Correlation Coefficient	.673*	Positive correlation
		Sig. (2-tailed)	.038	Statistically significant
		N	7	
*. Correlation is significant at the 0.05 level (2-tailed).				

Source: SPSS Results, 2017

= 1: perfect correlation, : strong correlation (very high),:high correlation, :moderate correlation, :weak (low) correlation, : absence of correlation.

Table 4.19 shows the correlation results between indicators of customer satisfaction and financial performance of BPR Nyamagabe during 2013-2015.

Starting from customer retention it was revealed that there is a weak correlation between customer retention and financial performance of BPR since the correlation is 0.234 and this is not statistically significant since the Sig (2-tailed) of p-value of 0.613 is greater than 0.01 and 0.05

Secondly, it was revealed that there is a moderate positive correlation between customer loyalty and financial performance of BPR with the correlation coefficient of 0.561 but this was found to be not statistically significant since the p-value is 0.190.

To the third indicator of customer satisfaction it was revealed that there is a high positive correlation between word of mouth and financial performance since the correlation coefficient was found to be 0.764 and this was found to be statically significant since the p-value is 0.046 to be less than 0.05.

To the fourth indicator it was revealed that there is a positive correlation between service quality and financial performance since the correlation coefficient is 0.673 and this was found to be statistically significant regarding the p-value of 0.038 less than 0.05.

Table 4.20: Overall correlation between customer satisfaction and financial perfromance

			Financial performance	Customer satisfaction	**Comments**
Spear-man's rho	Financial perfor-mance	Correlation Coefficient	1.000	.487*	Positive correlation Statistically significant
		Sig. (2-tailed)	.	.048	
		N	7	7	
	Customer satisfaction	Correlation Coefficient	.487*	1.000	
		Sig. (2-tailed)	.048	.	
		N	7	7	
*. Correlation is significant at the 0.05 level (2-tailed).					

Source: SPSS Results, 2016

= 1: perfect correlation, : strong correlation(very high),:high correlation, :moderate correlation, :weak(low) correlation, : absence of correlation.

The table 4.20 shows the correlation between the level of customer satisfaction and financial performance of BPR Nyamagabe. The Correlation revealed that there is a positive relationship between customer satisfaction and financial performance with the correlation coefficient of 0.487 interpreted as moderate and this was found to be statistically significant.

This moderate correlation means that customer satisfaction influences the level of financial performance but there are other dominant determinants like competency of employees, macrocosmic situation and among others. Returning to the verification of the hypothesis is to retain the null hypothesis "there is appositive correlation between customer satisfaction and financial performance of BPR".

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary of major findings

The research carried out aimed at analyzing the effects of customer satisfaction on the performance of financial institutions. The study was built on a conceptual framework composed of factors affecting customer satisfaction as independent variable. Financial performance was considered dependent variable with sub-variables such as profitability and liquidity. In chapter two factors affecting customer satisfaction and financial performance were discussed basing on existing literature from books, internet and journals. The data collected were analyzed using SPSS in forming tables and correlation.

The findings of the study were presented and interpreted in chapter four basing on the problem statement, objectives of the study and directed by research questions. The respondents questioned were (96) customers of BPR Nyamagabe branch. All respondents attempted all questions which served as the basis for analysis. The analysis and interpretation were focused on the data collected from the concerned margin.

5.1.1. To examine the level of customer satisfaction in BPR Nyamagabe Branch

To respond this objective customer retention, customer loyalty, word of mouth and service quality were considered to measure the level of customer satisfaction. For customer retention it

was revealed that is high considering the grand mean of 3.50 interpreted as high mean, this means that the bank do all possible to retain the existing customers by providing them extra services like discount and promotion. For customer loyalty it was found that the level of loyalty is good considering the grand mean of 3.71 interpreted as high mean. Regarding word of mouth also it was revealed that it is good with the grand mean of 3.84 interpreted as high mean, and finally service quality was also rated good with the grand mean of 3.80 interpreted as high mean.

5.1.2. Objective two: To assess the level of financial performance of BPR Nyamagabe Branch

Based on qualitative results it was found that the BPR Nyamagabe has excelled in the following: performance in terms of the decreases of reporting negative income considering the mean of 4.57 interpreted as very strong mean, increase of interest revenues with the mean of 3.86, increase of dividends from investments with the mean of 3.86, increase of discount from received payment with the mean of 3.43, decreases of operating expenses in general with the mean of 3.31, and having positive net income with the mean of 3.86.

Based on liquidity ratios, the results of BPR Nyamagabe branch show a good picture. According to the ratio standards which are international, to have a good ratio, a company should have at least a ratio of 2:1 to be sure that the firm is doing well and having a quick ratio position of 1:1 BPR Nyamagabe branch

has met the standard, and this put the organization in a good position of having enough liquidity. A firm without liquidity is a dead firm. It was shown that each year the liquidity of this organization keeps dropping up taking example of current ratio which was in 2013 (3.97), 2014 (4.92%) and 2015 (6.10%). The situation is good and it should be looked upon before being late. Also checking the quik ratio, in 2013 (3.33), in 2014 (3.96) and in 2015 (4.67) which is the good situation. From the table above, it is clear that, BPR Nyamagabe Branch, has increased its net profit during the years 2013, 2014 and 2015.

5.1.3. To establish the relationship between customer satisfaction and financial performance

The degree of correlation between customer satisfaction and financial Performance in BPR Nyamagabe branch, the statistical evidences depict that there is a positive relationship between customer satisfaction and financial performance with the correlation coefficient of 0.487 interpreted as weak and this was found to be statistically significant.

5.2. CONCLUSIONS

The large majority of clients of BPR Nyamagabe branch belong to the economically active age group (20-49) and they have secondary and universities education. Also, customers of BPR Nyamagabe branch are generally satisfied with the services provided by the employees.

To conclude, the researchers have been able to achieve the objectives set out at the beginning, and the research questions fully answered. The method has also been found to be fairly appropriate and fits into the overall structure of the work.

5.3. Recommendations

Based on the findings from the study, the researchers would like to make the following recommendations in order to increase the satisfaction levels of customers of BPR Nyamagabe branch. These are outlined below as follows:

Results from the research show that customers of BPR Nyamagabe branch are generally satisfied with services provided. That notwithstanding, BPR Nyamagabe branch can take advantage of these ratings to even better serve clients to create customer loyalty and also attract new ones.

Also, considering the fact that clients asked in this study have been with BPR Nyamagabe branch for at least 2 years and more and it is important for BPR Nyamagabe branch to adapt strategies including interpersonal media such as peer-to-peer education in order to create awareness amongst clients who

were not so familiar with the products as at the time of the research (social services, medical loan and other types of loan). In addition deliberate steps should be taken to occasionally refresh and update customers on available products so as to keep them abreast with BPR Nyamagabe branch's products.

It is further suggested that loan officers of BPR Nyamagabe branch become more proactive with clients' needs and assist them in identifying loan products that will ultimately suit them. Conditions regarding loans should also be explicitly explained to them taking into consideration their background information.

This research thereby suggests that BPR Nyamagabe branch should quickly capitalize on these findings and then make these products accessible to all the clients. These products, if fully introduced will help raise the satisfaction levels of these clients and also entice new ones as it can serve as an avenue for BPR Nyamagabe branch to gain a competitive edge over its competitors.

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THE ROLE OF MONITORING AND EVALUATION TO CONSTRUCTION PROJECTS SUCCESS IN RWANDA

A Case of Genocide Survivors' Settlement Project in Gasabo District

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ABSTRACT

This Article is entitled "The role of monitoring and evaluation to construction project success in Rwanda, case study of genocide survivor's settlement in Gasabo District". The problem statement of project success through time delaying efficiency, cost minimization, lack quality optimization and stakeholder's ownership for houses projects in Gasabo District.

The objectives of this study were: To evaluate time utilization, to examine budget adequacy, to assess results quality, to establish stakeholder's participation to construction project success and to find out relationship between monitoring and evaluation (M&E) and construction project success. The study population was comprised 168 people and sample size selection was 120 respondents by using simple random sampling method and data collected by questionnaire which analysed by using methods of descriptive statistics and inferential statistics with SPSS and Excel. The findings show that there are mean, minimum, maximum, frequencies standard deviations, regression and correlation between M&E and construction project success.

The first specific objective findings for correlation and regression between Time utilization and Time efficiency, Cost minimization and quality optimization are r& R^2 = 81.5%, 87.5%, 83.9%, and 66.5%, (0.004), 76.6%, (0.001), 70.4%, (0.002) respectively. The second specific objective findings for correlation and regression between budget adequacy and Time efficiency, Cost minimization

and quality optimization are r& R² = 71.2%, 77.9%, 76.7%, and 50.7%, (0.021), 60.6%, (0.008), 58.9%, (0.010) respectively. The third specific objective findings for correlation and regression between quality management and Time efficiency, Cost minimization and quality optimization are r or R² = 73.9%, 82%, 83.3%, and 54.6%, (0.015), 67.3%, (0.004), 69.3%, (0.003) respectively. The fourth specific objective findings for correlation and regression between stakeholders participation and Time efficiency, Cost minimization and quality optimization are r or R² = 73.9%, 76.9%, 73%, and 54.6%, (0.015), 59.1%, (0.009), 53.3%, (0.017) respectively. The correlation and regression results for five objective are r & R²=95.7%, and 91.7%, (0.043). Conclusion and Recommendation were basing empowerment of M&E to construction project success due all hypotheses in this study were rejected and the triple constraints are unbalanced R².

GENERAL INTRODUCTION

Background of the Study

Muller and Turner, (2007) mentioned that, "project success is a complex and ambiguous concept and it changes over the project and product life cycle". Various success factors can be listed for projects; these could range from cost to time and quality or many other factors. (Mwala, 2012) mentions controlling as a three step process i.e. measuring progress, evaluating what remains to be done, and Corrective actions to achieve or exceed the objectives. Ahmed G, *et al.,*(2002) confirmed that project monitoring and evaluation has already been found to be an important contributor towards construction project success. Construction projects are subjected to large stakeholders and environmental issues making it susceptible to deviations from planned progress and budget.

M. Beaudry, *et al.,* (2007) also confirm that monitoring and controlling of a project must be done very carefully. The balance between the three controlling aspects varies from project to project and also from time to time in the same project. Project progress monitoring and evaluation is one of the most important tasks of construction project management. Every stakeholders members needs to know , in a timely and accurate manner , how is the project progressing, where they are currently in comparison to the initially set plans, whether deadlines are met, budgets are safely measured and followed. These reports also mentioned the construct ability problems, quality issues including test   results, contract changes

including modification in design and increase/decrease in quantities, pending issues from progress meetings as said by M. Arditi and K. Gunaydin, (1997).

The relationship between monitoring and evaluation both project monitoring and evaluation are management tools. In the case of project monitoring, information for tracking progress according to previously agreed on plans and schedules is routinely gathered. Discrepancies between actual and planned implementation are identified and corrective actions taken (Woodhil, 2000). Bar charts or Gantt charts are a powerful communication tool and an extremely useful, visual and graphical medium in construction scheduling; as found by (Atencio, 2012). Impacts may be assessed informally, through conversations with beneficiaries and stakeholders. This allows managers to adjust strategies, if necessary, during implementation, rather than continue less than effective activities.

Problem Statement

Report of Auditor General, (AG, 2014), the Rwandan Auditor General has identified numerous irregularities in the management and delivery of the Government Assistance Fund for Vulnerable Survivors of the Genocide against the Tutsi FARG. The report also revealed poor coordination and potential mismanagement of several billions of Rwandan Francs (equivalent to several million British Pounds) earmarked for house building for needy survivors. A sum amounting to seven billion Rwandan Francs was disbursed between June 2010 and June 2012 for the

construction of 3,489 houses for vulnerable genocide survivors identified as homeless in 2010. More than half of this sum remains unaccounted. "A significant number of Genocide survivors and other targeted needy people who had been earmarked to benefit from this funding still need help with shelter since some of them did not actually benefit. Even for those who benefited, some of the houses built are either in a poor state or uninhabitable (AG, 2014). They have also taken other steps to ensure the efforts made meet the needs. "They have taken to court contractors who constructed houses badly while they have been paid. Some houses that were built for the survivors were either poorly constructed, or contractors abandoned housing projects before completion.

It is therefore hypothesized that poor and inefficient monitoring and evaluation of houses construction projects could be one of the causes of endemic project delays and poor workmanships on completed houses construction projects success in Gasabo but it is not clear how effectively the monitoring and evaluation is contribute on these construction projects success by contractors and government agencies through time utilization, budget adequacy, quality management and stakeholders participation (G. Ahmed, et al., 2002). It was therefore imperative to examine the role of monitoring and evaluation for 1994 genocide survivor's houses construction projects success in terms of time efficiency, cost minimization and quality optimization in Rwanda especially at Gasabo District in different sectors.

Research Questions

1) Is the time utilization for construction project success of genocide survivors' houses in Gasabo District?

2) What level of budget adequacy of construction project success of genocide survivors' houses in Gasabo District?

3) Is there the result quality for construction project of genocide survivors' houses in Gasabo District?

4) How stakeholders are involved in construction project success of genocide survivors' houses in Gasabo District?

5) Is there any relationship between monitoring and evaluation and construction project success for genocide survivors' houses in Gasabo District?

Objectives of the Study

General objective

The general objective of this study was to assess the role of monitoring and evaluation to construction houses project success for genocide survivor's 1994 Settlement constructed from period of 2013 up to 2015 in Gasabo District of Rwanda.

Specific objectives

1. To evaluate the time utilization for construction project success of genocide survivors' houses in Gasabo District.

2. To determine the budget adequacy for construction project success of genocide survivors' houses in Gasabo

District.

3. To assess the result quality for construction project of genocide survivors' houses in Gasabo District.
4. To establish the stakeholder participation for construction project success of genocide survivors' houses in Gasabo District.
5. To find out if there is a relationship between monitoring and evaluation and construction project success for genocide survivors' houses in Gasabo District.

Hypotheses

Ho-a: There is no a significant relationship between time utilization and indicators of construction project success in Gasabo

Ho-b: There is no a significant relationship between budget adequacy and indicators of construction project success in Gasabo

Ho-c: There is no a significant relationship between quality management and indicators of construction project success in Gasabo

Ho-d: There is no a significant relationship between stakeholders participation and indicators of construction project success in Gasabo

Ho-e: There is no a significant relationship between monitoring and evaluation to construction projects success in Rwanda.

RESEARCH METHODOLOGY

Research Design

This study was non-experimental research study provides the procedural outline for conducting a study and it specifies procedures for collecting data, analysing data and reporting results in qualitative and quantitative research (Cresewell, 2008). (Gay & Airson, 2006) State that an exploratory study is an important qualitative and quantitative research that enables the researcher to become familiar with basic facts, setting and concerns.

Population of the Study

The study population was considered construction project staff and project M&E staff of sponsors where each house presented by two construction project staff and four staff for construction Project funds, one as construction engineer staff of District and staff of genocide survivors wellbeing at the Gasabo District again one construction engineer staff of FARG and staff of internal auditor. The houses construction project of 1994 Genocide survivor's living in new houses settlement constructed from periods of 2013 end 2015 in Gasabo District. The target population is composed by four (4) construction project M&E staff from sponsoring institutions and one hundred sixty four (164) construction project staff of contractors for new houses constructed 2013-2015. The total target population in this study is 168.

Sample Size Selection Techniques

Gasabo district was selected as an area of study because it currently has recorded the highest number of construction projects, and the most populated District in both Kigali city and Rwanda in general (NISR, 2015). For the selected of a representative sample, simple random sampling was used and the sample selected by formula for construction Project staff.

By using Slovin's formula;

Where:

n   =   sample size

N   =   Population size

a   =   level of significance (0.05)

The formula developed by (Adanza, 1995) was used in determining sample size. As the proposed N are 168 target populations, a=<0.05, and Calculation of the sample size using Slovin's formula:

Sample size (n) was = $\{164/ [1+164*(0.05)^2]\}$; total sample calculated as respondents was 116. n = 116 Sample Elements for construction project staff selected by simple random method. Again by adding construction project M&E staff funds as partners by using census for four staff. Therefore, the total sample size is 120 out of 168 people.

Research Instrument

Research instruments tools were used for 120 questionnaires with 90 questions for questionnaire. The tool of construction meter for measuring size and standard of houses construction, pen, notebook, computer for recoding and analysis data, and also a video camera were used.

Questionnaire

Questionnaire is information gathering technique that contains information about the attitude, beliefs, behaviour and characteristics from several respondents, who may be affected by a given system. Questions included close-ended questions where the respondents allowed choosing from the owner answers by Likert scale methods with five composition of strongly disagree, disagree, don't known, agree and strongly agree.

The questionnaire addressed to all selected sample members. The instruments tools was used include 120 questionnaires guides with 90 questions for each respondent. Questionnaires provide a high degree of data standardization and adoption of generalized information amongst any population (Kothari, 2008). Both quantitative and qualitative approaches were used to analyse the data obtained from the field.

Validity of the instruments

According to (William, 2003) validity can be explained as the degree to which the research conclusions sound plausible to specific objectives and linked with the response to the questions asked by the study witch come out with a problem statement as findings results interpreted from data collected in the population sampled in the field into primary and secondary data. The research instrument used is questionnaire. The validity and reliability of this instrument was established by having it cross examined for approval by research experts, to ensure that the information they have generated is appropriate and consistent. Before going out to carry out the study, a pre-test was conducted in order test and improve on the validity of the questionnaire. In this research the pre-test of questionnaire instrument is shown below, the content validity index was calculated from the formula below:

CVI= n/N, Where:

CVI: Content Validity Index, n: Total number of items questions in one questionnaire. N: Number of relevant items of the questionnaires for delivery to respondents, in this research the total number of items questions is (n) which is equal to 90. The number of relevant sample size items or total questionnaires (120) is equal to 120. Then the content validity index (CVI) is equal to 90/120= 0.75 or 75%. The validity index value above 0.7 is good then the way of collecting answers and below 0.7 is not clear even it is not appreciated during data collection but in this study research the value of CVI is greater than 0.7

which means that the questionnaire tool are accuracy for data collection. The criterion-related validity of a test is measured by the validity coefficient. It is reported as a number between 0 and 1.00 that indicates the magnitude of the relationship, "r," between the test and a measure of job performance (criterion). The larger the validity coefficient, the more confidence you can have in predictions made from the test scores. However, a single test can never fully predict job performance because success on the job depends on so many varied factors. Therefore, validity coefficients, unlike reliability coefficients, rarely exceed r = .40.

Table 1: General Guidelines for Validity Coefficients

Validity Coefficient Value	Interpretation
Above .35	Very beneficial
.21-.35	Likely to be useful
.11-.20	Depends on circumstances
Below 0.11	Unlikely be useful

Source: (William, 2003)

As a general rule, the higher the validity coefficient the more beneficial it is to use the test as indicated in the table 1. Validity coefficients of r =.21 to r =.35 are typical for a single test. Validities for selection systems that use multiple tests will probably be higher because of using different tools to measure/ predict.

Reliability of the instruments

(Knapp T, 2004) Explain reliability as the degree to which the results are repeatable and this repetition of results should be observed in both the measurement and outcomes, and in all occasions that these measurements are applied under similar conditions. (Hessen, *et al.,* 2011) have described reliability into two types: The first one is internal consistency, in field observation: the researcher responds to questions whether the observations are reasonable, fit together, or are consistent over time, cost, quality and stakeholders in different contexts. The second is external consistency; verification is done by cross-checking observations with other divergent document and neighbour competences.

Sport psychologists often produce a variable by effectively averaging the scores of two or more items from a multi-item questionnaire or inventory. The alpha reliability of the variable is derived by assuming each item represents a retest of a single item. But the reliability is calculated in such a way that it represents the reliability of the mean of the items, not the reliability of any single item. Alpha reliability should be regarded as a measure of internal consistency of the mean of the items at the time of administration of the questionnaire (Hessen, *et al*, 2011).

Interpretation of Reliability Information

The reliability of a test is indicated by the reliability coefficient. It is denoted by the letter "r," and is expressed as Cronbach's Alpha coefficient, a number ranging between 0 and 1.00, with r = 0 indicating no reliability, and r = 1.00 indicating perfect reliability. Table 2 below presents the results of test reliability as excellent as it was found to be greater than 0.9.

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.93	120

Source: Primary data, 2016

RESEARCH FINDINGS AND DISCUSSION

Time Utilization for Construction Project Success

Table 3 shows first symmetric matrix with the findings results of correlation between Time utilization, Time efficiency, Cost minimization and Quality optimization and the values considered is below one symmetric due the above also are the same. The results values in the above table are explained in the significant which shows that there is positive and very strong correlation between time utilization and time efficiency (r=0.815 or 81.5%, p=0.004), and correlation between time management (Tm) and Cost minimization (r=0.875 or 87.5%, p=0.001),

and correlation between Cost minimization (Cm) and Time efficiency (Te) (r=0.904 or 90.4%, p=0.0001), and correlation between Tm and Quality optimization(r=0.839 or 83.9%, p=0.002), and correlation between Quality optimization (Qo) and Te (r=0.932 or 93.2%, p=0.0001), and correlation between Qo and Cost minimization (r=0.967 or 96.7%, p=0.0001) at significant level 0.01 of two star.

Table 3: Relationship between Time Utilization and Construction Project Time Efficiency

Model	R	R Square	R Adjusted square	F	p-value or sig.
Values	0.815	0.665	0.623	16	0.004
Percentage %	81.5	66.5	62.3		

Source: Primary data, 2016

The results in the table 3 indicate the correlation with R or r from square root of R^2, so is r=.815 or 81.5 % strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.665 or 66.5% of the variance in dependent variable (DV) time efficiency is accounted for by Independent Variables (IDVs) scores (this is a strong effect) and adjusted square with R^2adj 0.623 or 62.3%.

As indicated in tables 4.5again coefficient of determination above is $R^2$where the results explain that: independent variable as time utilization causality/ implies 66.5% to the dependent

variable time efficiency with p. value of 0.004 and F(16) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between time utilization and time efficiency. **Therefore the null hypothesis says that there is no relationship between time utilization and time efficiency is rejected.**

Table 4: Relationship between Time Utilization and Cost Minimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.875	0.766	0.737	26	0.001
Percentage %	87.5	76.6	73.7		

Source: Primary data, 2016

The results of table 4 indicate the correlation with R or r from square root of R^2 so is r=.875 as IDV or 87.5% with strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.766 or 76.6% of the variance in DV as cost minimization is accounted for by IDVs scores (this is an effect) and adjusted square with R^2adj0.737 or 73.7%. As indicated in tables 4.6 again coefficient of determination above is $R^2$where the results explain that: independent variable as time

utilization causality/ implies 76.6% to the dependent variable time efficiency with p. value of 0.001 and F(26) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between time utilization and time efficiency. **Therefore the null hypothesis says that there is no relationship between time utilization and cost minimization is rejected.**

Table 5: Relationship between Time Utilization and Quality Optimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.839	0.704	0.667	19	0.002
Percentage %	83.9	70.4	66.7		

Source: Primary data, 2016

The results of table 5 indicate the correlation with R or r from square root of R^2 so is r = .839 as IDV time utilization or 86.9% with strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.704 or 70.4% of the variance in DV as cost minimization is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.667 or 66.7%. As indicated in table 5 again coefficient of determination above is $R^2$where the results explain that: independent variable as time utilization causality/ implies 70.4% to the dependent

variable quality optimization with p. value of 0.002 and F(19) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between time utilization and time efficiency. **Therefore the null hypothesis says that there is no relationship between time utilization and quality optimization is rejected.**

Project Budget Adequacy for Construction Success

Table 6: Relationship between Budget Adequacy and Time Efficiency

Model	R	R Square	R Adjusted square	F	p-value or sig.
Values	0.712	0.507	0.445	8	0.021
Percentage %	71.2	50.7	44.5		

Source: Primary data, 2016

The results of table 6 indicate the correlation with R or r from square root of R^2 so is r=.712 or 71.2 % strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.507 or 50.7% of the variance in DV (time efficiency) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.445 or 44.5%.

As indicated in tables 6 again coefficient of determination above is R^2 where the results explain that: independent variable as budget adequacy causality/ implies 50.7% to the dependent variable time efficiency with p. value of 0.021 and F (8) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between budget adequacy and time efficiency. **Therefore the null hypothesis says that there is no relationship between budget adequacy and time efficiency is rejected.**

Table 7: Relationship between Budget Adequacy and Cost Minimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.779	0.606	0.557	12	0.008
Percentage %	77.9	60.6	55.7		

Source: Primary data, 2016

The results of table 7 indicate the correlation with R or r from square root of R^2 so is r= .779 as IDV or 77.9% with correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.606 or 60.6% of the variance in DV as cost minimization is accounted for by IDVs scores (this is an effect) and adjusted square with R^2adj.557 or 55.7%. As indicated in tables 4.13

again coefficient of determination above is R²where the results explain that: independent variable as budget adequacy causality/ implies 60.6 % to the dependent variable cost minimization with p. value of 0.008 and F(12) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between budget adequacy and cost minimization. **Therefore the null hypothesis says that there is no relationship between budget adequacy and cost minimization is rejected.**

Table 8: Relationship between Budget Adequacy and Quality Optimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.767	0.589	0.537	11	0.010
Percentage %	76.7	58.9	53.7		

Source: Primary data, 2016

The results of table 8 indicate the correlation with R or r from square root of R^2 so is r= .767 as IDV or 76.7%with correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.589 or 58.9% of the variance in DV as quality optimization is accounted for by IDVs scores (this is an effect) and adjusted square with R²adj.537 or 53.7%.

As indicated in tables 4.6 again coefficient of determination above is R²where the results explain that: independent variable as budget adequacy causality/ implies 58.9% to the dependent variable quality optimization with p. value of 0.01 and F(11) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between budget adequacy and quality optimization. **Therefore the null hypothesis says that there is no relationship between budget adequacy and quality optimization is rejected.**

Quality Management for Construction Project Success

Table 9: Relationship between Quality Management and Time Efficiency

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.739	0.546	0.49	10	0.015
Percentage %	73.9	54.6	49		

Source: Primary data, 2016

The results of the table 9 indicate the correlation with R or r from square root of R^2 so is r=.739 or 73.9% strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.546 or 54.6% of the variance in DV (time efficiency) is accounted for by IDVs scores (this is a strong effect) and adjusted

-164-

square with R^2adj.49 or 49%. As indicated in tables 4.19again coefficient of determination above is $R^2$where the results explain that: independent variable as quality management causality implies 54.6% to the dependent variable time efficiency with p. value of 0.015 and F(10) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between quality management and time efficiency. **Therefore the null hypothesis says that there is no relationship between quality management and time efficiency is rejected.**

Table 10: Relationship between Quality Management and Cost Minimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.820	0.673	0.632	17	0.004
Percentage %	82	67.3	63.2		

Source: Primary data, 2016

The results of table 10 show a correlation with R or r from square root of R^2 so is r= .82 or 82 % strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.673 or 67.3% of the variance in DV is accounted for by IDVs scores and adjusted square with R^2adj.632 or 63.2%.As indicated in tables 4.20again coefficient of determination above is $R^2$where

the results explain that: independent variable as quality management causality/ implies 67.3% to the dependent variable cost minimization with p. value of 0.004 and F (17) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between quality management and cost minimization.

Therefore the null hypothesis says that there is no relationship between quality management and cost minimization is rejected.

Table 11: Relationship between Quality Management and Quality Optimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.833	0.693	0.655	18	0.003
Percentage %	83.3	69.3	65.5		

Source: Primary data, 2016

The results of the table 11 indicate the correlation with R or r from square root of R^2 so is r= .833 or 83.3% strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.693 or 69.3% of the variance in DV (quality optimization) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.655 or 65.5%.As indicated in tables 4.9 again coefficient of determination above is $R^2$where the results explain that: independent variable as quality

management causality/ implies 69.3% to the dependent variable quality optimization with p. value of 0.003 and F (18) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between quality management and quality optimization.

Therefore the null hypothesis says that there is no relationship between quality management and quality optimization is rejected.

Stakeholders Participation for Construction Project Success

Table 4.12: Relationship between Stakeholders Participation and Time Efficiency

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.739	0.546	0.489	10	0.015
Percentage %	73.9	54.6	48.9		

Source: Primary data, 2016

The results of the table 4.12 indicate the correlation with R or r from square root of R^2 so is r= .739 or 73.9 % strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.546 or 54.6% of the variance in DV (time efficiency) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.489 or 48.9%.

As indicated in tables 4.26 again coefficient of determination above is R^2 where the results explain that: independent variable as quality management causality/ implies 54.6% to the dependent variable time efficiency with p. value of 0.015 and F (10) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between stakeholders participation and time efficiency. **Therefore the null hypothesis says that there is no relationship between stakeholder's participation and time efficiency is rejected.**

Table 4.13: Relationship between Stakeholders Participation and Cost Minimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.769	0.591	0.54	12	0.009
Percentage %	76.9	59.1	54		

Source: Primary data, 2016

The results of table 4.13 indicate the correlation with R or r from square root of R^2 so is r= .769 or 76.9% strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.591or 59.1% of the variance in DV (cost minimization) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.54 or 54%. As indicated in tables 4.11 again coefficient of determination above is R^2 where the

results explain that: independent variable as stakeholders participation causality/ implies 59.1% to the dependent variable cost minimization with p. value of 0.009 and F (12) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between stakeholders participation and cost minimization.

Therefore the null hypothesis says that there is no relationship between stakeholder's participation and cost minimization is rejected.

Table 4.14: Relationship between Stakeholders Participation and Quality Optimization

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.730	0.533	0.474	9	0.017
Percentage %	73	53.3	47.4		

Source: Primary data, 2016

The results of table 4.14 indicate the correlation with R or r from square root of R^2 so is r= .73 or 73% strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.533 or 53.3% of the variance in DV (quality optimization) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2 adj.474 or 47.4%.

As indicated in tables 4.28 again coefficient of determination above is R^2 where the results explain that: independent variable as stakeholders participation causality/ implies 53.3% to the dependent variable quality optimization with p. value of 0.017 and F (9) test where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between stakeholders participation and quality optimization.

Therefore the null hypothesis says that there is no relationship between quality management and time efficiency is rejected.

Monitoring and Evaluation for Construction Project Success

Table 4.15: Relationship between M&E and Construction Project Success

Model	R	R Square	R Adjusted square	F	p-value or Sig.
Values	0.957	0.917	0.875	22	0.043
Percentage %	95.7	91.7	87.5		

Source: Primary data, 2016

Table 4.15 indicates the correlation with R or r from square root of R^2 so is r= .957 or 95.7% strong correlation, positive, linear relationship. Then it gives a measure of effect R^2= 0.917 or 91.7% of the variance in DV (project success) is accounted for by IDVs scores (this is a strong effect) and adjusted square with R^2adj.875 or 87.5%.As indicated in tables 4.34again coefficient of determination above is $R^2$where the results explain that: independent variable as monitoring and evaluation causality/ implies 91.7% to the dependent variable project success with p. value of 0.043 and F (22) test is strong where tell that at least two of the groups differ, but not which ones differ, the p-value is small than significant level of 0.05 so that, there is a significance relationship between monitoring and evaluation and construction project success. **Therefore the null hypothesis says that there is no relationship between M&E and construction project success is rejected.**

CONCLUSION

The general findings results on the time utilization to construction project success as the relationship for all variables were used in the data collected and the findings analysis are not equally where the values of Coefficient of determination and correlation are (66.5%,81.5%), (76.6% , 87.5%) and (70.4% and 83.9%) respectively. Theses null hypotheses are rejected due the significant level obtained are less than 0.05 significant level used. As based on problem statement took about delaying time, cost overrun and lack of quality, the triple constraints should be balanced while the findings are unbalanced therefore there are a gap within monitoring and evaluation to construction project success.

The second objective's findings about budget adequacy to the construction project success as the relationship for variables are not equally where the values of regression and correlation between budget adequacy and three project success indicators are (50.7% , 71.2%), (60.6%, 77.9%) and (58.9% and 76.7%) respectively. Theses null hypotheses are rejected due the significant level obtained are less than 0.05 significant level used. As based on problem statement the triple constraints should be balanced while the findings are unbalanced therefore there are a gap within monitoring and evaluation to construction project success.

Third objective's findings about the quality management to construction project success as the relationship for all variables

are not equally where the values of regression and correlation between quality management and project success indicators are (54.6%, 73.9%), (67.3%, 82%), and (69.3% and 83.3%) respectively. These null hypotheses are rejected due the significant level obtained are less than 0.05 significant level used. As based on problem statement the triple constraint should be balanced while the findings are unbalanced therefore there are a gap within monitoring and evaluation to construction project success.

The fourth objective's findings about the stakeholders participation to the construction project success as the relationship for all variables are not equally where the values of regression and correlation between stakeholders participation and project success indicators are (54.6%, 73.9%), (59.1%, 76.9%) and (53.3% and 73%) respectively. These null hypotheses are rejected due the significant level obtained are less than 0.05 significant levels. As based on problem statement the triple constraint should be balanced while the findings are unbalanced therefore there are a gap within monitoring and evaluation to construction project success.

The fifth objective's findings about M&E of the construction project success such as the values of correlation, regression, adjusted square, F test and p- value between M&E and the construction project success are 95.7%, 91.7%, 87.5%, 22, 0.043. As based on influence of monitoring and evaluation to construction project success, therefore there is a gap within

monitoring and evaluation to construction project success due to lack of effective way of M&E. The conclusion on the null hypothesis is said that there is no relationship between M&E and Construction project success is rejected due significant level of 0.05 is greater than 0.043.

RECOMMENDATIONS

From the findings and conclusions, the following recommendations were drawn regarding the role of monitoring and evaluation to construction project success. In this study the recommendation for managers especially who are responsible for project M&E should focus on following parameters: involved in the time of site visit and project location survey, contract contents should be respected and discussed with stakeholders, for avoid time losses, money deviation, quality violation and poor communication of stakeholders on the right time. The time wasted during project should be considered because it should affect time efficiency, cost minimization and quality optimization the accuracy report should be shared with stakeholders for construction project success.

The study recommends managers for project budget adequacy focus on cheapest expenditures materials in different market price the materials and labour's requirement, contract content articles should be respected, avoid money and materials deviation and check list of casual workers payment by compare

debts they have in the village, respect project M&E planned in the project design and include in project design cost and frequency of project monitoring and evaluation then the financial statement like the progress of cash flow report of project for information of stakeholders, considering the addition works in project implementation by calculating the cost remaining or cost forgotten during project design and costing the all-time losses should be translate in the money and being paid during payment. The budget adequacy should be considered in terms of reaching on the time efficiency, cost minimization and quality optimization for project success.

The study recommends managers for project quality management on construction project success by measures of managers with project M&E staff dealing with procurement process and contract materials items respective through site visits and selection survey on different market price relating quality existed, to avoid quality violence and deviation. The progress report on materials purchasing and other change of quality proposed in the contract by choosing the cheapest market with high quality required and obligated in the specification agreement. Instruction guideline and effective project M&E quality fulfilment at the project implementation the standard quality changed and used should be mentioned in the report for upgrading the stakeholders situation and suggest the decisions from project M&E. The project quality management has influence on time efficiency, cost minimization and quality optimization for construction project success.

The study recommends project managers for project stakeholders' participation in the construction project from project design, monitoring and evaluation, sharing information about project progress, stakeholders' conflict resolution through meeting or other communication which should increase ownership and relationship in the project. The project stakeholder's participation contribute in the project time efficiency, cost minimization and quality optimization for construction project success.

The project management have a tool of Project M&E which is important and influence in the project success through increasing and improving the time, frequency of monitoring and evaluation at the right time, right cost with right quality and project stakeholders management. The study recommends for construction project success, as for as monitoring and evaluation should be done more frequently of the 1994 genocide survivors.

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