

**CERTIFICATION TO ISO 9001:2008 STANDARD AND MARKET
COMPETITIVENESS OF LOCAL MANUFACTURING COMPANIES IN RWANDA: A
CASE STUDY OF SULFO RWANDA INDUSTRIES LTD.**

Uwaramutse Charles

University of Lay Adventists of Kigali (UNILAK)

Email: uwacharles3@yahoo.fr

Abstract: Basing on National Export Strategy elaborated in 2011 and aligned with EDPRS and vision 2020, the export of products and services could be increased to 11.5% in 2020. However few companies are committed to comply with the requirements of Quality Management System which are helpful for market access. Those companies which are ISO certified have gained acknowledgement and credibility of their products and services at the international level. So far, in Rwanda, there was no study done on the role played by certification to ISO standards in the market competitiveness. This study aimed to assess the contribution of ISO 9001:2008 certification to the market competitiveness of local manufacturing companies in Rwanda with a focus on SULFO Rwanda Industries Ltd. The methodologies employed spearman correlation and student t-tests. Based on a sample of 63 employees, 68 customers and the review of financial statements of SULFO Rwanda Industries, the findings report a significant difference between sales revenue, Return on Investment (ROI), and market share for the period before and after certification. Findings also report a positive and significant relationship between certification to ISO 9001:2008 and market competitiveness. Thus, it can be said that ISO certified company experience the benefits of certification through the increase of sales revenue, ROI and market share which also implies increased customer loyalty, confidence and a larger customer base. This study will help non-ISO certified companies to consider investing in a suitable quality management system, possibly leading to ISO 9001:2008.

Key words: ISO, ISO 9001:2008, Competitiveness, Rwanda

1. Introduction

Due to globalization, multinational and national strong companies are fighting to be the dominant forces in the world market.

While prices used to be known as the selling factor of most commodities, the trend has changed and the quality is the most selling preposition, this is evidenced by the rate at

which companies are rushing to be ISO standard certified.

According to ISO Focus (2009), the International organization for standardization, based in Geneva, is a federation of national standards bodies representing about 130 countries. Its mission is to promote international standardization that facilitates international exchange of goods and services. The objectives of ISO are to develop and provide international standards in response to market needs. The ISO 9000 standards are the fastest-growing international standard ever (Saaralainen, 2009).

European companies have taken the standards seriously, and thousands of companies are spending considerable resources to establish quality systems meeting the requirements of ISO 9000. More than 70% of all ISO 9000 certificates have been issued in Europe. While the standards were first adopted by industries in the chemical and mechanical sectors, adoption is now common throughout the industrial sector (ISO 9000 News, 1995d). As in the United Kingdom; several European governments have established programmes that provide financial support for the implementation of the ISO 9000

quality system in industrial sectors (European Commission, 1995b; CBI, 2008).

In Asia the number of certificates issued to companies in Japan and the Newly Industrialized Countries (NIEs) account for the majority of the total certificates in Asia. Companies in these countries were pioneers in establishing quality management systems that operate somewhat differently from the ISO 9000 standards. This, combined with existing high levels of quality and international competitiveness, has resulted in the relatively low number of companies that have implemented ISO 9000 quality systems. In most of the countries in Asia, the primary motivation for implementing the ISO 9000 standards has been to facilitate exports, especially to the European Union (Humphrey, 1995).

To achieve global competitiveness, firms need to create and develop strategies to deal with changing organizational operations and external environments. This includes situations such as creating business networks, improving productivity and quality, and promoting entrepreneurship orientation. Adopting an international standard is a concrete strategy for increasing competitiveness (Peach and Ritter, 1998). Certification to ISO 9001:2008 standard has

very positive impact for entering new markets, increasing the reliability of the product and most importantly helping the brand image to strengthen. Also certification has been efficacious for the increase in sales in current markets and export markets (Sun and Cheng, 2002).

Rwanda Bureau of Standard as an accredited to ISO QMS in Rwanda is mandated by ISO to give out information about ISO system to Rwandan institutions, and to deliver the quality manual, and to certify companies that require certification to ISO standards. Since 2009, RBS issues also product certification where it provides Standardization Mark (S-Mark) and Mark of Excellence (E-mark) (RBS quarterly newsletter, October-December 2010). RBS is mandated by the Rwandan government to control the quality of goods and the raw materials imported and to control the quality of manufactured products in the country. Supported by German International Cooperation (GIZ), Rwanda Bureau of Standards launched a training campaign aimed at certification of Rwandan products in order to increase their market access (RBS quarterly newsletter, October-December 2010). In spite of effort provided by RBS, the issue of certification is still a

challenge which requires a deeper investigations and appropriate solution.

While the ISO 9000 Quality Management System has been around the world since 1987 and it is generally acknowledged that the system produces some fairly significant benefits, including improved profitability, higher sales, and better employee morale, there are still a lot of companies reluctant to climb on the bandwagon. Some of this is likely due to skepticism, the belief it will not live up to its claims, but a lot of it is simply due to the lack of understanding: owners unsure how to go about implementing a system and thinking the implementation process will be too costly and too disruptive (Dick, 2002).

Basing on National Export Strategy (NES) elaborated in 2011 and aligned with EDPRS and vision 2020, the export of products and services in Rwanda could be increased to 11.5% in 2020 (MINICOM, 2011). In line with this, Rwanda Bureau of Standards has started campaigns on the importance of being certified to international standards. However, few companies are committed to comply with the requirements of QMS and certified to ISO 9001:2008 which are helpful for market access; only 4 companies are certified to ISO 9001:2008; these are

BRALIRWA Ltd, SULFO Rwanda Industries Ltd, NAKUMATT, and RRA (RBS, 2013).

According to (RBS, 2011), few companies which are ISO certified have gained acknowledgement and credibility of their products and services at the international level. Being recognized has various benefits including the increase of market share. So far, in Rwanda, there was no study done on the role played by certification to ISO standards in the market competitiveness. It is in this regard that the researcher was prompted to probe and find out whether there is a direct relationship between ISO certification and market competitiveness of local manufacturing companies in the light of findings from SULFO Rwanda Industries.

Objectives

The overall objective of this study was to assess the contribution of certification to ISO 9001:2008 standard to the market competitiveness of local manufacturing companies in Rwanda.

Towards fulfillment of the main objective, the following were the specific objectives:

a) To investigate the critical factors for successful implementation of ISO

9001:2008 standard in SULFO Rwanda;

- b) To evaluate SULFO's market competitiveness in terms of sales turnover, Net Profit, ROI and market share comparing the period before and after certification;
- c) To assess the challenges faced by SULFO in maintaining the requirement of ISO 9001:2008;
- d) To examine the relationship between ISO standard certification and the competitiveness of SULFO Rwanda.

Hypothesis

This study attempted to verify the following hypotheses:

H01: There is no significant relationship between Certification to ISO 9001:2008 standard and market competitiveness of local manufacturing companies in Rwanda.

H02: There is no significant difference between market competitiveness comparing the period before and after certification.

2. Method

This study applied descriptive and correlation studies as research design, both quantitative and qualitative prospective study designs were used to assess the impact of ISO 9001:2008 standard certification in

local competitiveness of SULFO Rwanda Industries Ltd. The design of a research is the combination/set of methods you chosen for the empirical part of your study (Bakkabulindi, 2004). As a supplement to parametric data that found at SULFO Rwanda, which are the most relevant to this study, the researcher collected and analyzed the views of SULFO's employees about the impact of ISO 9001:2008 certification on this company. In line with this, the targeted population was 166 employees and managers from the office of managing director, sales and marketing, production, procurement, quality control, and quality auditing departments because they are supposed to have the required information on the present research.

The sample size for employees was computed using Yamane formula: $n = \frac{N}{1+N e^2}$ where n is the sample size, N is the population size and e is the margin of error. Then,

$$n = \frac{166}{1+166 \left(\frac{10}{100}\right)^2} = 62.41.68 \cong 63.$$

In selecting the respondents, the researcher used purposive sampling strategy. According to Kenneth (1978), purposive sampling is a method of sampling whereby the researcher uses his or her own judgment

about which respondents to choose, and picks only who best meet the purpose of the study. Likewise, Amin (2005) argued that purposive sampling is a type of sampling whereby the researcher uses his/her own judgment or common sense regarding the participants from whom information will be collected. This technique was used because the researcher contacted only the managers and employees who are more informed on the issue under study.

In conducting this study, primary data were collected through structured interview and self administered questionnaire. In designing questionnaires, the researcher used Likert scale to measure the employees' views on the critical factors for successful implementation of ISO 9001:2008 standard. The same rating scale was also used to measure the SULFO's competitiveness and challenges in maintaining the requirements of ISO 9001:2008. Using Likert Scale, employees indicated whether he/she strongly agree (1), agree (2), undecided (3), disagree (4), or strongly disagree (5). The items for the said scale are gathered for related research studies (Bhuiyan and Alam, 2004; Casadesus and Karapetrovic, 2005; Haversjo, 2000; Psomas, 2010). Secondary data were also collected from the company's relevant reports to measure the market

competitiveness in terms of sales turnover, Net Profit, ROI and market share comparing the period before and after certification.

To insure that the instrument measured what it was supposed to measure, the instrument was checked to insure validity. For further improvement, the questionnaires were presented to researcher experts to solicit

their opinion in order guarantee correctness and relevance of the instrument. Concerning reliability of the instrument, a pilot study was conducted in Inyange Industries Ltd. The researcher’s target in conducting pilot study was to verify the reliability of the instruments before distributing them to the respondents.

Cronbach's Alpha	N of Items
.769	53

Reliability of data collection instrument was tested using Cronbach’s Alpha coefficient and found that the score is 0.769 which falls into acceptable range. According to George and Mallery (2003), Cronbach's alpha in the range of $0.8 > \alpha \geq 0.7$ is acceptable in surveys. Measurements are reliable to the extent that they are repeatable and that any random influence which tends to make measurements different from occasion to occasion or circumstance to circumstance is a source of measurement error. Before administrating the research instrument to the respondents, ethical issues were taken into consideration; the researcher was given a recommendation letter by the Dean of the Faculty to the Managing Director of SULFO Rwanda requesting permission to carry out research. The researcher followed right

procedures before approaching the respondents like looking for formal authorization before collecting any information. Following the authorization, the questionnaires were left to the office of Human Resource Manager for distribution to the respondents in indicated department. In this study, some issues required an interview with Quality manager and Director of Finance to clarify and supplement the information from the employees, the researcher met them in their offices.

In this study, Statistical Package for the Social Sciences (SPSS) and Excel were used in processing and analysis of data which informed the presentation of findings, analysis and interpretation. The presentation focused on the research questions. The kind

of statistical treatment depends upon the nature of the problem, especially the specific and the nature of data gathered. In this study, parametric and non-parametric tests were done where Chi-square and Student T-test have been used to analyze the relationship and comparison of means respectively. This study was not contradicted with ethical principles including the obligation to avoid hurting or embarrassing the respondents as well as respecting their privacy. The researcher asked himself the ethical relevance of the research with reference to the values and actions to undertake in order to complete it. For this purpose the researcher observed a set of measures to comply with ethical standards during the whole process of research.

3. Results and Discussions

For the researcher to present research findings and interpretation, tables, figures, frequencies, percentages, and graphics were used as means of analyzing and interpreting the data. Responses were collected from a sample of 63 employees categorized into 6 strata that include office of managing director, sales and marketing, production, procurement, quality assurance, and quality auditing. To supplement the information

from employees, the researcher interviewed Quality Manager and Director of Finance.

3.1 Views of employees and managers on ISO 9001:2008 standard certification

As stated above, a sample of 63 employees of SULFO Rwanda was selected to help the researcher to be equipped with sufficient information in order to investigate the critical factors for successful implementation of ISO 9001:2008 standard, the challenges faced in implementing the requirements of the said standard and the relationship between ISO 9001:2008 standard certification and market competitiveness. In supplementing the views of employees, the researcher interviewed the Quality manager and Director of finance who were supposed to be the ones with most reliable information.

Personal information

In this study, personal identification such as age, gender, education level and working experience was considered.

As shown by table 1, respondents were asked to provide information about their age and this was used to determine the level of maturity of participants for quality management system requirements implementation.

Table 1: Personal information

Age of respondents	Frequency	Percentage
Between 20 and 30 years old	28	44.4
Between 31 and 40 years old	16	25.4
Between 41 and 50 years old	15	23.8
Above 51 years	4	6.3
Total	63	100.0

Respondents by gender	Frequency	Percentage
Male	49	77.8
Female	14	22.2
Total	63	100.0

Education level	Frequency	Percentage
Secondary level	31	49.2
Bachelor's degree	25	39.7
Masters and above	7	11.1
Total	63	100.0

Working experience	Frequency	Percentage
Less than one year	1	1.6
1 to 2 years	2	3.8
3 to 4 years	3	4.8
5 to 6 years	14	22.2
7 to 8 years	17	30.0
9 years and above	26	41.3
Total	63	100.0

Source: Primary data (2014)

The respondents in this study consisted of 77.8% male and 22.2% female. This information is not surprising given the Rwandan culture background where women used to be limited on some activities including manufacturing ones. Furthermore, education level was other challenge faced women. Regarding the education level of respondents, the results indicate that 39.7% of respondents are Bachelor degree holders while 49.2% have completed secondary

level; interestingly 11.1% have completed Master's studies; this has an implication on their performance. From the table, the researcher wanted to know the number of years, respondents have been working in SULFO Rwanda, the information provided demonstrate that 41.3% of total respondents have working experience above 9 years; this shows that SULFO has experienced employees which is

very important to the implementation of ISO 9001:2008 standard requirements.

Driving factors behind ISO 9001:2008 certification

In this study, the researcher intended to investigate the factors that influenced

SULFO to implement and apply for ISO certification as indicated in the table 2,

Table: 2 Driving factors behind ISO 9001:2008 certification

Driving factors behind ISO 9001:2008 certification	Strongly Agree		Agree		undecided		Disagree		Strongly Disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Customer requirements	17	27.0	40	63.5	2	3.2	4	6.3	0	0	63	100
Profitability	23	36.5	40	63.5	0	0	0	0	0	0	63	100
Continuous improvement	52	82.5	11	17.5	0	0	0	0	0	0	63	100
International trade requirements	23	36.5	40	63.5	0	0	0	0	0	0	63	100
Increase competitiveness	25	39.7	38	60.3	0	0	0	0	0	0	63	100

F: Frequency

The respondents agree and strongly agree on profitability, continuous improvement, international trade requirements and increase of competitiveness as driving factors to the implementation and certification to ISO 9001:2008. Only for the issue of customer requirements, 3.2 % and 6.3% of total respondents were undecided and disagreed respectively. This witnesses unawareness of some Rwandans on international standards for quality. In an interview with quality manager, the increase of competitive forces influenced the company to adopt this new approach to withstand against new local emerging companies and products from

EAC resulted from regional economic integration and also to increase the market access. In a similar study conducted by Martinez et al. (1992), companies seek ISO 9001:2008 in order to gain internal efficiency, effectiveness and ultimately profitability, customer, and international trade requirements. Supporting this, a study by Gotzamani and Tsiotras (2002) found that Greek companies seek ISO 9000 certification mainly to improve internal operations. Arauz and Suzuki (2004), in a study in Japan, revealed that internal motivation was the significant factor in terms of cost and quality.

Compliance with ISO 9001:2008 standard requirements

In table 3, the employees revealed how effective SULFO Rwanda is complying with the requirements of ISO 900:2008. Data gathered revealed that respondents have rated the compliance of ISO requirements

implementation such as management responsibility, training, internal quality audit, corrective and preventive action as excellent and very good in SULFO.

Table:3 Compliance with ISO 9001:2008 standard requirements

Level of compliance	Excellent		Very Good		Good		Fair		Poor		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Management responsibility	50	79.4	13	20.6	0	0	0	0	0	0	63	100
Quality systems	53	84.1	10	15.9	0	0	0	0	0	0	63	100
Document and data control	37	58.7	26	41.3	0	0	0	0	0	0	63	100
Process control	24	38.1	39	61.9	0	0	0	0	0	0	63	100
Inspection and testing	22	34.9	41	65.1	0	0	0	0	0	0	63	100
Corrective and preventive action	9	14.3	54	85.7	0	0	0	0	0	0	63	100
Control of quality records	29	46.0	34	54.0	0	0	0	0	0	0	63	100
Internal quality audit	56	88.9	7	11.1	0	0	0	0	0	0	63	100
Training	53	84.1	10	15.9	0	0	0	0	0	0	63	100

Source: Primary data (2014)

During an interview, Quality Manager of SULFO Rwanda said “the compliance of the requirements of ISO standard ensures the improvement of quality of products offered and even the renewal of certificate granted, this is the reason we always keep complying with the requirements”.

This is supported by Suganthi and Anand (2005), they pointed out that it is an obligation for ISO certified company to keep complying with the requirements because the certificate awarded is valid usually for 3

years. After that the certificate has to be renewed by undergoing all the processes once more.

Critical factors for successful implementation of ISO 9001:2008

As revealed in table 4, respondents revealed critical factors identified when implementing ISO 9001:2008 standard requirements in SULFO Rwanda such as top management commitment, team commitment, training for team involved, defined responsibility, quality oriented culture, resource allocation, and awareness

of the people about the importance of ISO 9001:2008.

Table 4: Critical factors for successful implementation of ISO 9001:2008 standard

Critical factors	Strongly Agree		Agree		Undecided		Disagree		Strongly disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Top management commitment	55	87.5	8	12.7	0	0	0	0	0	0	63	100
Team commitment	26	41.3	37	58.7	0	0	0	0	0	0	63	100
Training for the team involved	29	46.0	34	54.0	0	0	0	0	0	0	63	100
Defined responsibility	16	25.4	47	74.6	0	0	0	0	0	0	63	100
Quality oriented culture	27	42.9	36	57.1	0	0	0	0	0	0	63	100
Resource allocation	27	42.9	36	57.1	0	0	0	0	0	0	63	100
Awareness of the people about the importance of ISO 9001:2008	8	12.7	55	87.3	0	0	0	0	0	0	63	100

The critical factors are the crucial elements that require evaluation and categorization to ensure effective management and implementation of a single system, therefore effective implementation of the ISO 9001:2008 depends on the approach of the organizations on the critical success factors identified.

The top Management Commitment is cited by several authors. In accordance with Psomas et al. (2010), it is related to the support given by the leadership in the process of implementation. In terms of quality, leadership involve efforts of top management as an example to integrate quality improvement within strategic

planning and through the entire organization, in addition they promote the values of quality in the working practices (Claver and Molina, 2003). Research by Sumukadas (2006) indicates that leadership is critical to the success of any effort related to changes in the operating philosophy of an organization. Aggelogianopoulos et. al. (2007); Augustyne (2000); Bhuian (2005); Chuo-Chua (2003); Kho (2002) Mazher et. al. (2005); and Magd (2008) comment about other factors, they summarized that the success depends on the team commitment, the development of a schedule for implementation, training, quality oriented, and resource allocation,

SULFO's achievement after certification to ISO 9001:2008 standard

The crucial issue that determines the competitive success of a company is the ability to integrate the results of quality

improvement, which is crucial for consumer satisfaction, with measures of sales revenues, Return on Investment and market share.

Table 5: The improvement of SULFO after certification to ISO 9001:2008 standard

Improvement	Strongly Agree		Agree		Undecided		Disagree		Strongly disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
	A better trained workforce	56	88.9	7	11.1	0	0	0	0	0	0	63
Reducing scrap and rework	20	31.7	43	68.3	0	0	0	0	0	0	63	100
Company's corporate image	40	63.5	23	36.5	0	0	0	0	0	0	63	100
Increase sales turnover	47	74.6	16	25.4	0	0	0	0	0	0	63	100
Reduced warrantee claims	21	33.3	42	66.7	0	0	0	0	0	0	63	100
Profitability	10	15.9	53	84.1	0	0	0	0	0	0	63	100
Customer confidence	10	15.9	53	84.1	0	0	0	0	0	0	63	100
Marker share	10	15.9	53	84.1	0	0	0	0	0	0	63	100
Market access	29	46.0	34	54.0	0	0	0	0	0	0	63	100

Source: Primary data (2014)

The crucial issue that determines the competitive success of a company is the ability to integrate the results of quality improvement, which is crucial for consumer satisfaction, with measures of sales revenues, Return on Investment and market share. In open economies, companies that are relatively more competitive than their rivals expand their market share because consumers are satisfied with specific characteristics of their products or services (Pandora, 1989). In the present study, since

certification to ISO 9001:2008 standard, SULFO recognized an improvement in different areas as revealed by respondents.

From the findings in table 5, respondents revealed the improvement experienced by SULFO Rwanda following certification to ISO 9001:2008 standard. A better trained work force, company corporate image, increase of sales turnover, market share, market access, and profitability are evidenced by respondents as more improved aspects in SULFO Rwanda. Throughout the

interview, marketing manager of SULFO said that after certification SULFO increased access to new international markets such as Congo, Burundi and Uganda. Marketing manager further said that in year 2015 SULFO expect to expand the market in South Sudan and Zambia.

According to Kantner (1997), most companies have witnessed an increase in the overall sales after certification. Supporting this, Haversjo (2000) reported that ISO 9001:2008 certified companies have better

rates of return than non-certified ones, largely due to increased sales. Chua, Goh and Wan (2002) examined the issue of ISO 9001:2008 certification and its benefits for Singapore based companies. In addition to several stakeholders' benefits, a number of studies have identified significant financial benefits for organizations certified to ISO 9001 (Pang, 2003; Martinez et al, 2007:284)

Challenges faced by SULFO in maintaining the requirements of ISO 9001:2008 standard

Table 6: Challenges faced by SULFO in getting ISO standard certification

Challenges	Strongly Agree		Agree		Undecided		Disagree		Strongly disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
High cost associated with obtaining ISO standard certification			52	82.5	11	17.5	0	0	0	0	63	100
High cost associated with ISO requirements	44	69.8	15	23.8	4	6.3	0	0	0	0	63	100
Several audits	39	61.9	24	38.1	0	0	0	0	0	0	63	100

Source: Primary data (2014)

In spite of the benefits reported, there are numerous barriers including high cost of implementation, regular verification, and regular training for managers and employees as identified by employees in table 6 and supported by Quality Manager and Director of Finance. The latter further disclosed the average annual cost necessary to maintain

the requirements of ISO 9001:2008 standard; as said, SULFO spends Rwf 25,000,000 each year. Various studies confirmed that ISO 9001:2008 certification is too expensive, time consuming, resource consuming, formalized and impersonal and that implementation costs are too huge (Bhuiyan and Alam, 2004; Casadesus and

Karapetrovic, 2005). In a study done by (Kumar and Balakrishan, 2011), the challenges in maintaining ISO 9001:2008 certification are classified into leadership

related issues, strategy related issues, quality system related issues and societal oriented gaps in terms of corporate social responsibility and sustainability.

Table 7: Spearman Correlation coefficient

			Certification to ISO 9001:2008 standard	Competitiveness of local manufacturing companies
Spearman's rho	Certification to ISO 9001:2008 standard	Correlation Coefficient	1.000	.702**
		Sig. (2-tailed)	.	.000
		N	63	63
	Competitiveness of local manufacturing companies	Correlation Coefficient	.702**	1.000
		Sig. (2-tailed)	.000	.
		N	63	63

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

From table 8, P value (0.000) is less than Alpha (0.05); this shows that the correlation is statistically significant. Since P value is less than Alpha and a high correlation of 0.702, null hypothesis 1 (H01) which stated that there is no significant relationship between Certification to ISO 9001:2008 standard and market competitiveness of local manufacturing companies in Rwanda is rejected. This is an indicator of relationship between effective implementation of ISO 9001:2008 standard requirements and the competitiveness of SULFO Rwanda at the level of 70.2%. The willingness to implement ISO 9001:2008 certification may be related to expectations

about improved quality and to those factors perceived as important to competitive success and competitive advantage (Escanciano et al., 2001; Withers and Ebrahimpour, 2000).

3.2 Analysis of SULFO Rwanda Industries competitiveness

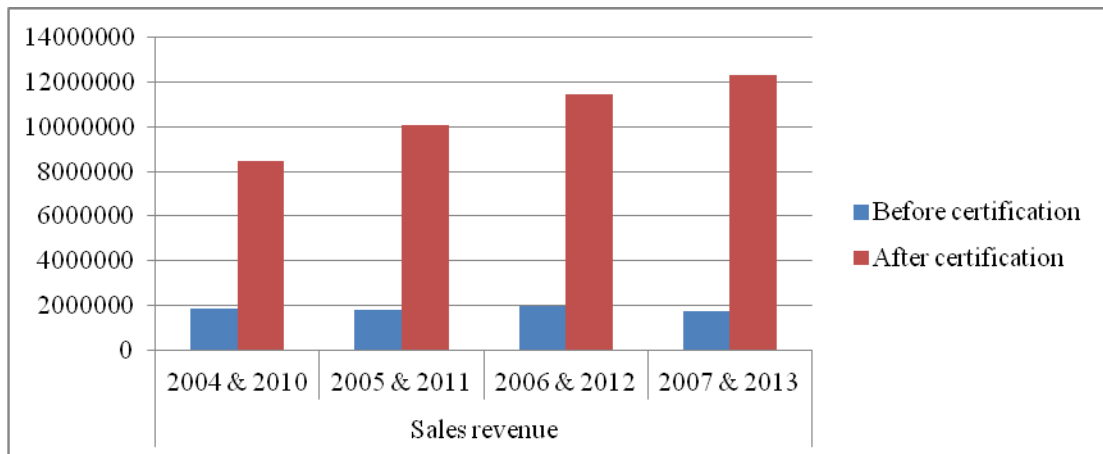
The financial statements of SULFO have been reviewed in order to analyze its sales revenues and return on investment. According to Krugman (1994), a competitive business might be expected to achieve one or more of higher sales revenues than the competitors, Return on Investment (ROI), again, compared with

competitors, a high market share and strong brand reputation. Information from marketing department was also used to assess the market share of products offered by SULFO Rwanda which are grouped into drinking water, cosmetics and sanitation products. Following certification to ISO 9001:2008 standard, SULFO Rwanda Industries Ltd has improved its sales revenues, return on investment, and market share as indicated in the following tables.

Sales revenues comparing the period before and after certification to ISO 9001:2008 standard

The increase in sales revenue is one of the indicators of market competitiveness. As exhibited in graphic 1, SULFO Rwanda Industries realized a significant and constant improvement of sales revenues during the period after certification.

Graphic 1: Sales revenues comparing the period before and after certification to ISO 9001:2008 standard



Source: Financial statements of SULFO Rwanda Industries Ltd (2004-2013)

From graphic 1, SULFO Rwanda has tremendously improved its sales revenues for the period after certification from Rwf 1,745,226,000 in 2007 to Rwf 8,487,958 in 2010. This evidences the way certification to ISO 9001:2008 enhanced production processes, the quality of products offered,

and consequently the loyalty among customers. As stated by Director of Finance throughout interview, SULFO would have generated more sales revenues if the revenue agency had managed to prevent entrance of EAC products in illegal manner.

Table 8: Paired Samples Test

		Paired Differences				T	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Sales Before – after certification	-8740398.000	1714085.147	857042.573	-11467889.971	-6012906.029	-10.198	3	.002

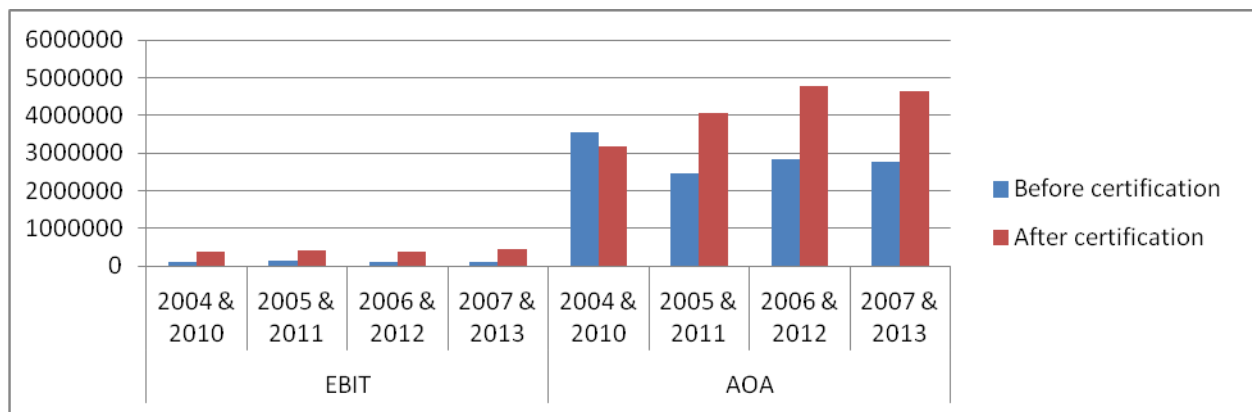
The results from student t-test analysis in table 8 which assessed whether there are differences in sales revenues before and after certification, t calculated is equal to -10.198 while t tabulated is equal to 3.182. Since t calculated falls in the rejection region, the null hypothesis is rejected, then there is a significant difference between sales revenues comparing the period before and after certification to ISO 9001:2008. Tord’s study (2003) on certified Danish companies, confirms better business performance based on increased sales.

Another study conducted by Heras (2003:171) supports the fact that ISO 9001:2008 implementation has a positive impact on sales and profitability. Certified companies have higher profit than non-certified (White, 1999; Torn, 2000; Chow-Chua, 2003; Corbett, 2005).

Return on investment (ROI)

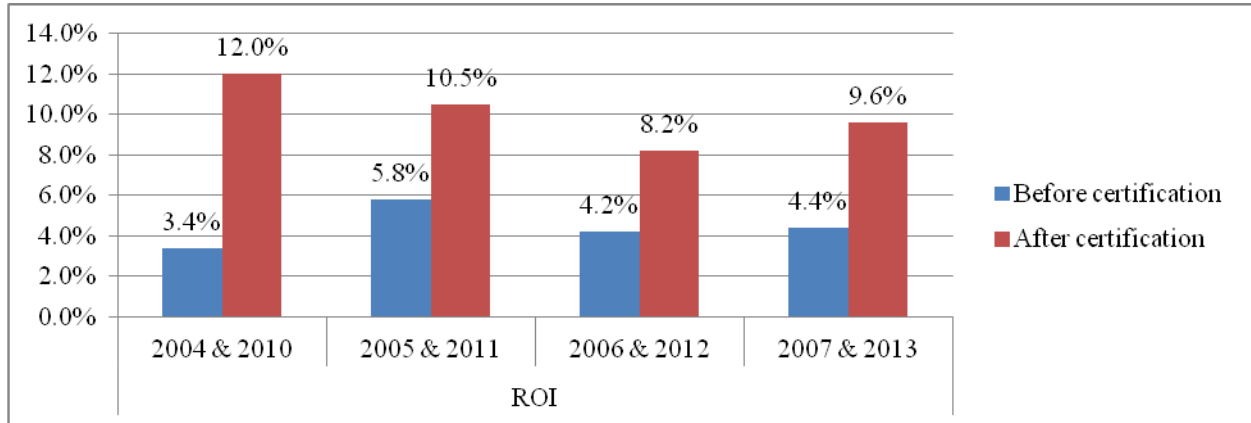
In this study, Return on Investment was also used to assess the level of SULFO’s competitiveness in terms of efficiency in the use of resources.

Graphic 2: EBIT and AOA comparing the period before and after certification



Source: Financial statements of SULFO Rwanda Industries Ltd (2004-2013)

Graphic 3: Return on Investment comparing the period before and after certification



From graphic 3, comparing the period before and after certification, SULFO Rwanda experiences a progress in Return on Investment in the period after certification to ISO standard. This witnesses how expenses were decreased and the efficient use Average Operating Assets (cash, account receivable, inventory, plant and equipment,

and other productive assets) following certification to ISO standard. However, the improvement was not consistent where ROI decreased from 12% in 2010 to 9.6% in 2013.

Table 9: Paired Samples Tests

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
ROI Before Pair 1 certification – After certification	-5.62500	2.04349	1.02174	-8.87664	-2.37336	-5.505	3	.012

The result of t test analysis aimed at investigating the difference between ROI before and after certification, t calculated is equal to -5.505 while t tabulated is equal to 3.182. Since t calculated falls in the rejection region the null hypothesis is rejected, it therefore shows a significant

difference between ROI before and after certification to ISO 9001:2008. Heras et.al (2002) using longitudinal methodology in 400 companies in Spain in 1994-1998 and found that the company's financial performance (sales growth and ROA) are

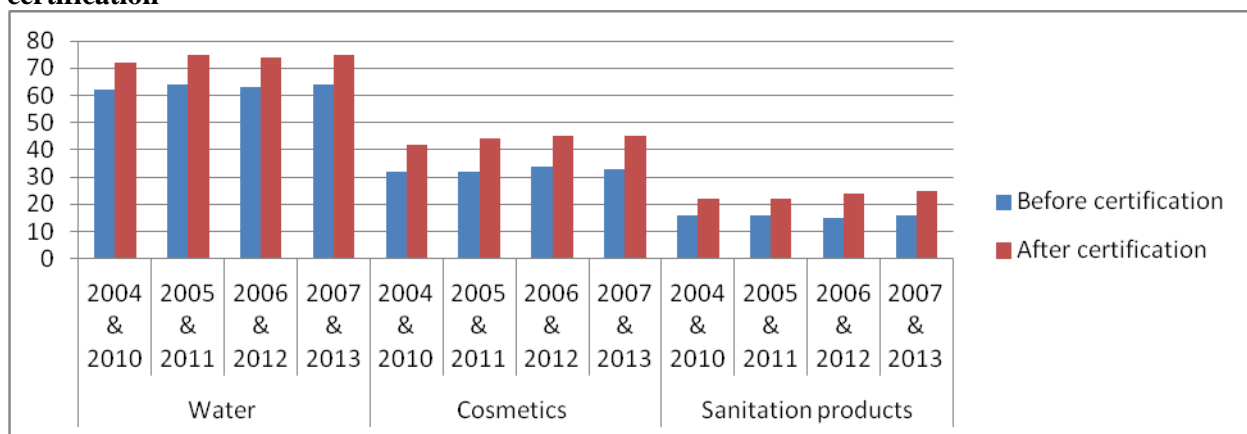
better for certified companies compare to others.

Market share for SULFO Rwanda products

Market share is a key measure of competitiveness which is the percentage of a

market accounted for a specific entity. Increasing market share is one of the most important objectives of business. Market shares were presented on product offered by SULFO grouped into drinking water, cosmetics, and sanitation products.

Graphic 4: Market share for SULFO's Products comparing the period before and after certification



Source: SULFO Rwanda Industries Market research (2004-2013)

As revealed in graphic 4, SULFO Rwanda Industries has considerably increased its market share for all products after certification to ISO standard. This obviously a result of credibility of quality products through enhanced production processes. T-test for drinking water, cosmetics and sanitation products has shown a significant difference between market share comparing the period before and after certification.

In open economies, companies that are relatively more competitive than their rivals expand their market share because

consumers are satisfied with specific characteristics of their products or services (Pandora, 1989). The competitive performance of companies in global consumer markets will be determined by their capacity to deal simultaneously with the competition factors of price, quality, delivery time, flexibility and innovation (Fleury, 1995; Maas, 1992; Pandora, 1989).

4. Conclusion

This research inquired whether there is an association between ISO 9001:2008 certification and market competitiveness of

manufacturing companies in Rwanda with reference to SULFO Rwanda. Not only it contributed to the extensive literature, but it also contributed more in terms of evaluating competitiveness of businesses by the use of competitive indicators. In Rwanda there was no study done on the contribution of ISO 9001:2008 standard on market competitiveness of businesses. Based on a sample of 63 employees and the review of its financial and other reports of SULFO Rwanda, all specific objectives have been achieved as indicated in previous section. Regarding the hypothesis, the first hypothesis consisted of testing whether there is no significant relationship between certification to ISO 9001:2008 standard and market competitiveness of local manufacturing companies in Rwanda and spearman correlation test actually confirms this. The second hypothesis consisted of verifying whether there is no significant difference between market competitiveness comparing the period before and after certification, this is satisfied by student t-test analysis where the results indicated that sales revenue, ROI and market share significantly and constantly increased following certification. This was in line with the views of respondents on products offered by SULFO Rwanda compared to its

competitors.

In spite of the rise of competitive pressure in Rwanda resulted from new emerging companies and similar products from EAC companies; SULFO Rwanda remains a leading company in the production of drinking water, cosmetics, and sanitation products. In fact, to increase the export of products and services in Rwanda and to remain competitive as stated by NES and aligned by Vision 2020, companies need to create and develop strategies to deal with changing organizational operations and external environments by complying with quality management requirements. This enables them to enlarge their customer base, remain competitive, increase market share and boost up customer loyalty and confidence.

References

- Aggelogiannopoulos, D. et al. (2007). "Implementation of a quality management system (QMS) According to the ISO 9000 family in a Greek small sized winery: a case study," *Food Control*, 18(9), 1077-1085.
- Amin, M.E. (2005). *Social sciences research: conception, methodology, and analysis*. Kampala, Makelele University printer.
- Bakkabulindi, F.E.K. (2004). *Research methods by example*. Unpublished manuscript

- Bhuiyan, N., Alam, N. (2004). *ISO 9001:2008 Implementation – The North American experience*, International Journal of Quality and Reliability Management, 53 (1) 10-17
- Casadesus, M., Karapetrovic, S. (2005). *An empirical study of the benefits and costs of ISO 9000 compares to ISO 90001/2/3:2004*, Total Quality Management, 16 (1), 1005-120
- CBI (Centre for the promotion of imports from developing countries) (2008), *"The unification of Europe; harmonizing technical regulations"*, Komma Consultants, Rotterdam, The Netherlands.
- Chua C.C, Goh M. and Wan T.B (2002), *"Does ISO 9000 Certification improve business performance?"*, International Journal of Quality and Reliability Management, Vol. 20 No. 8, pp. 936-953.
- Claver, E., and Molina, T. E. J. (2003). *Critical factors and results of quality management: an Empirical study,* Total Quality Management, 14, 91-118.
- Corbett, C J & Kirsc, DA (2001). *International Diffusion of ISO 9000 and ISO 14000*
- Dick, G. et al. (2002). *Does ISO 9000 accreditation make a profound difference to the way service quality is perceived and measure? Managing Service Quality, 12: 1, 30-42.*
- European Commission (1995b). *The European quality assurance standards, ISO 9000 and EN 45000 in the community's new approach legislation*, Directorate-General III, Brussels.
- Fleury, A. (1995), *"Quality and productivity in the competitive strategies of Brazilian industrial enterprises"*, World Development, vol. 23, No. 1 special.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update, 4th addition*. Boston: Allyn & Bacon.
- Haversjo, T. (2000). *"The financial effects of ISO 9000 registration for Danish companies"*, Managerial Auditing Journal, Vol. 15 No. 1/2, pp. 47-52.
http://www.iso.org/iso/iso-focus_2009-07.htm Retrieved on 2014, retrieved on August, 15, 2014
- Humphrey, J. (1995). *"Introduction of the editor"*, World Development, vol. 23, No. 1 special. (1993), "Quality and productivity in industry: New strategies in developing countries" IDS Bulletin, vol. 24, No. 2.
- ISO 9000 News (1995d). *"ISO 9000 registrar sees major shift into service sector"*, January, SociJtJGJnJral de Surveillance/ International Certification System (SGS-ICS).
- Kantner, B. (1997). *QS 9000 – Answer Book*, Wiley, New York, NY.
- Kie, K.S. and Palmer, E. (1999), *"An empirical examination of ISO 9000-registered firms in New Zealand"*, Total Quality Management, Vol. 10, pp. 887-99.
- Krugman, P. (1994). *How competitive forces shape strategy*, Harvard Business Review, March-April
- Kumar, D. A. and Balakrishnan, V. (2011), *—A study on ISO 9001 Quality Management*

System: Reason behind the failure of ISO Certified Organizations, Global Journal of Management and Business Research, Vol. XI (XI), p, 43-50.

Magd, H. (2008). *ISO 9001:2000 in the Egyptian manufacturing sector: perceptions and perspectives*". International Journal of Quality & Reliability Management, 25(2), 173-200.

Martinez, C., Choi M., and Martinez, L., (2007). *Simultaneous Consideration of TQM and ISO 9000 on Performance and Motivation: An Empirical Study of Spanish Companies*. International Journal of Production Economics, No.113. pp 23-39.

MINICOM (2011). *National export strategy (NES)*, Kigali

Pandora (1989). *"Quality management as a competitiveness tool"*. Delft, Technical University Delft.

Pang P.N.T (2003). *Essential of quality control management*, 1st Edition, Canada: Trafford Publishing.

Peach, R. W. & Ritter, D. S. (1998). *The memory jogger 9000*. New Hampshire: GOAL/QPC.

Poksinska, B.; Eklund, J.A.E. e Dahlgard, J.J. (2006). *ISO 9001:2000 in small organizations – lost opportunities, benefits and influencing factor*. International Journal of Quality and Reliability, 23: 5, 490-512.

Psomas, E. L., Fotopoulos, C. V., and Dimitrios, P. K., 2010, "Critical factors for effective implementation of ISO 9001 in SME service companies," *Managing Service Quality*, 20 (5), 440-457.

RBS quarterly news letter (2010) Issue 9 pp.

4

Saaralainen, M. (2009), *Quality Systems Behavior Newsletter*, Roswell, Georgia.

Sampaio, P (2008). *Estudo do fenómeno ISO 9000: origens, motivações, consequências*

Sampaio, P.; Saraiva, P. e Rodrigues, A. G. (2009). *ISO 9001 certification research: questions, answers and approaches*. International Journal of Quality & Reliability Management, 26: 1, 38-58.

Schuurman, H. (1997). *Quality management and competitiveness*. UN- Economic Commission for Latin America and the Caribbean (ECLAC), Santiago Chile, no 41 *SIGMA Magazine*, No.3.

Sekaran, U. (2003). *Research methodology for business: A skill building approach*. 4th edition, Singapore: John Wiley and Sons, Inc.

Sun, H. and Cheng, T. (2002). *Comparing reasons, practices and effects of ISO 9000 certification and TQM implementation in Norwegian SMEs and large firms*. International Small Business Journal. 20 (4). 421-442.

Suganthi L. and Anand A.S. (2005). *Total Quality Management*. New Dheli: Asoke K. Ghoshi, Printice of Indian Private Limited.

Wahid, R. J. (2009). *Critical success factors and problems in ISO 9000 maintenance*. International Journal of Quality & Reliability Management, 26: 9, 881-893