Supply Chain Management and Performance in Cameroonian Small and Medium Enterprises

DJODA NJODA Charles

University of Saint-Jérôme, Douala, Cameroon

Abstract: *We employ Cameroonian data on 162 Small and Medium Enterprises (SME) to test fourth competing hypotheses about the impact of Supply Chain Management (SCM) on their performance. The first hypothesis states that there is a relationship between Critical Success Factors (CSFs) for implementation of SCM and SME performance in terms of customer service and satisfaction. In second, there is a significant relationship between CSFs and SME performance in terms of internal business parameters. Third, there is a significant relationship between CSFs and SME performance in terms of financial performance. Fourth, there is a relationship between CSFs and SME performance in terms of innovation and growth. It is evident that SMEs in Cameroon face problems in SCM implementation due to lack of resources and direction. However, successful implementation of SCM can give SMEs an edge over their competitors. Our study identifies some major CSFs for achievement of SCM and studies their impact on performance. Results are analyzed by testing research hypotheses using standard statistical and econometric tools: "devoted resources for supply chain", "top management commitment", "development of effective SCM strategy", "development of reliable suppliers" and "logistics synchronization" emerge as the most pertinent CSFs. Our findings appear to leave little room for explanations of the over/under-performance phenomenon rooted in the trade-off between different forms of managerial capital.*

Keywords: *Supply chain management, performance, critical success factors, Cameroonian small and medium enterprises.*

I.   Introduction

Supply chain can be defined as a set of organizations that maintain relations with each other from the beginning to the end of the logistic chain, creating value in the form of products and services from the suppliers to the final consumer (The Supply Chain Council, 2002). Supply Chain Management (SCM) is the integration of all activities associated with the flow and transformation of goods from the raw materials stage through to the end-user, as well as the associated information flows (Handfield and Nichols, 2003). For this reason, SCM seeks to enhance competitive performance by closely integrating the internal cross-functions within a company and effectively linking them with the external operations of suppliers, customers, and other channel members to be successful (Kim, 2006). SCM represents the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole (Christopher, 2011). According to Singh (2011), to effectively compete in the domestic market, small scale enterprises should focus on improving the effectiveness of operational functions with effective SCM.

With an increasing number of competitors local Cameroonian businesses not only have to restructure their organizations to produce higher-quality products and services, reduce cost and be able to react quickly to the market, but also to manage their supply chain. However, Cameroonian Small and Medium Enterprises (SMEs) find home competition very challenging with Chinese product (Khan and Baye, 2008; Nanje and Atinuke, 2011). To face this competition, SMEs should have effective collaboration with their customers and suppliers, and should be competitive in terms of cost, quality, innovation, and delivery. The ability to meet the customer demands for time, variety, quality and price, has been the biggest challenge for enterprises. Achieving world-class performance levels requires continuous attention and efforts to ensure the survival of business. Successful implementation of SCM can play a significant role in meeting these challenges and SMEs should have an effective supply chain strategy. Critical Success Factors (CSFs) of SCM represent a wide variety of strategies devoted to improving operational efficiency and competitiveness of SMEs. In this study, we have recognized a number of 12 CSFs for SCM from literature (see Table A1 in appendix). We have further attempted to analyze the effects of the SCM initiatives taken by Cameroonian SMEs on their performance. Issues of performance have been considered based on the Balanced Score Card (BSC) method. This BSC approach is the most

prevalent and is taken as the foundation while developing the framework (Figure A1). According to this framework, CSFs of SCM implementation leads to performance improvement of Cameroonian SMEs on different categories based on the BSC approach. The performance measures included are customer service and satisfaction, internal business, financial performance, and innovation and growth. In the basis of this measure, we define fourth hypotheses for our empirical research. Previous studies have not analyzed the impact of CSFs on different performance measures in a holistic manner like the present paper does.

Narasimhan and Jayaram (1998) used exploratory factor analysis for each construct to ensure the unidimensionality of the scales in respect of SCM practices. The indicator items are deleted if they are loaded on more than two factors or their factor loadings are smaller than 0.5. Handfield and Bechtel (2002) suggested that buyer-dependence, supplier human asset investments, and trust are all positively associated with improved supply chain responsiveness, defined in their study as the supplier's ability to quickly respond to the buying party's needs by conducting Confirmatory Factor Analysis (CFA). Ngai et al., (2004) conducted an empirical study using an Exploratory Factor Analysis (EFA) of the survey data and revealed five major dimensions of the CSFs for web based SCM system implementation. Chen et al. (2006) developed three constructs of e – Supply chain capability (procurement, make and delivery) and tests the relationships between e-Supply chain capability, competitive advantage, and organizational performance. Bozarth et al. (2009) presented a conceptual model that formally states the relationship between supply chain complexity and plant performance through multiple regression modelling. Agus (2011) investigated relationship between SCM, supply chain flexibility and business performance and these associations are analyzed through statistical methods such as Pearson's correlation and Structural Equation Modelling (SEM). The overall result suggests that supply chain management has significant correlations with supply chain flexibility and business performance.

To study the effect of different CSFs on performance of Cameroonian SMEs, we develop a concise framework and try to validate it in the current study. Our empirical approach involves statistical tests using 12 measures of SCMs and 4 corresponding CSFs metrics. These statistical tests include exploratory econometric analysis to investigate interaction effect between endogenous and exogenous main variables.

This paper is organized as follows: The second section presents the data and measurement issues. The third section examines the hypotheses and models. The fourth section discusses regression analysis for testing the research hypotheses. Finally, the fifth section concludes.

II.   The data and measurement issues

The sample used in this study was drawn from a survey conducted among 162 Cameroonians SME. These SMEs were selected from directories available at Inter-managerial Committee of Cameroon (ICC), Cameroon Chamber of Commerce, Industry, Mines and Crafts, Cameroon Manufacturers' Union, and Ministry of Small and Medium Sized Enterprises (MSMSE). The data was collected between April 2015 and December 2015. Most of the SMEs were located in urban areas (70 percent were located in Douala and Yaoundé, 20 percent in Bafoussam, Bertoua and Garoua, 10 percent in Bamenda, Buea, Ebolowa, Maroua and Ngaoundéré). Sector wise distribution shows that out of the total responding SMEs, 40 percent were from manufacturing sector, 34 percent from the services sector, 17 percent from the transportation, and 9 percent from construction sectors.

Issues related to SCM were handled by top management in collaboration with the purchase and/or the marketing departments. Only two percent of SMEs had a separate SCM subdivision and dedicated team to handle different supply chain issues. 90 percent did not have a separate SCM subdivision. The remaining 8 percent of SMEs had little awareness of SCM. About 35–45 percent of the SMEs were aware of the micro, small and medium enterprises development Law 2010/001 of April 13, 2010 on the promotion of Small and Mediumsized Enterprises, and they were availing the benefits of all Government policies and schemes for the 2010-Law. Responses from the rest of the SMEs revealed very little knowledge about the Law. We observed that either they were not aware of the 2010-Law and the policies and schemes intended for them or they were not in a situation to take advantage of them in the current market situation.

The questionnaire contained two parts respectively: Part 1 focuses on CSFs for implementation of SCM in Cameroonian SMEs and Part 2 focuses on performance improvement (on criteria of balanced score card approach) in the past two years on the basis of different initiatives taken towards SCM implementation by Cameroonians SMEs. Available in the data set is information on firms' characteristics such as top management commitment, development of effective SCM strategy, devoted resources for supply chain, logistics

synchronization, use of modern technologies, information sharing with supply chain members, forecasting of demand based on Point Of Sales (POS), trust development in supply chain partners, development of reliable suppliers, higher flexibility in production system, focus on core strengths, or long-term vision for survival and growth. With theses 12 critical success factors (CSFs) for implementation of SCM in SMEs, the variables on a Likert scale of five (1 – lowest, 5 – highest) listed in Table 1 were constructed. Sample means and other descriptive statistics are also given in Table 1. SPSS 20 software has been used to analyze the collected responses.

Table 1. Definition of variables, sample mean and standard deviation of variables

Variable	Description	Mean	Rank	Standard deviation	t value (p value)
Dependent variables					
Customer service and satisfaction	CSS	2.789	1	0.239	6.814 (0.040)
Internal business	IB	1.520	2	0.909	9.301 (0,011)
Finance	F	1.275	3	0.315	7.806 (0.017)
Innovation and growth	IG	1.116	4	0.092	5.382 (0.064)
Independent variables					
Devoted resources for supply chain	DRS	2.430	1	0.813	14.586 (0.015)
Top management commitment	TMC	2.235	2	0.497	11.418 (0.036)
Development of effective SCM strategy	DESS	1.960	3	0.746	1.354 (0.090)
Development of reliable suppliers	DRS	1.940	4	0.020	1.815 (0.080)
Logistics synchronization	LS	1.866	5	0.455	3.373 (0.071)
Information sharing with SC members	ISSM	1.641	6	0.823	1.340 (0.087)
Trust development in SC partners	TDSP	1.434	7	0.744	5.905 (0.032)
Focus on core strengths	FCS	1.374	8	0.195	4.792 (0.039)
Long-term vision for survival and growth	LTVSG	1.318	9	0.487	8.788 (0.014)
Use of modern technologies	UMT	1.278	10	0.092	3.823 (0.031)
Higher flexibility in production system	HFPS	1.152	11	0.315	4.608 (0.051)
Forecasting of demand on point of sale	FDPS	1.127	12	0.109	3.190 (0.023)

Performance measurement can be defined as the process of quantifying the effectiveness of various processes being followed by the enterprise. Performance measurement provides the information necessary for decision makers to plan, control, and directs the activities of the enterprise. Performance measures allow managers to measure performance, to signal and educate employees (and suppliers) on the important dimensions of performance, and to direct improvement activities by identifying deviations from standards. Based on the BSC approach, this study has selected the performance measures customer service and satisfaction, internal business, financial performance, and innovation and growth parameters for assessment of performance.

Average improvement in performance in the past two years was measured on a Likert scale of five (1 – lowest, 5 – highest). This scale took care of decreasing, constant, as well as increasing percentage changes

In the multiple regressions below, the dependent variables, CSS, IG, F and IB, are the different categories of performance measures. Independent variables include DRS, TMC, DESS, DRS, LS, ISSM, TDSP, FCS, LTVSG, UMT, HFPS and FDPS which are completed by some proxied variables related to performance. The choice of variables is based on theoretical considerations in the literature review and field observations. These variables purport to measure different individual endowments of SCM and performance, both general and firm-specific.

Inter-item analysis is used to check the scales for internal consistency or reliability. Cronbach's coefficient was calculated for each scale, as recommended for empirical research in operations management (Flynn et al., 1990). The coefficients of Cronbach's $α$ for all constructs were in the range of 0.584–0.689. These values exceed the minimum requirements of 0.5 for an exploratory study such as this one (Nunnally, 1978). Data acquired from the survey of Cameroonian SMEs are analysed by statistical tests such as one sample t-test, correlation and multiple regression analysis.

Of most interest to the present study are the variables related to CSFs. In the pioneering study by Bullen and Rockart (1986), these variables are few key areas where things must go right for the business to flourish and for the manager's goals to be attained. It is observed in Table 1 that the most important factor is "devoted resources

for supply chain" with mean values of (2.430), followed by "top management commitment" (2.235), "development of effective SCM strategy" (1.960) and "development of reliable suppliers" (1.940). These results suggest that in Cameroonian SMEs resources devoted for supply chain occupies a very important place, although major decisions are taken by the top management. Top management commitment is certainly a key enabler for effective SCM (Sandberg and Abrahamsson, 2010). Implementation of SCM proves to be very useful for long term survival. But SCM implementation requires committed management and devoted resources. Usually it is observed that SMEs do not have the time, knowledge or resources to conduct detailed analysis for implementing SCM. In the absence of a plan for long term growth, SMEs often do not understand the full implications of SCM to the organization.

The other important CSFs that emerged are "logistics synchronization" (1.866), "information sharing with SC members" (1.641), "trust development in SC partners" (1.434) and "focus on core strengths" (1.374). Logistics synchronisation will help SMEs in optimising their transportation and warehousing costs. Customers' orders and the services of the organization can be effectively connected by a good logistics system.

Usually SMEs work in isolation and involve middlemen in their supply chain, often losing benefits to them. By establishing close partnerships with their suppliers and customers, SMEs could better achieve product, process and technology innovations. To improve coordination and responsiveness of the supply chain, information sharing with all members of the chain is very important. Supply chain coordination relies on the availability of prompt and accurate information that is visible to all actors in the supply chain. Coordination improves by close partnership with customers and suppliers and helps in joint development of new products, joint effort in reducing purchase lead-time, and cross training of workforces. Coordination also helps in reducing late change of design and orders, which subsequently affects the delivery/logistics performance of the companies. Coordination and responsiveness will not only benefit the suppliers and the customers, but will improve the profits of the overall supply chain.

The other CSFs that emerged in the study are "long-term vision for survival and growth" (1.318), "use of modern technologies" (1.278), "higher flexibility in production system" (1.152) and "forecasting of demand on point of sale" (1.127). For example, use of modern technologies such as internet, electronic data interchanges, web sites, radio frequency identification (RFID) technologies and ERP helps in better management of information. Accurate, timely, and easily accessible information can improve decision making and forecasting in supply chain. Forecasting of demand based on point of sales data helps in making more accurate forecasts of customer requirements. In the context of SCM, a supplier is able to better match inventory with demand when accurate information is available about the buyer's inventory status. Flexibility in production system (1.152) helps in dealing with changing product design and demand of customers. From the coordination point of view, trust development in supply chain partners (1.434) is also very important. Due to a perceived lack of security, a trust deficit exists between SMEs and their partners.

III. Hypotheses and models

Based on the identification of CSFs for implementation of SCM and focuses on their effects on the performance of Cameroonian SMEs, the study has attempted to test the following four research hypothesis:

H1: There is a significant relationship between CSFs and SME performance in terms of customer service and satisfaction.

H2: There is a significant relationship between CSFs and SME performance in terms of internal business parameters.

H3: There is a significant relationship between CSFs and SME performance in terms of financial performance.

H4: There is a significant relationship between CSFs and SME performance in terms of innovation and growth.

Previous research has focused on the relationship between CSFs variables and improvement in performance. Performance, PERF, is decomposed into fourth parts: CSS, IB, F and IG; whereas Observed Performance, OPERF, is decomposed into two parts: underperformance and over-performance. After evaluation of the number of components of business required for adequate management performance, if the enterprise's observed performance attainment is less than 50 percent then the deficit conduct to an underperformance or, alternatively, the excess is attributed to over-performance.

Econometric regressions patterned after the specification of framework are thus expressed as

$$PERF_i = \alpha + \beta CSF + \varepsilon_i, \qquad (1)$$

where α is a constant; CSF is a (row) vector of non-performance related variables which include DRS, TMC, DESS, DRS, LS, ISSM, TDSP, FCS, LTVSG, UMT, HFPS, FDPS (of the enterprise *i*); β is a conformable (column) vector of coefficients; ε is a random disturbance. Marginal effects of explanatory variables are distributed by the β coefficients.

In the first model, we are interested in the SCM effect on performance. We build on the literature of supply chain adoption (Power, Sohal and Rahman, 2001; Umble, Haft and Umble, 2003) and include the variables that captures the number of modern supply chain suppliers in Cameroonian SMEs. It is important that the explanatory variables are uncorrelated with the endogenous one. This effect is commonly referred to as the endogenous influence, because it may capture the influence of the SCM on the individual enterprise, but also the behaviour of the individual that influences the SCM. This refers to correlated unobservable characteristics of the enterprises and their business members. We use an instrumental variable approach to address this problem, by defining the following second model

$$PERF_i = \alpha + \beta CSF + \gamma OPERF_i + \varepsilon_i, \qquad (2)$$

The candidate instrument OPERF should be correlated with the potentially endogenous social network variable, but uncorrelated with any unobservable variables and the participation variable.

It is generally expected (and evidence supports the view) that the sign of coefficient γ is negative in the case of over-performance, and positive in presence of under-performance. The first explanation for the firm over/under-performance phenomenon reviewed above stresses the possible substitutability or complementarity of different forms of the organization endowment (managerial, general or firm-specific, administration, etc.). Supposedly, deficit performance might be compensated by a larger stock of firm-specific capital or of general goods-market endowment, whereas surplus performance might be viewed as a substitute for the lack of firm seniority or of logistic experience. We thus posit that these factors could be taken into account by modifying the econometric equation (1) by tacking to account the average of CSF factor:

$$OPERF_i = \alpha + \beta CSF + \gamma OPERF_i + \delta ACSF + \varepsilon_i, \qquad (3)$$

where the newly-added variable ACSF represented the mean interaction variable defined as the mean combination of all explanatory variables. Under this specification, marginal effect to an additional firm of required performance is proxied by the partial derivative.

Of particular interest for the purposes of this study are the signs of γ which is anticipated to be negative, and, to a lesser extent, those of δ. According to the firm management view, over-performance is a transitory stage in which firms with good managerial qualifications improve their chances of finding a better SCM match. Under this view, we would expect enterprise technology-capital investments to be more search-oriented rather than directed toward the acquisition of firm-specific capital and, in turn, we would expect managers to have little incentive to invest in a SCM who is in the market for a better performance match. A negative sign for δ, at least, a value indistinguishable from zero would be consistent with this hypothesis. In this case, the positive sign of β should help to compensate the negative effect conducted by overperformance.

On the other hand, under-performance is sometimes seen as a more stable situation in which a given stock of non-technology capital compensates for performance deficits. Under this view, performance attainments being the same (and equally inadequate), it appears that preference should be granted to enterprises with larger endowments of other forms of fixe capital. Accordingly, the penalty profit by underperformed enterprises should be lower the higher are their resources and flexibility levels, and positive signs would be expected for γ and δ.

IV. Results
This section examines factors influencing the engagement of SME in supply chain trade.

The correlation matrix among the explanatory variables in Table 2 indicates a low degree of correlation among the explanatory variables. Hence, multicollinearity is unlikely to be a problem in these data. Following diagnostic testing, we continue by considering the results for instructive method.

Table 2. Correlation matrix of CSFs

	DRS	TMC	DESS	DRS	LS	ISSM	TDSP	FCS	LTVSG	UMT	HFPS	FDPS
DRS	1											
TMC	0.303	1										
DESS	0.091	0.778	1									
DRS	0.341	0.215	0.080	1								
LS	0.208	0.172	0.036	0.212	1							
ISSM	-0.024	0.059	0.024	-0.080	0.004	1						
TDSP	0.273	0.111	0.019	0.243	0.143	-0.094	1					
FCS	0.315	0.201	0.078	0.438	0.122	-0.127	0.363	1				
LTVSG	0.358	0.317	0.108	0.308	0.273	0.030	0.218	0.288	1			
UMT	0.100	0.071	0.011	0.027	0.121	0.049	0.081	0.066	0.132	1		
HFPS	0.181	0.136	0.034	0.071	0.111	0.005	0.157	0.189	0.164	0.001	1	
FDPS	0.043	0.111	0.035	0.050	0.027	0.341	0.080	0.026	0.098	0.156	0.006	1

For testing of research propositions made in this study, regression analysis is carried. To estimate equations (2) and (3), we use Ordinary Least Squares (OLS) with robust standard errors available on SPSS 20. Tables 3 and 4 report the results of the tests of our hypotheses obtained with our full sample of 162 enterprises. The strength of the relation between the overall dimensions of SCMs practices and performance indicators are significant globally and individually. As shown by a finer R^2, the 'all manufacturing firms in supply chain trade' model better fits the outcome data. The coefficient of the majority of variable is positive and significant (at least 0.05 level), as expected, in both models. The major observations on the basis of this analysis are as follows:

-First, regression analysis of CSFs as independent variable and performance in terms of customer service and satisfaction as dependent variable (ProbF= 0.000 and $R^2 = 0.539$) explains 53.9 percent of variability of performance of Cameroonian SMEs. This means that in addition to these independent variables, other factors related to supply chain implementation play a significant role in performance improvement in terms of customer service and satisfaction in the Cameroonian scenario. The results of the analysis show, in particular, that there is significant impact of the devoted resources for supply chain on the customer service and satisfaction, ($\beta = 0.916$). For example, during analysis and survey, we observed that for SMEs cost reduction, quality improvement and on time delivery of goods have more influence on performance.

-Second, regression analysis of CSFs as independent variable and performance in terms of internal business as dependent variable (ProbF= 0.000 and $R^2 = 0.528$) explains 52.8 percent of variability of performance of Cameroonian SMEs. It implies that in addition to these independent variables, other factors related to supply chain implementation, play a significant role in performance improvement of Cameroonian SMEs, in terms of internal parameters.

-Third, regression analysis of CSFs as independent variable and performance in terms of finance as dependent variable (ProbF= 0.000 and $R^2 = 0.517$) explains 51.7 percent of variability of performance of Cameroonian SMEs. This means that in addition to these independent variables, other factors related to supply chain implementation play a significant role in improvement of performance of SMEs in terms of finance.

-Fourth, regression analysis of CSFs as independent variable and performance in terms of innovation and growth as dependent variable (ProbF= 0.001 and $R^2 = 0.508$) explains 50.8 percent of variability of performance of Cameroonian SMEs. This implies that in addition to these independent variables, other factors related to supply chain implementation play a significant role in performance improvement of Cameroonian SMEs in terms of innovation and growth.

Table 3. Selected coefficient estimates, mode-based criterion

Variable	CSS	IB	F	IG
Devoted resources for supply chain	0.916*	0.160*	0.105	0.409**
Top management commitment	0.716*	0.726*	0.169	0.161
Development of effective SCM strategy	0.858*	0.943*	0.393*	0.162
Development of reliable suppliers	0.955*	0.434*	0.105	0.212
Logistics synchronization	0.252*	0.364*	-0.247	0.168
Information sharing with SC members	0.437*	0.275*	0.298	0.167
Trust development in SC partners	0.859*	0.341*	0.213	0.104
Focus on core strengths	0.463*	0.452*	0.157	0.144
Long-term vision for survival and growth	0.410**	0.268	-0.285	0.028
Use of modern technologies	0.437*	0.640*	0.391	0.160
Higher flexibility in production system	0.350*	0.831*	0.220	0.024
Forecasting of demand on point of sale	0.360*	0.448*	0.525	0.139
Constant	0.856*	0.548*	0.362*	0.104
Operf	0.263**	0.383*	0.168*	0.253
R2	0.539	0.528	0.517	0.508
Prob F	0.000*	0.000*	0.000*	0.001*

Notes: Dependent variable in first row. Coefficients are reported in the table. Signification at the 0.01 level = *; signification at the 0.05 level = **.

Table 3 also provides information on the estimates obtained using our entire preferred mode-based measure of performance. All coefficients on devoted resources for supply chain are positive and significant with the correct sign in both models. Having an important level of resources invest in supply chain increases the possibility of a firm augmenting supply chain. Logistics synchronization and use of modern technologies are also significant. Accordingly, firms that have acquired higher levels of technological capabilities are more likely to succeed in supply chain trade. This requires firms to undertake conscious investments in skills and information to operate imported technologies rather than simply learning by doing. Capability building involves a range of technological activities, including actively acquiring new technologies through foreign licenses, implementing international quality standards and developing new products supported by patent protection.

The coefficient on top management commitment is positive and significant in the all manufacturing firms model. In SMEs, decisions are generally centrally governed by top management. Resources such as money, time, technology, manpower, and material are controlled and managed by top management. According to Ganesan and Saumen (2005), top management support is very much necessary for cross-functional training, integration of departments within the organization and vendor development for a responsive supply chain.

The Trust development in SC partners variable has a positive and significant sign. Trust among supply chain partners is another important aspect for improving coordination between the partners. Anderson and Narus (1990) stated that trust is a favourable attitude that exists when one supply chain member has confidence in other supply chain members. Trust is required for flow of information in the supply chain.

Access to information sharing with SC members is positive and significant. Information technology (IT) has gained a lot of importance in SCM implementation in recent years. Increasingly, supply chain operations are changing from electronic data interchange systems and enterprise resource planning systems to internet/intranet to support SCM (Pant, Sethi and Bhandari, 2003). Lancioni, Smith and Olivia (2000), observed that use of modern technologies in SCM can lead to advantages such as cost saving, quality improvement, delivery and support, and greater competitive advantage.

The estimate of the coefficient on Operf is still close to 0.1-0.4, as in Table 3. Without accounting for possible interaction effects of explanatory variables, marginal influence of observed performance is positive, statistically significant. When interaction effects are taken into consideration in Table 4, the estimates of γ and δ obtained under the exogenous definition of overperformance/underperformance, albeit lower in magnitude than those shown in Table 3, are still clearly and significantly supportive of the same hypothesis. That is, marginal effect of overperformance improve with prolonged business with the same sample, whereas effect of underperformance

deteriorate as capabilities increases, a behaviour that runs counter to the notion of the substitutability of devoted resources for supply chain for performance.

Table 4. Selected coefficient estimates, skill/qualification-based criterion

Variable	CSS	IB	F	IG
Devoted resources for supply chain	0.269**	0.416**	0.546**	0.501
Top management commitment	0.249**	0.409**	0.519**	0.131
Development of effective SCM strategy	0.362**	0.563**	0.597**	0.148**
Development of reliable suppliers	0.491**	0.414**	0.465**	0.408**
Logistics synchronization	0.448**	0.481**	0.359**	0.336**
Information sharing with SC members	0.454**	0.308**	0.302**	0.492**
Trust development in SC partners	0.408**	0.633**	0.235**	0.435**
Focus on core strengths	0.545**	0.451**	0.299**	0.445**
Long-term vision for survival and growth	0.398**	0.334**	0.213**	0.256**
Use of modern technologies	0.420**	0.482**	0.441**	0.340**
Higher flexibility in production system	0.289**	0.579**	0.565**	0.137**
Forecasting of demand on point of sale	0.406**	0.671**	0.534**	0.159**
Constant	0.519**	0.639**	0.608**	0.481**
Operf	0.533**	0.438**	0.670**	0.246**
Acsf	0.319*	0.307*	-0.222*	-0.171*
	0.461*	0.901*	0.189*	0.430*
R2	0.541	0.511	0.510	0.504
Prob F	0.000*	0.000*	0.000*	0.001*

Notes: Dependent variable in first row. Coefficients are reported in the table. Signification at the 0.01 level = *; signification at the 0.05 level = **.

In our second set of results, we rely on an exogenous definition of required performance (by the Business Environment and Enterprise Performance Survey that includes measures of firm performance, variables relating to ownership, competition and export orientation). For purposes of comparison, Table 4 displays selected information on the results. Without accounting for possible interaction influence of Operf and others CSF variables**,** marginal effect to Operf adequate for performance are estimated at close to 0.31%, in line with previous research for the Cameroonian goods market (Nguimkeu, 2013). If differential effects of Operf and Acsf are allowed, the differentiation shows an improvement marginally in comparison with result of Table 3.

V. Conclusion

Our objective in this study was to identify the impact of CSFs for SCM on the performance of Cameroonian SMEs. We have showed that CSFs have positive impact on different categories of performance such as customer service and satisfaction, internal business, financial performance, and innovation and growth of Cameroonian SMEs. It is also observed that to face the challenges of a competitive market, SMEs in Cameroonian are now recognizing the importance of SCM implementation but on a small scale. Devoted resources for supply chain, top management commitment, development of effective SCM strategy, development of reliable suppliers, and logistics synchronization are the main CSFs for implementation of SCM in Cameroonian SMEs.

Findings of the study have many crucial implications for SMEs while implementing SCM in practice, and for academia as well. A major implication is that SMEs should develop their supply chain strategies effectively after analysing the business environment and their future plans. While developing strategies for implementation of SCM in SMEs, they should give due importance to CSFs and keep them in mind while deciding their priorities.

Our paper can be further extended for comparing SMEs with larger enterprises in terms of different supply chain practices and performance. The findings from this study may be beneficial for SMEs outside Cameroonian as well.

References

[1.] Agus, A. (2011), Supply Chain Management, Supply Chain Flexibility and Business Performance, *Journal of Global Strategic Management*, 9, pp. 134-145.

[2.] Anderson, J.C. and Narus, J.A. (1990), A model of Distributor Firm and Manufacturer Firm working Partnerships, *Journal of Marketing*, 54, pp. 42–58.

[3.] Arshinder, Kanda, A. and Deshmukh, S. G. (2007), Supply Chain Coordination Issues: An SAP-LAP Framework, *Asia Pacific Journal of Marketing and Logistics*, 19(3), pp. 240-264.

[4.] Arshinder, Kanda, A. and Deshmukh, S. G. (2008), Supply Chain Coordination: Perspectives, Empirical Studies and Research Directions, *International Journal of Production Economics*, 115, pp. 316-335.

[5.] Bianchi, C. and Saleh, A. (2010), On Importer Trust and Commitment: A Comparative Study of two Developing Countries, *International Marketing Review*, 27(1), pp. 55-86.

[6.] Bozarth, C. C., Warsing, D. P., Flynn, B. B., and Flynn, J. E. (2009), The Impact of Supply Chain Complexity on Manufacturing Plant Performance, *Journal of Operations Management*, 27, pp. 78-93.

[7.] Bullen, C.V. and Rockart, J.F. (1986), A Primer on Critical Success Factors, *in* C.V. Bullen, J.F. Rockart (Eds.), *The Rise of Managerial Computing: the Best of the Center for Information System Research*, Dow Jones-Irwin, Homewood, Illinois, pp. 383–423.

[8.] Chen, C-Y., Leu, J-D. and Chiou, C-H. (2006), The Impact of e-Supply Chain Capability on Competitive Advantage and Organizational Performance, *International Journal of Electronic Business Management*, 4(5), pp. 419-427.

[9.] Christopher, M. (2011), *Logistics and Supply Chain Management*, Fourth Edition, Prentice Hall.

[10.] Flynn, B.B., Sakakibara, S., Schroeder, R.G., Bates, K.A., Flynn, J.B. (1990), Empirical Research Methods in Operations Management, *Journal of Operations Management*, 9, pp. 250–284.

[11.] Francesca, M., Bianco, F. and Mauro, C. (2008), Internet and Supply Chain Management: Adoption Modalities for Italian Firms, *Management Research News*, 31(5), pp. 359-374.

[12.] Ganesan, K. and Saumen, B. (2005), Corporate Turnaround through Effective Supply Chain Management: The Case of a leading jewellery Manufacturer in India, *Supply Chain Management: An International Journal*, 10 (5), pp. 340–348.

[13.] Handfield, R. B. and Bechtel, C. (2002), The Role of Trust and Relationship Structure in improving Supply Chain Responsiveness, *Industrial Marketing Management*, 31, pp. 367-382.

[14.] Handfield, R. B. and Nichols, E. L. (2003), *Introduction to Supply Chain Management*, New Jersey: Prentice Hall.

[15.] He, Y., Zhao, X., Zhao, L. and He, J. (2009), Coordinating a Supply Chain with Effort and Price Dependent Stochastic Demand, *Applied Mathematical Modeling*, 33, pp. 2777-2790.

[16.] Khan, A.S. and Baye, M. F. (2008), China-Africa Economic Relations: The Case of Cameroon, Department of Economics and Management, Report Submitted to the African Economic Research Consortium (AERC).

[17.] Kim, S. W. (2006), Effects of Supply Chain Management Practices, Integration and Competitive Capability on Performance, *Supply Chain Management: An International Journal,* 11(3), pp. 241-248.

[18.] Kumar, R., Singh, R. K. and Shankar, R. (2012), Supply Chain Management Issues in an Indian SME: A Sap-Lap analysis, *Journal of Supply Chain Management Systems*, 1(2), pp. 34-44.

[19.] Kumar, R., Singh, R. K. and Shankar, R. (2013), Study on Coordination Issues for Flexibility in Supply Chain of SMEs: A Case Study, *Global Journal of Flexible Systems Management*, 14(2), pp. 81-92.

[20.] Kumar, R., Singh, R. K. and Shankar, R. (2014), Strategy Development by Indian SMEs for improving Coordination in Supply Chain: An Empirical Study, *Competitiveness Review*, 24(5), pp. 414-432.

[21.] Kumar, R., Singh, R. K. and Shankar, R. (2016), Study on Collaboration and Information sharing Practices for SCM in Indian SMEs, *International Journal of Business Information Systems*, 22(4), pp. 455-475.

[22.] Lancioni, R.A., Smith, M.F. and Oliva, T.A. (2000), The Role of the Internet in Supply Chain Management, *Industrial Marketing Management*, 29, pp. 45–56.

[23.] Marek, P. and Malyszek, E. (2008), A Local Collaboration as the most Successful Co-ordination Scenario in the Supply Chain, *Industrial Management and Data Systems*, 108(1), pp. 22-42.

[24.] Nanje, D. U. and Atinuke, A. O. (2011), Sino-Cameroon Economic Relations: Opportunities and Challenges, Aalborg University, Denmark.

[25.] Narasimhan, R. and Jayaram, J. (1998), Causal Linkages in Supply Chain Management: An Exploratory Study of North American Manufacturing Firms, *Decision Sciences*, 29, pp. 579- 605.

[26.] Ngai, E. W. T., Cheng, T. C. E. and Ho, S. S. M. (2004), Critical Success Factors of Web-based Supply Chain Management System Using Exploratory Factor Analysis, *Production, Planning & Control*, 5(6), pp. 622 - 630.

[27.] Nguimkeu, E. P. (2013), Business Environment and Firm Performance: The Case of Retailing Firms in Cameroon, available on http://www2.gsu.edu/~econpn/Pierre_Nguimkeu/RESEARCH_files/bizclimate.pdf

[28.] Nunnally, J.C. (1978), *Psychometric Methods*, McGraw-Hill, New York.

[29.] Pant, S., Sethi, R. and Bhandari, M. (2003), Making Sense of the e-Supply Chain Landscape: An Implementation Framework, *International Journal of Information Management*, 23, pp. 201–221.

[30.] Power, D.J., Sohal, A.S. and Rahman, S.U. (2001), Critical Success Factors in Agile Supply Chain Management, *International Journal of Physical Distribution and Logistics Management*, 31, pp. 247–265.

[31.] Sandberg, E. and Abrahamsson, M. (2010), The Role of Top Management in Supply Chain Management Practices, *International Journal of Retail and Distribution Management*, 38 (1), pp. 57–69.

[32.] Singh, R. K. (2011), Developing the Framework for Coordination in Supply Chain of SMEs, *Business Process Management Journal*, 17 (4), pp. 619–638.

[33.] Singh, R. K. (2013), Prioritizing the Factors for coordinated Supply Chain using Analytic Hierarchy Process (AHP), *Measuring Business Excellence*, 17(1), pp. 80-98.

[34.] Singh, R. K., Garg, S. K. and Deshmukh, S. G. (2010), Strategy Development by Indian SSIs, *Industrial Management and Data Systems*, 110(7), pp. 1073-1093.

[35.] Singh, R. K., Kumar, R. and Shankar, R. (2012), Supply Chain Management in SMEs: A Case Study, *International Journal of Manufacturing Research*, 7(2), pp. 165-180.

[36.] Soroor, J., Tarokh, J. M. and Shemshadi, A. (2009), Theoretical and Practical Study of Supply Chain Coordination, *Journal of Business and Industrial Marketing*, 24(2), pp. 131-142.

[37.] Stanley, E. F., Cynthia, W., Chad, A. and Gregory, M. (2009), Supply Chain Information-Sharing: Benchmarking a Proven Path, *Benchmarking: An International Journal*, 16(2), pp. 222-246.

[38.] Tejpal, G., Garg, R. K. and Sachdeva, A. (2013), Trust among Supply Chain Partners: A Review, *Measuring Business Excellence*, 17(1), pp. 51-71.

[39.] Thakkar, J., Kanda, A. and Deshmukh, S. G. (2008), A Conceptual Role Interaction Model for Supply Chain Management in SMEs, *Journal of Small Business and Enterprise Development*, 15(1), pp. 74-95.

[40.] The Supply Chain Council (2002), http://www.supply-chain.org/, 10/09/02.

[41.] Umble, E.J., Haft, R.R. and Umble, M.M. (2003), Enterprise Resource Planning: Implementation Procedures and Critical Success Factors, *European Journal of Operational Research*, 146, pp. 241–257.

Appendix

Table A1. Assessment of critical success factors in literature

No	CSFs	References for the past decades
1	Devoted resources for supply chain	Singh, Garg and Deshmukh (2010); Singh (2013)
2	Top management commitment	Sandberg and Abrahamsson (2010); Singh (2011); Singh (2013)
3	Development of effective SCM strategy	Soroor, Tarokh and Shemshadi (2009); Singh, Garg and Deshmukh (2010); Singh, Kumar and Shankar (2012); Kumar, Singh and Shankar (2014)
4	Development of reliable suppliers	He, Zhao, Zhao and He (2009); Kumar, Singh and Shankar (2013); Kumar, Singh and Shankar (2016)
5	Logistics synchronization	Singh, Kumar and Shankar (2012); Kumar, Singh and Shankar (2013); Kumar, Singh and Shankar (2016)
6	Information sharing with SC members	Stanley, Cynthia, Chad and Gregory (2009); Singh, Kumar and Shankar (2012)
7	Trust development in SC partners	Bianchi and Saleh (2010); Singh (2013); Tejpal, Garg and Sachdeva (2013)
8	Focus on core strengths	Thakkar, Kanda and Deshmukh (2008); Kumar, Singh and Shankar (2012); Kumar, Singh and Shankar (2014)
9	Long-term vision for survival and growth	Thakkar, Kanda and Deshmukh (2008); Singh, Kumar and Shankar (2012); Kumar, Singh and Shankar (2013)
10	Use of modern technologies	Arshinder, Kanda and Deshmukh (2008); Thakkar, Kanda and Deshmukh (2008); Singh (2013)
11	Higher flexibility in production system	Arshinder, Kanda and Deshmukh (2007); Kumar, Singh and Shankar (2013)
12	Forecasting of demand on point of sale	Francesca, Bianco and Mauro (2008); Arshinder, Kanda and Deshmukh (2008); Marek and Malyszek (2008)

Figure A1. Framework for the study.