

Supply Chain Quality Management (SCQM); A Tool for Financial Performance of Brewery Companies in the South West Region of Cameroon

Nicodemus Tiendem

Department of Management Sciences, University of Buea, Buea, Republic of Cameroon

Email address:

tiendem.nicodemus@ubuea.cm

To cite this article:

Tiendem Nicodemus. Supply Chain Quality Management (SCQM); A Tool for Financial Performance of Brewery Companies in the South West Region of Cameroon. *International Journal of Business and Economics Research*. Special Issue: *Microfinance and Local Development*. Vol. 9, No. 5, 2020, pp. 308-318. doi: 10.11648/j.ijber.20200905.12

Received: April 30, 2020; **Accepted:** August 7, 2020; **Published:** August 25, 2020

Abstract: *Purpose:* The goal of every business is long term profitability. The outcomes of the 21st century have greatly influenced this goal. In reaction, companies now resort to indirect competition through Supply Chain Quality Management. This paper sort to examine the effect of such practices on the financial performance of the brewery companies in the South West Region of Cameroon. *Method:* The study made use of primary data collected using a five point likert scale questionnaire administered to 224 employees and 112 distributors of the four major brewery companies in the South West Region of Cameroon. The survey method was applied in a case study design. The ordinary least squares technique was used to assess the effect of supply chain quality management on the financial performance while the Levene statistic was used to test for homogeneity of the responses following the employees and the distributors of the companies. *Findings:* While surprisingly establishing that information sharing and top management commitment had an insignificant effect and that top management commitment had a negative influence on the financial performance of the companies. Customer relationship management, continuous improvement and innovation and strategic supplier partnership revealed significant positive effects on the financial performance of the companies. However, continuous improvement and innovation and strategic supplier partnership did not portray differences in the responses between employees and distributors while top management commitment and information sharing portrayed variances in the responses and customer relationship management did not show any clear conclusion. *Managerial implications (contributions):* The managerial implications rest on the partial implementation of supply chain quality management practices between employees and distributors. Efforts towards continuous improvement and innovation and strategic supplier partnership need to be applied evenly between distributors and employees while emphasis need should not be placed on top management commitment and information sharing. This will give room for improvement and innovation leading to increase in customer satisfaction, sales and other financial parameters of the companies.

Keywords: Supply Chain Quality Management, Financial Performance, Ordinary Least Squares, Brewery Companies

1. Introduction

The aim of every business is long-term profitability. This is because it fuels growth and development and also generates greater earnings for shareholders [1]. The advent of modern technology, the increase in competitive pressures and the increasing need for profit maximisation has placed the concept of quality in the lips of every business person be it small or large, national or international. In such a dynamic international market, efforts to improve quality are not

enough; supply at the right time, place and cost is also critical for a company's financial performance [2]. In the global business environment, efforts to cut down cost are imperative for profit maximisation. Today, leading companies are not only integrating suppliers as well as customers into their internal operations through partnerships and strategic alliances but are more into integrating quality management practices into Supply Chain Management Practices in a bit to reducing the cost of their operations and so maximising returns [3]. This often takes the form of leadership, strategic

planning, human resources management, supplier quality management, customer focus, and process management [4]. However, other factors having to do with efforts to continuously render quality and better customer experience are important. This does not only make the concept an organisation wide strategy but extends to external partners of the organisation's operations. The end result of these efforts is on the financial bench of the organisation [5].

The brewery companies in the South West Region of Cameroon are not left out of the race. Just like other companies, they are increasing efforts towards Supply Chain Quality Management. Some efforts here include getting their suppliers closer to them by encouraging local producers of input. A case in point is 'Guinness Cameroon S. A.' that is spending millions of Francs CFA to partner with local sorghum producers in the North of Cameroon [6]. These efforts however, have an external focus and still leaves much to desire as far as the efficiency of the internal operations of the organisation are concern. To close this gap, they are simultaneously implementing Total Quality Management practices. This brings about supply chain quality management as the integration of quality management practices into the organisation's Supply Chain management practices. The essence here is to improve the efficiency of the internal operations of the organisations while at the same time creating alliances with the partners of the organisations for better customer experience. This is the central issue with Supply Chain Quality Management. Efforts by 'Guinness Cameroun S.A.' in this regard includes standardised operation procedures, organisation structures, a capabilities agenda, information and systems platform, demand solutions for forecasting, and GPS through regular inspections in production lines and quality control to certification in line with acceptable standards [6, 7]. The expectation here is competitive advantage for 'Guinness Cameroun S.A.' and hence, market leadership through larger market share and performance. 'Brasseries du Cameroon' on the contrary seems to be less interested in the implementation of Supply Chain Quality Management practices. Much of her efforts in this regard rest on the internal supply chain on like 'Guinness Cameroun S.A.' which has conceptualized quality management within her internal and external Supply Chains. One will ordinarily expect 'Guinness Cameroun S.A.' to control a larger share of the market following the fact that she is prime in efforts towards supply chain quality management. Ironically, 'Brasseries du Cameroon' commands up to 75% of the market while 'Guinness Cameroon S.A.' controls only 16% [8]. Consequently, the sales of 'Brasseries du Cameroon' far outweigh that of 'Guinness Cameroon S.A.'. Considering sales as the most fundamental measure of financial performance of companies, it leaves one worried about the contribution of SCQM on the financial performance of the brewery companies in the South West Region of Cameroon. This paper then seeks to answer the following questions:

- a) What is the effect of SCQM on the financial performance of the brewery companies in the South West Region of

Cameroon?

- b) Is there homogeneity between employees and distributors on the effect of SCQM on the companies' financial performance in the brewery companies in the South West Region of Cameroon?

The objective of this paper therefore, is to examine the contributions of SCQM on the financial performance of brewery companies in the South West Region of Cameroon using the ordinary least square regression analysis as well as the Levene's test for homogeneity of the responses between the employees and the distributors of the companies. By clarifying this confusion, the paper adds its voice to the already existing literature and helps in theorising.

2. Literature Review

2.1. Perceptions of SCQM in the Literature

Supply Chain Quality Management, being a relatively contemporary concept, has raised controversial concerns. Each author has addressed the concept from his/her own perspective following the particular circumstances facing them in addressing the concept. To begin with,

Ferguson [9] opens the debate by referring to supply chain quality management as encompassing all quality management activities associated with the flow and transformation of goods from raw material stage through the end users (finished product) stage along with flow of all information related to quality. This embodies an unlimited list of all activities that are geared towards the flow of the finished product(s) to the end user of the product(s). This definition seems to completely involve all the actors of the Supply Chain of an organisation but at the same time leads to an unending list of items directed towards customer satisfaction.

Kuei, Madu & Lin [10] defined the concept based on simple equations that make up the concept. In their view, each equation represents the letters that make up SCQM thus:

SC = Production – Distribution Network. Q = Products should be in responsive to market demands and able to meet customer satisfaction speedily, accurately and at a profit. M = the conditions that permits and enhances trust for supply chain quality. Putting it together, their definition holds that SCQM refers to efforts made to ensure that production should exclude distribution networks and be responsive of the market demands and able to meet customer satisfaction speedily, accurately and at a profit; under conditions that permit and enhance trust for Supply Chain Quality. This definition embodies production efforts geared towards speedy and accurate customer satisfaction at a profit while leaving out distribution networks. This makes their definition wanting as it excludes the distribution networks which are an integral part of the downstream supply chain of any organisation. Without such networks, the final product from the production facilities in place will not get to the target final consumer(s). This does not only defeat the very purpose of the supply chain but also the second part of the definition relating to customer satisfaction and the profit making objective of a firm.

Robinson & Malhotra [2] on their part, refer to SCQM as the formal coordination and integration of business processes involving all partner organisations in the supply channel to measure, analyse and continually improve products, services and processes in order to create value and achieve satisfaction of intermediate and final customers in the market place. This definition ideally thinks that SCQM activities must either be to continually improve products, services and processes or to create value to achieve customer satisfaction. This definition seems contrary to the value chain analysis of Porter [11]. In this model Porter identifies value adding and support activities of an organisation and establishes that for organisations to add value they need to concentrate on the value adding activities while not neglecting the support activities. Although the support activities do not directly add value to the organisation's finished product, the organisation may not function properly in their absence since they provide support for the primary (value adding) activities. This makes the definition of Robinson & Malhotra inadmissible for an accurate definition of SCQM.

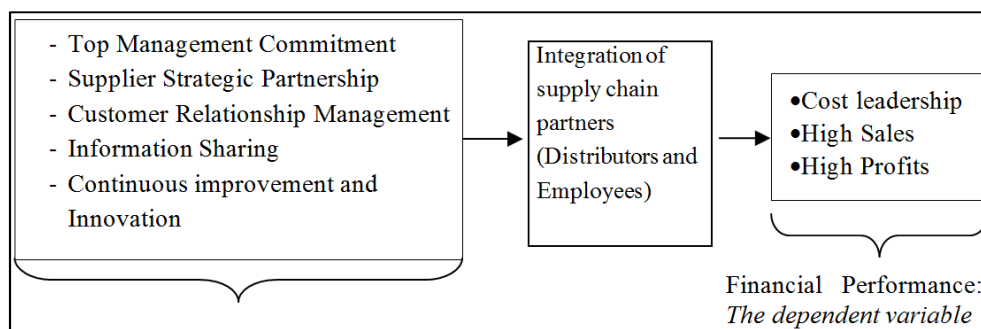
Also, the definition of Lai, et al., [12] referring to SCQM as 'conformance to mutually agreed upon requirements among the partner firms with the aim of improving the performance of the transactions taking place in the chain'; is found relevant. It requires that both the supplier and buyer have to agree on specifications, exchanges of information, coordination and control at the inter-organisational level to ensure product quality is not affected and the quality in the supply chain is achieved. This seems much easier in theory than in practice. This is because the suppliers and consumers do not only have

different stakes in an organisation but their stakes have adverse effects on the performance of an organisation. This makes mutual agreement between them an up-hill-task.

Finally, the work of Kushwaha and Barman [13] hold that "Supply chain quality management is a set of approaches utilised to efficiently and responsively integrate all channel partners through applying quality management practices across the whole supply chain, in order to enhance trust between channel partners and deliver maximum value to customers". This, so far, seems to be the most comprehensive definition. This is because it captures the partners of the upstream and the downstream supply chain, equally specifies the application of quality management practices across the entire supply chain to promote/enhance trust between partners of the supply chain and finally emphasises the need to deliver maximum customer value. For the sake of this study therefore, we shall adopt this definition as the most acceptable and comprehensive definition of SCQM.

2.2. SCQM: A Tool for Financial Performance of Manufacturing Firms

Considering financial performance as a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues [14] this paper takes it rise by examining the companies' financial benefits of implementing quality management practices along their supply chains. A close examination of the financial benefits of SCQM implementation to a company leads to the establishment of the conceptual model in figure 1.



Source: Computed by author, 2020

Figure 1. Conceptual model of SCQM.

From the conceptual model above, SCQM integrates a company's supply chain partners thereby unifying their action towards customer satisfaction and hence the financial performance of the company.

Top management commitment to begin with describes the direct participation of top level management and management executives in practices directed towards delivering a quality product to the final consumers. These practices include inspection, certification, supervision, quality control and quality assurance. The more management efforts are directed towards delivering a product of acceptable quality to consumers the more they are satisfied and the more they will be willing to make repurchase decisions in favour of the

organisation. This will also pave the way for customers of competitors to cross over in their repurchase decisions leading to an increase in the sales of the company.

Continuous Improvement on its part describes the processes an organisation puts in place to achieve regular and frequent improvements in the deliverable(s). The Government of Western Australia [15] has proposed eight practical steps to continuous improvement including: focusing on the desired end results, finding ways to achieve the goals that were set in the focus stage, selecting the best options from the ones identified, designing the action you need to take to successfully implement the options chosen, implementing the action you designed and tracking

performance, assessing the results achieved, asking questions and coming up with ideas for further improvements and finally turning one or two of the ideas for further improvement. When these steps are followed regularly, it will lead to innovations as new products will often be introduced into the market. The theory of consumer behavior shows that customers are adventurous. So they will often want to try such a new product. This will place the company far ahead of her competitors in the market place. Talking about how continuous improvement influences the financial performance of the firm, Nawras [16] pointed out that continuous improvement generates a fall in cost of production through inventory holding cost while at the same time creating new markets for the company's product(s).

Information sharing on its part is considered a key element of any supply chain quality management system. This is because it makes information readily available to the members of an organisation's supply chain. The availability of information will lead to cost/price reduction, a fall in time to market of products, increase in product quality and product innovations and hence an increase in the profits of the organisation. This is achieved by putting in place an information system that supplies the much needed information at the right time, form and place when needed for an effective organisational function. Strategic partnerships with both the upstream and downstream supply partners seem very clear on how to generate the financial performance of the companies. The longer the supply chain of an organisation, the more there are intermediaries whose activities will require a share of the profits generated from the final consumers. This follows to say that when an organisation has a direct relationship with customers and suppliers the profits are shared by fewer participants making it better for each of them. Hence, it is financially rewarding for companies to maintain adequate customer relationship management and strategic supplier partnerships.

2.3. Empirical Review

While highlighting that there seems to be a severe lack of studies investigating the effect of SCQM on the financial performance of companies, a few empirical studies are found with sporadic contributions on a few of the constructs of SCQM on the financial performance of companies. Attia [17] in a study on the nature of the relationship between quality management and supply chain and how quality management practices can affect organisational performance through supply chain efficiency in the Egyptian textile industry included top management commitment and support in measuring quality management on supply chain but failed to make use of financial performance in the model. Using regression analysis, he found out that applying quality management practices helps in improving the supply chain performance. Furthermore, his work only focused on quality managers and CEOs while leaving out the external supply chain which is the central focus of all supply chain activities. This makes generalization of the finding questionable. Also, Bagher [18] made a strong influence on the financial performance using return on assets,

return on sales, average profitability, profit growth and sales growth but only captured supplier relationship (amongst other measures) which is grossly insufficient to capture SCQM. However, he ended up establishing that supply chain capabilities have a significant positive impact on operational and financial performance of food companies. Wahdan & Emam [19] focused on productivity, cost reduction and profitability as measures of financial performance but rather included demand management, the use of automation, technology, innovation, as well as inventory management to capture supply chain quality management practices. While failing to capture the core constructs of SCQM they made use of regression analysis to conclude that applying supply chain management on agribusiness field will lead to a cutting down of cost, increase in profit, infrastructural development and the employees' wellbeing. Another outstanding contribution has been made by Duong Vu & Nguyen [20] who made use of strategic supplier partnership, customer relationship, information sharing and quality of information sharing to capture supply chain management practices and return on investment, the growth of sales, Growth in return on investment and Profit margin on sales to capture financial Performance of small and medium enterprises in Vietnam. Separate regression analyses were conducted for each of the three objectives to confirm the significance of supply chain management practice in influencing the performance of the companies. While commenting their effort in the focus of this work, it is regrettable that they made use of three separate linear regression analyses to test the three objectives. This exposes their work to a high level of biasness in the analyses and in the integration of the results to bring out the mediating effect of competitive advantage on the effect of supply chain management practices on performance. This makes simulations of the results and strategic formulation and implementation in line with the main concepts of the study difficult.

From the literature examined, much is yet to be done in the line of clearly showing the constructs of SCQM as well as bringing out scientifically, its effect on the financial performance of companies. There is also a severe absence of studies on the disparity of such effect(s) between the employees and the distributors of the companies.

2.4. Hypotheses of the Study

H₀₁: SCQM does not have a significant effect on the financial performance of brewery companies in the South West Region of Cameroon

H₀₂: There is no significant difference in the perception of the distributors and employees of the effect of SCQM on the financial performance of the brewery companies in the South West Region of Cameroon.

3. Methodology

3.1. Data Collection

The study basically made use of primary data collected

from the distributors and employees of the top four brewery companies in the South West Region of Cameroon. These companies include 'Les Brasseries du Cameroun', 'Guinness Cameroun S. A.', 'Union Camerounnaies des Brasseries' and Source du Pays. Primary data was collected with the help of a five point Likert scale questionnaire scoring responses from 1 – strongly disagree, 2 - disagree, 3 – neutrality, 4 – agree to 5 – strongly agree. The variables of the study were captured in the questionnaire each with five response items. The fifth of the items was carefully designed to indicate inconsistency in the choices of the respondents. The questionnaire was broken into two parts: Section A and B. Section A comprised of the demographic information of the

respondents. Interestingly enough, this section included a question testing respondents' awareness of supply chain quality management practices in their respective companies. This was to ensure that only valid responses are included in the analyses. Section B of the questionnaire covered all the variables of supply chain quality management as well as the measures of financial performance included in the study.

The convenience sampling technique was used. Two employees and one distributor were selected per company from each of the 28 sub divisional headquarters in the South West Region of Cameroon to participate in the study. This gave the distribution shown on table 1:

Table 1. Distribution of the sample.

S/N	Company	Number administered		Number returned		Total
		E	D	E	D	
1	'Guinness Cameroon S. A.'	56	28	25	25	50
2	'Brasseries du Cameroun'	56	28	25	25	50
3	Union CB	56	26	25	25	50
4	Source du Payee	56	28	25	25	50
Total		224	112	100	100	200

Source: Computed by author, 2020

Key: E—Employees, D--Distributors

From table 1 above, the response rate of 60% was found acceptable in line with Fincham [21] who held that a response rate of 60% is acceptable for a survey study.

3.2. Variables and Their Measurements

Table 2. Variables of the study.

Main Aspect	Variable	Abbreviation	Measurement	Source
SCQM	Top Management Commitment	TMC	Communication of top management's philosophy, actively develop integrated quality plan, encouraging, involving and providing support to channel members	Kushwaha & Barman [13]
	Continuous Improvement and Innovation	CII	Regular inspections, quality control, feedback and information capturing	Marcio et al, [20]. Ana, Paulo and Maria [22]
	Information Sharing	IS	sharing business unit information, sharing proprietary information,	Ana, Paulo and Maria [23]
	Supplier Strategic Partnership	SSP	Reliance on high quality suppliers, Long-term supplier relationships, supplier support, supplier involvement	Kushwaha & Barman [13]
	Customer Relationship Management	CRM	interacts with customers, follow-up with customers, customer satisfaction and customer involvement	Kushwaha & Barman [13]
Financial Performance	Financial Performance	Fin Perf.	Perception of profit, sales volume, sales growth and the net cash flows	Kushwaha & Barman [13]

Source: compiled by author

3.3. Model of Analysis

To facilitate the analyses of the data, the responses of the various items were simulated into a single score for each variable and for each respondent using the mean thus:

$$\text{Arithmetic mean} := \frac{\text{Sum of items}}{\text{No. of items}} \quad (1)$$

Considering that the study made use of a time series model, the incidence of multicollinearity was tested using the correlation structure of the independent variables. Also, the Glejser's statistic was used to test for heteroschedasticity in the results, the F statistics tested for linearity of the variables,

and the Kolmogorov-Smirnov statistic was used to test for normality of the variables. The data was then analysed using the OLS regression model adopted to examine the effect of SCQM on the financial performance of the companies because it is the best linear unbiased estimator of the parameters of the study. Also, the Levene's statistic was used to verify the differences in the responses between the employees and the distributors. The models were presented as per the specific objectives thus:

3.3.1. The Effect of SCQM on the Financial Performance of the Companies

$$\text{Fin Perf} = f(\text{TMC} + \text{CRM} + \text{CI} + \text{IS} + \text{SSP} + e)$$

$$\text{Fin Perf} = a_0 + a_1\text{TMC} + a_2\text{CRM} + a_3\text{CI} + a_4\text{IS} + a_5\text{SSP} + e \quad (2) \quad W = \text{the Levene's statistic}$$

Where
apriori: $a_1 > 0, a_2 > 0, a_3 > 0, a_4 > 0$ and $a_5 > 0$

3.3.2. Homogeneity of the Responses Between the Employees and the Distributors of the Companies

$H_0: \sigma_d^2 = \sigma_e^2 = \dots = \sigma_k^2$.
Where - σ_d^2 is the mean score for distributors and
- σ_e^2 is the mean score for employees

$$W = \frac{(n-k)SSTz_{ij}}{(k-k)SSTz_{ij}} \quad (3)$$

Where SST_z and SSE_z are the usual sums of squares evaluated for the new data z_{ij} and $z_{ij} = |x_{ij} - x_i|$,
 $n-k$ and $k-1$ are degrees of freedom

4. Results of the Study

The analyses began by a descriptive analysis followed by an inferential analysis with the following results:

4.1. Presentation of Results

4.1.1. Descriptive Statistics

The descriptive analysis on table 3 helped to ascertain the level of assertiveness of the constructs of the study based on the responses from the employees and distributors who participated in the study.

Table 3. Descriptive analysis.

S/N	Variable	Mean	Standard Deviation	Min	Max	Skewness
1	Fin Perf	3.9970	0.60250	1.80	4.80	-0.637
2	TMC	3.6600	0.39034	2.80	4.60	-0.224
3	CRM	3.8690	0.42984	2.40	4.80	-0.216
4	CI	3.6380	0.62281	1.00	5.00	-0.913
5	IS	3.7660	0.41823	2.40	5.00	-0.428
6	SSP	3.8515	0.65968	1.20	4.80	-0.940

Source: Computed by author, 2020

The descriptive results presented above suggested that the companies were making effort in implementing all the variables of SCQM examined in this paper. This is because the mean score of all the variables was sufficiently greater than three. Referring to the five point Likert scale measure used in the study this value falls in the quadrant for agreement of the constructs investigated upon. The most outstanding value here was CRM with a mean score of 3.8690 occurring between 2.4 and 4.8. This was followed by SSP with a mean value of 3.8515 occurring between 1.2 and 4.8. The least responsive construct of SCQM seemed to have been CII with a mean score of 3.6380 lying between 1.0 and 5.0. Such a range, being the highest so far, suggested a wider variation in the responses relating to CII. However, going by the standard deviation, CII seemed to be varying less than SSP although it had a wider range. In terms of standard deviation, the least varying factor was TMC with a standard deviation of 0.39034. The study also found a view of the nature of the distribution of the responses important as it gave an idea of the concept of normality in the responses. This made use of the Perason's measure of skewness. The results indicated that all the distributions were

slightly negatively skewed. This confirmed the mean score of all the variables being higher than three but with none of them corresponding to the zone relating to a strong agreement of the particular construct in question. However the test of normality was further conducted.

4.1.2. Inferential Results

Like all other time series models, the regression analysis was suspected of a couple of shortcomings which could falsify the overall result leading to wrong judgment and decision making. This raised the need for diagnostic test prior to testing the hypotheses of the study.

i) Diagnostic Test

a) Test of Multicollinearity

Considering that the partners of every supply chain have a common focus, that of customer satisfaction, it is likely that the variables could have a relationship hence leading to the incidence of multicollinearity. This was examined using the correlation structure of the independent variables of the study as presented on table 4.

Table 4. Correlation structure of the constructs of SCQM.

		TMC	CRM	CI	IS	SSP
TMC	Pearson Correlation	1	0.067	0.102	0.256**	-0.096
	Sig. (2-tailed)		0.343	0.150	0.000	0.178
	N	200	200	200	200	200
CRM	Pearson Correlation	0.067	1	0.444**	0.145*	0.557**
	Sig. (2-tailed)	0.343		0.000	0.040	0.000
	N	200	200	200	200	200
CII	Pearson Correlation	0.102	0.444**	1	0.078	0.428**
	Sig. (2-tailed)	0.150	0.000		0.270	0.000
	N	200	200	200	200	200

		TMC	CRM	CI	IS	SSP
IS	Pearson Correlation	0.256**	0.145*	0.078	1	0.037
	Sig. (2-tailed)	0.000	0.040	0.270		0.600
	N	200	200	200	200	200
SSP	Pearson Correlation	-0.096	0.557**	0.428**	0.037	1
	Sig. (2-tailed)	0.178	0.000	0.000	0.600	
	N	200	200	200	200	200

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

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Computed by author, 2020

The correlation structure on table 4 showed that all the independent variables had a weak correlation coefficient against one another. This implies that there were no signs of multicollinearity affecting the results of the study. Interestingly, this analysis revealed that the relationship between TMC and IS was significant at 1% level although it was a weak positive relationship. This implies that a unit increase or decrease in TMC will lead to a significant increase or decrease in IS respectively. It was also surprising to find out that, although insignificant, TMC revealed an inverse relationship with SSP. This implies that the more top management makes effort towards the implementation of quality management practices along her supply chain, the more strategic partnership with suppliers will be unnecessary. This finding was inconsistent with the theory as well as the expectations of the study and thereby necessitating further investigations. By examining CRM, we also uncovered interesting insights as the results revealed that while it had a weak and significant relationship with CII, it had a strong positive relationship with SSP at 1% level of significance. The surprising outcome here was the fact that the relationship between customers and suppliers was significant and strongly correlated at 1% level. However, while Harshada [24] put forth that a large correlation coefficient in the correlation matrix of predictor variables indicate multicollinearity, they fail to indicate how large the correlation coefficient should be. Carsten [25] also worked extensively on multicollinearity and put that "... the 'folk lore' -thresholds of correlation coefficients between predictor variables of $|r| > 0.7$ was an appropriate indicator for when collinearity begins to severely distort model estimation and subsequent predictions". These contributions assured confidence that the correlation coefficient of +0.557, although significant at 1% level, is yet not strong enough to distort the model estimations and subsequent predictions. Furthermore, CII and SSP also revealed significant relationship at 1% level but such correlation coefficient of +0.428 indicated a weak relationship and only revealed a positive directional movement between them. With this insight, confidence was again assured that further analyses would produce results that were worthy of reliance for managerial decision making. This led to the fitting of the analytical model of the study.

b) Fitting the model and test for linearity

Fitting a model in statistical analysis is very important as it justifies the level of reliability in the findings. Fitting the model in this study was to create assurance that the data was linear and the results were free from the problems of outliers

in the model. Reference to table 7 helped made this clear using analysis of variance.

In the ANOVA test on table 7, the F-ratio; a ratio of the Mean Square Regression (5.431) and the Mean Square Residual (0.232), was used to determine whether the independent variables reliably predicted the dependent variable. This value of 23.373 was sufficiently greater than the critical value at 1% level. Hence, the constructs of SCQM included in this paper significantly predicted the financial performance of the companies at 0.1 level. With this finding, the researcher was certain that the model was appropriately fitted and so assuring the reliability of the overall results.

c) Test of normality

The axiom of normality relates to how a given data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. It gives the foundation for generalization of the findings of a study. In this work, normality was test using the Kolmogorov-Smirnov test presented on table 5 below.

Table 5. Test of normality.

Main constructs	variable	Kolmogorov-Smirnov ^a		
		Statistic	df	Sig.
SCQM	TMC	0.102	200	0.000
	SSP	0.101	200	0.000
	CRM	0.127	200	0.000
	IS	0.120	200	0.000
	CII	0.166	200	0.000
Performance	FINPERF	0.098	200	0.000

Source: Computed by author

The table shows values of the Kolmogorov-Smirnov statistic being greater than 0.05 for all the variables of the study. This finding confirmed that all the variables were normally distributed.

d) Glejser statistic test for heteroschedasticity

When the data set is heteroschedastic, it breaks the assumption of best linear estimator of the regression model and thereby weakens its capacity to show the effect of each of the explanatory variables on the dependent variable. This makes the tests of hypothesis (like t-test, F-test) no longer valid due to inconsistency in the co-variance matrix of the estimated regression coefficients. In this study, heteroscedasticity was tested using Glejser's test as presented on table 6.

Table 6. Test of heteroscedasticity.

Variables	t- value	sig
TMC	0.407	0.686
SSP	0.286	0.775
CRM	-0.93	0.354
IS	-0.29	0.769
CII	1.508	0.133

Source: Computed by author

Generally, heteroscedasticity is suspected when the t value for any variable has a significance of less than 0.05. The test

showed that all the significance value of the variables were greater than 0.05. This showed that the data was free of heteroscedasticity and hence standard errors and therefore inferences obtained from data analysis did not give justifiable evidence to suspect for biasness in the estimates.

ii) Test of Hypothesis

a) SCQM does not have a significant effect on the financial performance of the brewery companies in the SWR of Cameroon

The analysis relating to the first hypothesis of this paper gave the results presented on table 7.

Table 7. The effect of SCQM on the financial performance of the Cameroon brewery companies.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Coefficients ^a	(Constant)	0.906	0.483		1.877	0.062
	TMC	-0.047	0.092	-0.031	-0.513	0.609
	CRM	0.302	0.101	0.215	2.992	0.003
	CII	0.278	0.064	0.287	4.369	0.000
	IS	0.052	0.085	0.036	0.609	0.543
	SSP	0.231	0.065	0.253	3.536	0.001
Model Summary	R	0.613 ^a				
	R Square	0.376				
	Adjusted R Square	0.360				
	F	23.373				.000 ^b

a. Dependent Variable: FinPerf

b. Predictors: (Constant), SSP, IS, TMC, CI, CRM

Source: Computed by author, 2020

From the results presented on table 7, the constant term was positive with a t-value of 1.877. This value is greater than the critical value (1.65) at 5% level of significance. The positive coefficient of the constant term in the results indicated that there were other factors having a positive effect on the financial performance of the companies. In fact, a 1 unit increase/decrease in these factors will lead to a 0.906 units increase/decrease in the companies' financial performance, all things being equal.

The coefficient of TMC was negative. This implies a negative effect on the financial performance of the companies. Its t value of -0.513 is less than the critical value at 5% level thereby signaling an insignificant effect on the financial performance of the companies. The results revealed that a 1 unit increase/decrease in TMC will, all things being equal, account for a 0.513 unit decrease/increase in the financial performance of the companies. CRM also gave a positive coefficient of 0.302 and a t value of 2.992. One could see that the t value is greater than the critical value 2.35 at 1% level. This implies that CRM had a significant positive effect on the financial performance of the companies at 1% level. In much the same way, CII and SSP each also revealed a significant positive effect on the financial performance of the companies at 1% level of significance. In fact a 1 unit increase/decrease in both factors, all things being equal, will respectively lead to a 0.278 and a 0.231 unit increase/decrease in the financial performance of the companies. Information sharing on her part was also positive

but had a t value too small to be significant. Although insignificant, a 1 unit increase/decrease in information sharing will lead to a 0.036 unit increase/decrease in the financial performance of the companies.

The overall results also revealed exciting findings. The adjusted R-Squared of 0.36 showed that the constructs of SCQM captured by the model accounted for a 36% variation in the financial performance of the brewery companies in the SWR of Cameroon. The F ratio confirmed that SCQM had a significant effect on the financial performance of the companies as it was found to be well above the critical value (3.11) at 1% level. It should be noted that while CRM and SSP are more of external SCQM constructs, TMC, IS and CII are more of internal constructs. This left the researcher worrisome as far as the context of application is concern. The issue at stake was whether the results should be implemented uniformly to both the employees and the distributors. This led to a comparative analysis of the data collected for the study between the employees and the distributors.

b) There is no significant difference in the responses between employees and the distributors regarding the effect of SCQM on the financial performance of the brewery companies in the SWR of Cameroon

The next important issue in this paper was to help establish if there was a difference in the findings between the distributors and the suppliers. This will help to give further insights into the context of application of the findings above. Table 8 presented the analysis of variances and the Levene's

test of homogeneity in the responses relating to the distributors and the employees sampled in the study.

Table 8. Test of Homogeneity of Variances.

ANOVA and Levene Statistic						
	<i>w</i>	df1	df2	Sig.	F	Sig.
TMC	6.594	1	198	0.011	20.781	0.000
CRM	1.215	1	198	0.272	.087	0.768
CII	0.778	1	198	0.379	8.494	0.004
IS	4.155	1	198	0.043	3.125	0.079
SSP	0.103	1	198	0.749	9.600	0.002

Source: Computed by author, 2020

From the results on table 8, there was clear evidence of homogeneity in the responses with respect to some of the variables considered in the study. Specifically, TMC and IS had probability values less than 0.05 (sig <0.05) thereby indicating that equality of variances between the two groups was not assumed. With respect to TMC, the F statistic of 20.781 was also sufficiently higher than the critical value confirming that the variances of the two groups were not equal at 1% level. This implies no equality of variance in the responses between the employees and the distributors. Also, IS showed that the Levene statistic was significant at less than the critical value at 5%. This implies there was not enough homogeneity in the responses from the employees and the distributors relating to the effects of IS on the financial performance of the companies. The ANOVA also gave evidence to confirm this result as its F ratio (3.125) was again higher than the critical value. On the part of CII and SSP, the findings revealed homogeneity in the responses between the distributors and the employees. This is because they were significant at higher than 5% level as required by the test. The F ratios for these variables (8.494 and 9.6 respectively) were higher than the critical value at 1% thereby confirming significance of homogeneity in the responses at 1% level. In relation to CRM, the finding left worrisome implications as it showed significance of homogeneity well above 5% required for the test but ironically, the F statistic failed to confirm the finding as it was lower than the critical value at all levels. However, this calls for further research to clarify such a dichotomy.

4.2. Discussion of the Results

The results presented above led one to rejecting H_{01} while retaining the alternative hypothesis H_{a1} that SCQM has a significant effect on the financial performance of the companies at 1% level of significance of the study. More precisely, CRM, CII and SSP revealed significant effects on the financial performance of the companies at 1% while TMC and IS were insignificant. Also the responses in relation to CII and SSP were significantly homogeneous between the distributors and the employees at 5% level. The responses in relation to TMC and IS proved to be heterogeneous while CRM failed to portray any clear cut result.

This result could be supported by the internal supply chain

efforts put in place by the brewery companies in the study in view of a better customer experience. These efforts include ‘Guinness Cameroon S.A.’ focusing on innovation, product quality, employees’ trust and quality assurance; UCB applying the Deming’s Plan-Do-Check-Act Quality management system wherein they look at Quality as a state of mind and a new corporate culture based on quality improvement for all activities; ‘Brasseries du Cameroon’ adopting a quality management system based on ISO 9001 V 2015 while Source du Pays emphasises the Quality of her products, safety and hygiene for staff and customers. Also the fact that they hold suppliers very close as a core competitive tool justifies the significance of SSP.

This finding was in line with both the expectation and the theoretical undertone of the study. However, the findings in relation to CRM, CII and SSP are in agreement while the findings with respect to TMC and IS seem rather contradictory. This finding affirms the work of, Ana, Paulo and Maria [23] and Kushwaha & Barman [13] who only conducted an empirical analysis and concluded that all the parameters of SCQM have a significant effect on the financial performance of companies. However, this finding is very disturbing because the quality management rhetoric advocates that management makes significant effort towards the implementation of quality management practices across her internal and external supply chain whereas the result rather hold that management effort in that direction has a negative but insignificant effect on the financial performance of the companies. The big question to answer then is how a decline in top management’s effort towards quality management along the firms’ supply chain can generate an increase in the financial performance of the companies.

This finding also found itself contradicting the Penrose’s 1959 theory of the growth of the firm [26] which establishes that when management is committed to the application of skills and competences (comprising of SCQM practices), she will make the most efficient use of the company’s resources leading to excess capacity which can be exploited to gain competitive advantage in the market space. Such a competitive advantage, in time, will reflect on the financial performance of the company. Also, the finding in relation to IS seems to contradict the very essence of SCQM. SCQM is a customer concept directed to ensure a better customers experience. The theory of SCQM makes it clear that the need for information sharing and strategic alliance within partners is very important to deter competitors while ensuring the interest of all channel partners. Having examined the findings to this level, the context of application of the results became eminent. The worry here was whether to apply the significant constructs of SCQM equally between the employees and the distributors.

Although the results generally revealed homogeneity in the responses, distributors had a more significant contribution (51.7%) on the financial performance of the companies than the employees (21.8%). This therefore led to rejecting the null hypothesis while retaining the alternative hypothesis that there was homogeneity in the

responses of the distributors and the employees. Outside of this generalisation, some important observations exist in the results that are worthy of further investigation. This includes an investigation of the suitable CRM practices TMC and IS practices applicable to both the distributors and employees of the companies.

5. Conclusion and Managerial Implication of the Results

In recent times, the implementation of quality management practices along the supply chain of an organisation has become 'the talk of the day' in meeting the objectives of an organisation. This work examined the effects of SCQM on the financial performance of the brewery companies in the South West Region of Cameroon using primary data collected from both the employees and the distributors of the selected companies. This study, while emphasising the need for implementing quality management practices along the supply chain of the companies, made clarification regarding the contributions of SCQM on the financial performance of the companies. Using the Ordinary Least Squares technique of analysis it was concluded that SCQM has a statistically significant effect on the financial performance of the companies. However, although having an insignificant effect, top management commitment to quality management practices instead led to a fall in the financial performance of the companies involved in the study. Further, information sharing had an insignificant positive effect on the financial performance of the companies.

The findings of this study present very sensitive implications to management. It implies that management should adopt a partial approach in her implementation of SCQM practices with respect to both the distributors and the employees. While increasing research efforts towards TMC, employees should be made to be more aware of customers' preferences and the need for customer satisfaction. This will generate sales and hence the financial performance of the companies. Efforts towards TMC and IS should not be given emphasis while CII and SSP practices should be applied evenly to both the distributors and the employees.

This study, although making an important contribution to theory and to the empirical findings in this area of study, would have had better findings if we had more time and resources to extend our efforts to all the companies within the brewery industry. Also, SCQM is a customer concept. This implies that we would have had better results if more efforts were tailored towards the final consumers with a strong knowledge of the implementation of quality management practices along the supply chain of the companies. Summarily, while some scholars think the implementation of quality management practices along the supply chain is unnecessary cost for a company, this study makes it clear that it rather increases the financial performance of the companies. Hence, it should be implemented to induce better customer experience which will reflect on customer loyalty,

sales and the financial performance of the companies.

While this paper makes a strong input into the competitive activities of the companies, it equally cautions them on the context of application of the findings. The applications of the outcomes of this work will bring about the best use of the company's resources while strengthening customer satisfaction. This will not only lead to an increase in her sales but an increase in the returns of the company. This only means an increase in incomes to the stakeholders of the company and a fall in the poverty level of the companies' supply chain partners.

Acknowledgements

In addition to the list of references, the success of this study could not have been possible without the effort of Mrs. Zelefac Catherine Fogap Epose Tiendem and Rev. Fr. Felix Nkafu Forgap who gave moral, material and financial support needed for the collection and analysis of the data to facilitate the study.

References

- [1] Remus S. (2016). 5 Top Objectives of Highly Successful Businesses, *hubgets*. Accessed online on June 18, 2018 at <https://www.hubgets.com/blog>.
- [2] Robinson, J. R. and Malhotra, M. K., (2005). Defining the concept of supply chain quality management and its relevance to academic and industrial practice, *International Journal of Production Economics*, vol. 96, no. 18, pp. 315-337.
- [3] Mohammed A. W. & Mohamed A. E. (2017). The Impact of Supply Chain Management on Financial Performance and Responsibility Accounting: Agribusiness Case from Egypt, *Sciedu Press*, Vol. 6, No. 2, pp 136-149.
- [4] Azar A., Kahnali R. A. & Taghavi A. (2010). Relationship between supply chain quality management practices and their effects on organisational performance, *Singapore Management Review* 32 (1), P 45-68.
- [5] Flynn, B. and Flynn, E., (2005). Synergies between supply chain management and quality management: emerging implications, *International Journal of Production Research*, vol. 43, no. 16, pp. 3421-3436.
- [6] Walsh P. (2010). Diageo: Enabling Supply Chain Linkages in Cameroon, *Business Call to Action*, Accessed online on April 17, 2020 at Web: www.BusinessCalltoAction.org.
- [7] Staff writer (2016). Diageo Guinness Cameroon, accessed on August 20, 2019 at <https://www.supplychaindigital.com/company/diageo-guinness-Cameroon>.
- [8] Sylvain A. (2018). Cameroon: Beer consumption dropped by 0.1% to 653.9 million liters in 2017, *Agrobusiness*, accessed online at <https://www.businessinCameroon.com> on August 20, 2019.
- [9] Ferguson, B. R. (2000). Implementing Supply Chain Management. *Production & Inventory Management Journal*, 41 (2), 64.

- [10] Kuei C. H., & Madu, C. N., & Lin, C. (2001). The relationship between supply chain quality management practices and organizational performance. *International Journal of Quality & Reliability Management*, 18 (8), 864-872.
- [11] Porter, M. E. (2001). *The value chain and competitive advantage*. Understanding Business Processes. Routledge.
- [12] Lai, H. K., Cheng, T. C. E., Yeung, A. C. L. (2005). Relationship Stability and Commitment to quality. *International Journal of Production Economics*, 96 (3), 397-410.
- [13] Kushwaha G. S. and Barman D. (2010). Development Of A Theoretical Framework Of Supply Chain Quality Management, *Serbian Journal of Management* 5 (1) 127-142.
- [14] Kenton, W. (2020), Financial Performance, accessed online on July 5, 2020 at www.investopedia.com
- [15] The Government of Western Australia, (2017) Improvement tools: Continuous improvement and innovation, accessed online at <https://www.agric.wa.gov.au> on July 8, 2020.
- [16] Nawras, S. (2017). 5 Benefits of Continuous Improvement, accessed online on July 5, 2020 at <https://theleanway.net>
- [17] Attia, A. M. (2016). Effect of quality management on supply chain and organisational performance in the Egyptian textile industry, *International Journal of Business Performance Management*, 17 (2), 198-222.
- [18] Bagher, A. N. (2018). The effect of supply chain capabilities on performance of food companies, *Journal of Finance and Marketing*, 2 (4), 1-9.
- [19] Wahdan, M.& Emam M. A. (2018). The Impact of Supply Chain Management on Financial Performance and Responsibility Accounting: Agribusiness Case from Egypt, Sciedu Press, 6 (2), 136-149. SSN 1927-5986, E-ISSN 1927-5994.
- [20] Duong Vu. X. Q. and Nguyen H. H. (2018). Supply Chain Management Practices, Competitive Advantages and Firm Performance: A Case of Small and Medium Enterprises (SMEs) in Vietnam, *Journal of Modern Accounting and Auditing*, Vol. 14, No. 3, P 136-146.
- [21] Fincham, J. E. (2019). Response Rates and Responsiveness for Surveys, Standards, and the Journal, *American Journal of Pharmaceutical Education*, 72 (2), 43. doi: 10.5688/aj720243.
- [22] Marcio, C. M., Oswaldo, S., Saturnina, A. S. M., Jeane, A. M. and Carlos, E. S. (2016). Supply Chain Quality Management: a theoretical framework for integration measurement, *6th International Conference on Information Systems, Logistics and Supply Chain, Bordeaux, France*.
- [23] Ana, Paulo and Maria (2014). Quality Management and Supply Chain Management Integration: A Conceptual Model, *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management Bali, Indonesia*, P 773-780.
- [24] Harshada J. (2012). Multicollinearity Diagnostics in Statistical Modeling and Remedies to deal with it using SAS, *Statistical software services*, available online at www.cytel.com on April 18, 2020.
- [25] Carsten F. D. (2013). Collinearity: a review of methods to deal with it and a simulation study evaluating their performance, *Nordic Society Oikos, Ecography* 36, PP 027–046.
- [26] Christos N. P. (2009). Edith Penrose's 'The Theory of the Growth of the Firm' Fifty Years Later, Electronic copy available at: <http://ssrn.com/abstract=1477885> accessed on Feb 9th 2020.