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# **Exploring Supply chain risks management influence on firms performance under the mediation of customer service and the modération of information system : the case of Cameroon agro industrial sector**

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### **Abstract**

This research aim to determine the influence of downstream supply chain risk management on performance of food industries firms in developing country. Research use a combination of qualitative data obtained through semi-direct interviews with supply chain managers, and quantitative data obtained through the survey of agro industrial companies' sample. This is done through the lexical analysis and by the Structural Equation Modeling using the Partial Least Square method (PLS). Results show that strategic risks management positively influences the performance of agroindustrial companies. This link is both direct and indirect through customer relations. The customer relationship negatively affects firm's performance. But the management of strategic risks and part of the operational risks significantly influence the company's customer relationship. This relationship is moderated by the implementation of effective information systems. The sample size is the main limit.

### **Résumé**

**Analyse de l'impact des risques de la supply chain sur la performance des entreprises sous la médiation du service client et la modération du système d'information : le cas du secteur agroindustriel camerounais**

Cet article vise à déterminer l'impact du management des risques de la supply chain aval sur la performance des entreprises agroindustrielles au Cameroun. Il utilise les données qualitatives issues des entretiens semi-directifs avec les managers de la supply chain et les données quantitatives obtenues des enquêtes à l'aide d'un questionnaire sur un échantillon d'entreprises. Après l'analyse de contenu lexicale, l'analyse des données du questionnaire a été effectuée par les méthodes d'équation structurelles utilisant le Partial Least Square (PLS). Il ressort que les risques stratégiques influencent positivement la performance des entreprises. Cette influence est directe et indirecte via la relation client. Par contre, les risques stratégiques et une partie des risques opérationnels (prévisions collaboratives), affectent positivement la relation client. L'implémentation des systèmes d'information efficaces joue un rôle médiateur dans la relation management des risques et relation client. La taille de l'échantillon constitue la principale limite de la recherche.

Keywords: agro-alimentaire / agrifood, customer relationship management, information system, operational risks, performance, promotion, risque / risk, Strategic risk

## **Introduction**

Supply Chain Risks Management (SCRM) is widely recognized as a tool used by companies to improve their performance. For Lavastre *et al.* (2014), SCRM help company to build and maintain its competitive advantage. While the importance of managing supply chain risks increases, research in the domain focuses on strategic issues (Ganguly and Guin 2011), and are among that making the most progress in the field of logistics (Wieland and Wallenburg, 2012).

As noted Giannakis and Louis (2011), risk management is an important contributor of managerial and control decisions. In addition, the willingness to evolve in the collaboration networks in order to reduce risks leads managers to shift their production and distribution strategies (just-in-time production, partial or total outsourcing of certain activities) (Christopher and Lee, 2004). All these initiatives make supply chain risk management not only a catalyst for corporate performance, but a fruitful field of research (Tang and Musa,

2011).

If the SCRM concerns all economic sectors, the food industries seem to be more concerned. For Christopher and Lee, (2004), reasons are probably in the nature of their production (shorter life cycle) and their high exposure to natural phenomena. For Sharma *et al.* (2020), supply risks, demand risks, financial risks, logistics and infrastructure risks, management and operational, policy and regulation, biological and environmental risks have a significant impact in Agricultural Supply Chain. Foods sector is characterized by an important knot of collaborations, cooperation and complex coordination between different stakeholders (producers, suppliers, carriers, distributors, retailers, customers). Any failure of these relations is likely to either lengthen deadlines, or to create breaks and affect partners' performance.

Despite the dynamism of research in SCRM (Wieland and Wallenburg, 2012), no study on risk management and performance under the mediation of customer relationship and the moderating effect of information system, has to our knowledge, been conducted until then (Elock Son, 2019). Yet, this integrative approach is important in highly connected business relations. This research aims to fill this void and to enrich the theoretical and empirical literature. Our paper has the peculiarity of dealing with this mediation and this moderation, by investigating within agribusiness companies operating in Cameroon. Research will answer to these questions: does the SCRM affect agribusiness performance in developing country? What role do customer relationships play between risk management and performance? Does these links vary in the presence of information system or sale promotions?

To answer these questions, this research is organized as follows: it will begin by highlighting the conceptual framework. Then, we present the methodology of data collected from a sample of 78 supply chain managers in Cameroon and analyses performed by Partial Least Squares methods. Finally, the results will be presented and discussed.

### **Conceptual framework and hypotheses**

Supply chain risk is analyzed as the probability of an incident associated with inbound supply from individual supplier failures or the supply market occurring, in which its outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety (Zsidisin, 2003). Supply chain risk is used to refer to uncertain internal or external, environmental variables that reduce outcome predictability (Jüttner *et al.*, 2003).

## **Risks management and supply chain performance**

Performance is generated by more than one factor within the supply chain. It can result from partnership (Aviv, 2001, Brulhart, 2002), the combination of organizational effectiveness and efficiency (Lai *et al.*, 2002), customer loyalty (Ramanathan, 2010), and other variables. Understanding performance level in dynamic logic of supply chain actions supposes that the managers combine both their know-how and all the logistical, financial and technical available resources. But in companies where supply chains are becoming increasingly global and complex, risk is ever-present.

The existence of risk imposes managers to ripe monitoring tools and develops specific behaviors to cope with its possible consequences (Djuatio, 2004). The occurrence of risk may impact company's operation in the short, medium and long term. For Brandon-Jones et al. (2014), successful chains would be those that are resilient to the occurrence of risk. The premise of this research is therefore: Risk management influences supply chain performance.

H1 – The operational risk management positively influences downstream supply chain performance

H2 – The strategic risk management positively influences downstream supply chain performance

### **The influence of customer relationship management on company's performance**

After COVID19 outbreak, Hoek (2020) found that pandemic forces companies to consider that collaboration with suppliers and developing new sources of supply is of growing importance to reduce risk in the supply chain. Stanley and Wisner (2001) identified a positive and sequential relationship involving upstream integration and service quality. Their results show that the implementation of cooperative buyer / supplier relationships increases service quality to internal customers, which in turn affects the ability to provide quality service to external customers. For example, higher quality service can help generate high revenues and high profitability (Rust *et al.*, 1995). Auh and Menguc (2007) reported that, adoption of a customer orientation is believed to lead to greater firm performance and to superior perceived quality.

Tan *et al.*, (1998), in turn, argue that taking advantage of the supplier's capabilities and considering a long-term supply chain perspective in customer relations were both correlated with the company's performance. In addition, Carr and Pearson (1999) have shown that the cooperative customer-supplier relationship positively impacts financial performance of firms. It can therefore be established that:

H3 – the customer relationship positively influences the supply chain performance.

### **The operational risk management and customer relationship within the supply chain**

The integrated supply chain is widely considered by professionals and researchers as a vital contributor to supply chain performance (Prajogo and Olhager, 2012). However, for the authors like Flynn *et al.* (2010) and Devaraj *et al.* (2007), the best approach to supply chain integration is to start by developing internal integration capabilities, then focus on that of customer and supplier. According to Auh and Menguc (2007) finding, depending on whether the company's organizational structure is centralized or not, whether the roles are clearly defined and formalized or not, the mechanisms of customer orientation can guarantee a level relational performance of the company. We therefore postulate that:

H4 – The operational risks management positively influence customer relationship of the company

### **Strategic risks management and customer relationship**

They are inherent to information distortion (Trkman and Mc Cormack, 2009), double marginalization (which will not be analyzed in this work), loss of flexibility and control in the event of outsourcing of one or several activities. Their management is based on theories of transaction cost and agency and brings an added value to the supply chain.

In one hand, the presence of distorted information throughout the supply chain can lead to considerable inefficiencies. Distortion of demand information arises when the retailer issues orders based on her updated demand forecast (Lee *et al.*, 1997a). Empirically, the bullwhip effect increases supply chain operational costs (Lee *et al.*, 1997a and b). The absence of a structured information system is likely to favor its emergence.

In other hand, several researches justify outsourcing by advantageous costs that it provides (Levina and Ross, 2003). These advantages can be seen in terms of economies of

scale, expertise of procedures, access to capital and access to expansive technology (McCarthy and Anagnostou, 2004). Some researches like that of Hsiao *et al.* (2006) focused on the benefits and risks of outsourcing in traditional logistics relationships. For Leuschner *et al.* (2014), the main three reasons for logistics outsourcing are: service improvement, cost reduction and the desire of organizations purchasing these services to focus on core competencies. Outsourcing can also be seen as a market adjustment variable: it allows for more flexible business management (Elock Son, 2019). By choosing to entrust part of its production/distribution, the company will, at the same time, transfer the economic risks to its suppliers (Mathieu *et al.*, 2013). These authors find that the minimization of costs does not seem to be a sufficient reason for outsource. We formulate therefore that:

H5 – strategic risk management positively influences on the company's customer relationship.

### **Customer Relationship Management: mediating between supply chain risk management and downstream performance of company**

Customer orientation typically manifests by prioritizing allocation of resources to deliver high value and customer satisfaction (Noble *et al.*, 2002). It forces Supply Chain actors to understand this relationship and integrate it into their forecast responses that must be both common and autonomous. A supply chain that implements either type of forecast in return discounts a level of profit that can consolidate the chain's performance. However, the only prediction is not enough to guarantee SC performance. The development of lasting and stable customer relationships can mitigate risk effects (Chen and Paulraj, 2004). For these authors, the link between risks event and performance can shift through customer relations management. The quality of customer service promotes knowledge of customer needs, helps to orders control and increases company's performance (Elock Son, 2019). Which leads to postulate that:

H6 – the customer relationship plays a mediating role between operational risks management and company's performance.

H7 – the customer relationship plays a mediating role between strategic risks management and company's performance.

### **The Influence of Information System (IS) on the link between Supply chain Risk Management and Customer Relationship.**

Li *et al.* (2009) proposed a conceptual model to study the impact of IT implementation on SC performance. Their result shows that the use of these tools does not have a direct effect on SC performance, but can improve it thanks to its positive effect on SC integration. Rai *et al.* (2006) showed that the integrated and interoperable SI / IT infrastructure enables company to achieve a higher level of integration and thus significant and stable performance. IT contributes to improve company's profitability (Dehning *et al.*, 2007). Digitization tools are important for managing the SCs and enhancing their performance in this dynamic environment (Jabbour *et al.*, 2020). For these authors, digitization aims to increase productivity, to enhance the operations management, to increase the resilience of the SC, to facilitate exchanges but also lighten the management of relationships between customers and suppliers and it participates in the improvement of quality management practices and sustainable SC. We thus formulate the following hypotheses:

H8 – IS implementation moderates the relationship between operational risk management and customer relationship.

H9 – IS implementation moderates relationship between strategic risk management and customer relationship.

## **Sale promotions**

In retail marketing, sales promotions have very significant effects on consumer behavior (Laroche *et al.*, 2003), notably by substantial increase in short-run purchases. Promotions trigger unexpected purchases; stimulate consumer acquisition of unpromoted products (Mulhern and Padgett, 1995); accelerate consumer visit in stores. Promotional signals increase shopping comfort by reducing search costs (because brand is more visible at the store) (Chandon *et al.*, 2000). DeI Vecchio *et al.* (2006) found that, on average, sales promotions do not have a positive or negative effect on brand preference beyond the promotion period. Dussart (1997) notes that 84% of push promotions would have a negative impact on a brand's profitability and that 89% of pull promotions would be unprofitable. PIMS (1997) highlights a weak correlation between a high level of sales promotion and profits.

These results support the fact that strategies backed by an intensification of promotional activities tend to reduce profit margins for manufacturers and thus prevent rapid returns on investment. Yet, some managers use sales promotion as a demand catalyst. For

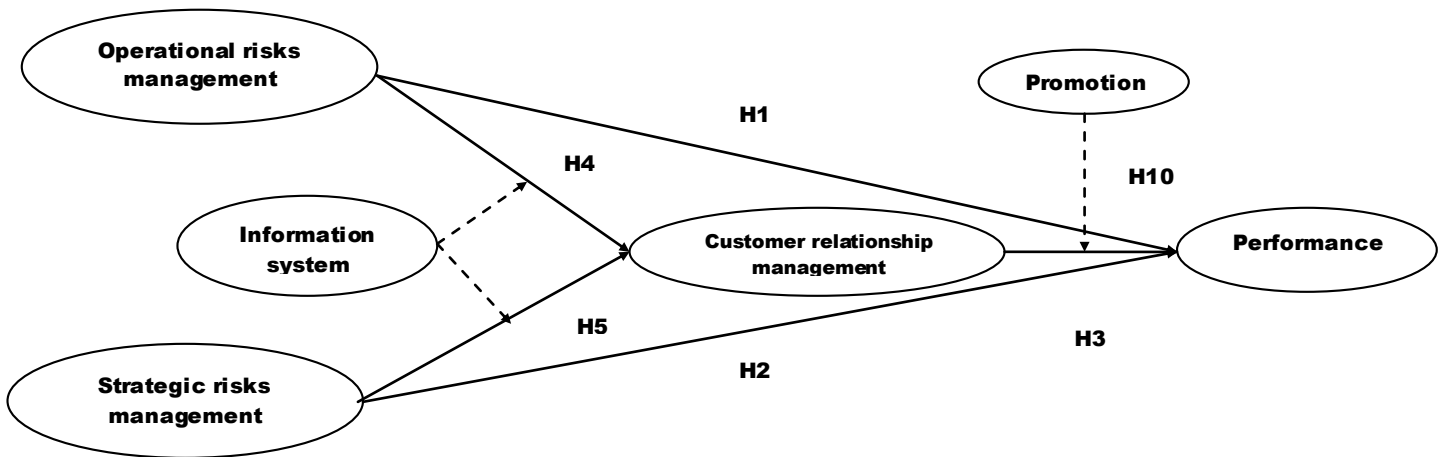


others, promotions would create sympathy for the brand. And indirectly it would impact the producer-distributor relationship. Which leads to postulating that?

H10 – promotion moderates the relationship between customer relationship and SC performance.

In light of these hypotheses, the following model is proposed.

**Figure 1: theoretical model**



### Research methodology

This exploratory research was conducted in two phases. Based on a literature review of major publications on supply chain risk management, an interview guide has been drawn up. Then, 10 semi-directive interviews were conducted with supply chain managers. The interviews were conducted for a total of 12h19min with an average of 1h21min per interview. Topics were Information system, customer relationship strategy, supply chain risks identification and management, promotion strategy, transport performance, operational/relational performance measures. After transcription, a corpus of 87 351 words was collected. We then perform a content analysis via Sphinx iQ2. This step helped us to:

- Classify SC risks: operational risks through procedure risk (orders management), forecasting risks (collaborative forecasting with wholesalers) and strategic risks (information risk and foods transport risk);
- Identify qualitative and quantitative downstream performance measures within

agribusiness

A questionnaire was developed from this content analysis and returned to the same manager for a pretest and to ensure that it reflects the arguments made during the interviews.

The final questionnaire was run on a sample of 300 agribusiness supply chain managers (one manager per company). 78 questionnaires fulfilling the criteria<sup>1</sup> were returned. The questionnaire was run face-to-face and by email.

The risk measurement scales are mainly based on those of Hsiao (2010a), on the capacity assessment of logistics providers. They are measured on a 5-point Likert scale (strongly disagree with strongly agreeing). The performance is apprehended through quasi-perceptual measurements across Likert scales of 1 to 5 (very good to very bad) which, according to Ketokivi (2004), allow researchers to obtain the most relevant and important measures. Thus qualitative performance was inspired by Chen and Paulraj (2004). Quantitative performance (sales volume, turnover achieved with year n-1 reference and the margins realized) was inspired by Hsiao (2010a), Chen and Paulraj (2004). Here participants are asked to situate their level of performance relative to that of main competitor in the market. The customer relationship metrics built here (fulfillment of order deadlines, claims management, delivery reliability, flexibility) are inspired from Wallenburg *et al.* (2011).

Data processing was done using SPSS software. After data purification, a factor analysis identified four factors that account for about 64% of the planned construct. The model was tested by the structural equation modeling by Partial Least Squares regression using SmartPLS3 software (Ringle *et al.*, 2015). This method is justified by the conceptual approach, the size of the sample, the meaning of predicted relations and number of indicators per construct/complexity of the model. Indeed, the research is quite exploratory, the relations measured here have been tested in the upstream or in the global supply chain, but have been tested little in downstream. In this situation, Sosik *et al.* (2009) recommend the PLS method.

## Resultats

Data obtained show that 38.5% of companies in Cameroon outsource their transport activity to get their products to distributors. The companies of our sample are mostly medium-sized companies with more than 10 employees (56.2%), with an annual turnover of more than

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<sup>1</sup> Having at least one industrial production unit, possess a structure with defined functions / departments, employing more than 10 employees...

2 million Euros. 82.4% of respondents were decision makers in the supply chain or sales department. The Kaiser-Meyer-Olkin index (0.64) and the significant Bartlett test at 1% threshold for all the factors selected are satisfactory. Only axes whose eigenvalue is greater than 1 and which explained a minimum of variance of 50% were retained. This procedure is recommended by Hair et al. (1998) to avoid the problems of multi-collinearity. The convergent validity of the model is thus ensured by this result.

**Table 1:** Principal component analysis after varimax rotation (see table 1 appendices)

### Model validity

The analysis in Table 1 shows that all conditions are met to ensure the validity of the seven constructs<sup>2</sup>. Overall, homogeneity is insured because all Cronbach alphas value are greater than 0.5. This is in accordance with the recommendations of Nunnally (1978) who found acceptable these values between 0.5 and 0.7 in the context of exploratory research. Similarly, in table 1 above, the factor contributions are all greater than 0.5 overall.

The discriminant validity evaluated here by examining the correlations between constructs and cross-contributions is satisfactory. Because all items contribute more to their construct than to neighboring construct. Following the advice of Sosik *et al.* (2009), one also realizes that the shared variance between constructs (measured by the correlations between constructs) is less than the variance shared by a construct with its indicators (measured by the square roots of the average variance extracted) see Table 2 below.

**Table 2: Correlations (Latent Variable) for the Overall Sample**

Facteur	SR	CRM	PERF	IS	OR
SR	,836				
CRM	-,003	,865			
PERF	,072	,015	,752		
IS	,025	,105	-,069	,678	
OR	,007	,046	-,011	-,027	,747

PERF=performance, CRM= customer relation, OR=Operational risks, SR=strategic risks, IS=information system

All significant  $R^2$  values meet the minimum of 0.10 overall. However, Customer Relationship records the highest  $R^2$ . Finally, the determination coefficient of 21.5% on

<sup>2</sup> The 8th construct (quantitative performance) was abandon after confirmatory analysis. Because it impoverished the model fit quality, its  $R^2$  is not significant.

average suggests the existence of other factors that could influence the relationship between supply chain risk management and business performance.

**Table 3: model evaluation**

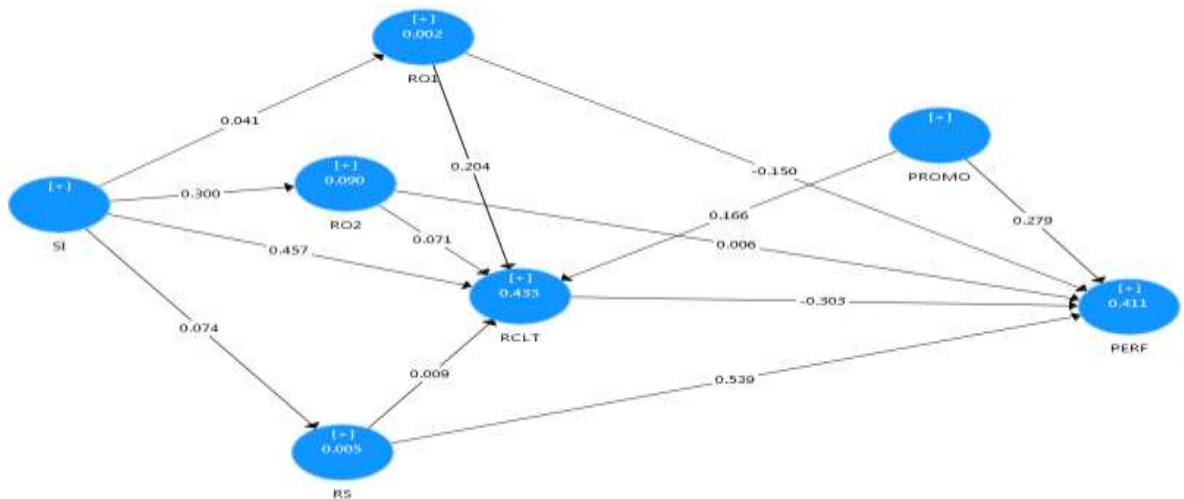
Latent variable	R <sup>2</sup>	R <sup>2</sup> adjusted	T Statistics
PERF	0,411	0,370	4,206
CRM	0,433	0,394	4,182
OR	0,002	-0,011	0,060
SR	0,005	-0,008	0,153
Average	<b>0,188</b>		

### Hypothesis testing

Chin (1998) admitted that, hypothesis validation or invalidation in a bootstrapping analysis will depend on the value and significance of t-student. Thus, the hypotheses are statistically significant at the threshold  $p < 0.01$ ;  $p < 0.05$  or  $p < 0.1$ , if and only if their t-student is greater than or equal to the absolute value of 2.58, 1.96 or 1.645 respectively. Below the 10% threshold, the significance of the hypothesis will not be supported.

Below (figure2) the model adjusted.

**Figure 2: model adjusted to overall**



**Table 4: Results of structural model estimations**

Hypothèses	Relations	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV)	P Values	Statut hypothèse
H1	<b>OR -&gt; PERF</b>	-0,150	-0,135	0,126	1,189	0,234	NV
H2	<b>SR -&gt; PERF</b>	0,539	0,524	0,089	6,042	0,000	V
H3	<b>CRM -&gt; PERF</b>	-0,303	-0,299	0,178	1,701	0,089	NV
H4	<b>OR -&gt; CRM</b>	0,204	0,187	0,104	1,965	0,049	V
H5	<b>SR -&gt; CRM</b>	0,009	0,003	0,156	0,055	0,956	NV

Overall, operational risks management does not influence the downstream supply chain performance, H1 is not validated. But, result validates the hypothesis 2. Thus, strategic risks management positively influences company's performance. The customer relationship negatively influences the performance of agribusiness chain, a contrary to our expectation. H3 is rejected. Similarly, neither strategic risk management nor operational risk management, have a significant influence on customer relationship. H5 is rejected. However, procedures simplifications has a significant and positive influence on customer relationship. This result validates H4. Although hypothesis 4 is partially rejected, this result leads to the conclusion that the collaborative forecasts strategy promotes the development of a good relationship with its customers-distributors.

The test of mediation hypotheses followed the steps enacted by Iacobucci *et al.* (2007) followed by Sobel's (1982) test. Similarly, the software chosen for analysis, SmartPLS allows to perform these tests directly. This simplifies the two-step process of the Preacher and Hayes program (2004, 2008) with mandatory export of the file to SPSS or SAS.

The mediation detection approach first examines the existence of a significant indirect effect  $a \times b$  (Zhao *et al.*, 2011). This significance is obtained with an alternative bootstrap test (Preacher and Hayes, 2004) available in the SmartPLS3 version. If there is an indirect effect  $a \times b$  significant, knowing the significance of  $c$ , a Sobel z-test is performed to confirm the sign of  $a \times b \times c$  obtained from bootstrapping in order to decide which kind of mediation is. By following the same procedure on the relations set, we obtain the following results.

The customer relationship does not significantly mediate the relationship between operational risk management and performance. H6 is rejected. On the other hand, there is a mediation of the customer relationship between strategic risk management and performance, H7 is validated.

To test the moderations of H7, H8 and H9 hypotheses, we have chosen to use the structural equations following the procedure of Kirkman and Shapiro (2001), which simultaneously represent different dimensions of risks (procedure, forecasting and strategic ), the information system and the interaction between risk dimensions and information system.

There is a simple positive effect of strategic risks on customer relationship management (0.620) and a simple positive effect of customer relationship on information system (0.623). The interaction of strategic risks x information system positively affects the customer relationship. Indeed the interaction *strategic risk x information system* has a significant positive effect on customer relationship (0.620). Hypothesis H9 is therefore confirmed, the information system is a moderating variable of strategic risks and customer relationship. H8 is rejected, information system do not moderate the relation between operational risks and customer relationship management.

There is no significant effect of customer relationship management on performance or an effect of sales promotions on performance. *Customer Relationship Management (CRM) x Sales promotion* is not significant. H10 is therefore is rejected.

## **Discussions, implications and conclusion**

Overall, the research aimed to check whether supply chain risk management (SCRM) influences agribusiness performance. It appears that operational risk management does not influence performance, which is not in line with the theory. The logic of the Balanced Scorecard model of Kaplan and Norton (2001) that excellent customer performance derives from processes, decisions and actions that come from the organization is not verified in this research.

Preliminary research conducted with supply chain executives revealed the negative impact that the increase in order processing or sales administration procedures may have on service quality. Indeed, managers have emphasized it while stating that the food products short life cycle does not allow them to weigh down the procedures. This may explain this weak negative relationship between procedure risks management and performance.

In addition, the non-significant positive relationship between forecasting risk management (collaborative forecasting) and performance is in contradiction with Aviv (2001) finding. They found that collaborative forecasting guarantees best performances. In the food

distribution chains, however, managers mentioned fact that the wide number of customers limits collaborative demand forecasting initiatives. Their forecasting activity is based on sale trends. On the other way, forecasts are made within the company with participation of several departments. Although it's less significant, the relationship between these constructs and customer relationship is more important than the relationship they have with performance. It can thus be concluded here that operational risks management contributes more to the customer relationship consolidation than to the perceived performance of supply chain in developing countries.

On the other way, strategic risk management positively and significantly influences agribusiness performance. This link is both direct and indirect via CRM in Cameroon. This result is in accordance with theory. He joins those found by Aviv (2001) and Brulhart (2002) who argued that supply chain performance is supported by close partnerships management. This result is also different from the predictions of McCarthy and Anagnostou (2004) who fear the loss of flexibility, increased costs and loss of control for outsourced activities.

Research also needed to verify the link between customer relationship management and performance. The results confirm the presence of link, but rather in negative direction. This result is not complying with theory. It is different from that of Flynn *et al.* (2010) who found that the customer relationship orientation has a positive impact on upstream supply chain performance. The rejection of this hypothesis in downstream, in Cameroonian context, may be due to the sole consideration of customer relation dimension as the antecedent of performance. Research that has positively correlated this with performance has incorporated it into an SCM practice package such as the strategic partnership with suppliers. These practices can provide the organization with a competitive advantage over costs, quality, reliability, flexibility and delivery times. Li *et al.* (2006) also found no direct link between these practices and performance because it provides a competitive advantage that in turn guarantees supply chain performance. This result raises questions in a context where companies are developing loyalty programs with their distributors in order to increase market share.

The relationship between strategic risk management and CRM is not moderated by the implementation of effective information systems in Cameroon because of poor investments on IS and lack of transparency between stakeholders. While IS moderates the relationship between procedure risks management and CRM, sales promotions do not moderate the CRM and performance relationship. But, they contribute to strengthening CRM. Managers consider them as a catalyst for commercial relationship between producer and seller. Abbad *et al.*

(2012) consider promotion as an element that contribute to distributor satisfaction with the supplier, but Dussard (1997) and PIMS deplore it negative impact on the producer's results.

On the theoretical side, this research shows that SR (transport outsourcing) in supply chain is not a drivers of control nor flexibility loss as pointed out by McCarthy and Anagnostou (2004), but a strategic choice to focus on "core service". At the same time, it is a risk-sharing strategy linked to the transportation activities using professional carrers. Perfectly manage these relationship can leads to reduce perceive cost arise in food distribution chains in developing countries.

From a managerial perspective, rather than suffering the potential chain disruption, managers should develop identification, treatment and management practices for operational and strategic risks. For strategic risks, they must divest themselves of activities for which they do not hold key competences such as transport activities through a development of partnerships with Logistic services providers. If the partner's selection is done in the rules, and the latter fulfill specific criteria, this would help improve supply chain performance.

## **Conclusion**

Current research on supply chain risk management integrates demand uncertainty as the main disruptive element of upstream forecasts (Jüttner 2005, McKinnon 2006, Nagurney *et al.*, 2005, Christopher and Lee 2004). They do not jointly consider procedures management practices, customer relationships or organization partners as risk drivers that may impact forecasts. The particularity of this research is related to the consideration of these different elements in the context of agribusiness distribution chains in developing countries.

This research invites the Cameroon managers to adopt the transport outsourcing strategy. Similarly, the implementation of effective information systems is a guarantee of the company customer relationship success. This system helps to mitigate information system risk from one level to another within the company and between company and its partners. This is to guarantee objective forecasts and to encourage customers to adhere to the chain management process. It invites managers to redefine their promotion program and to revise their relationships with their distributors.

The main limitation of this research is related to the sample size because the data collected are not sufficiently representative of the agribusiness sector. Like most research on industrial units, efforts to collect this data have been hampered by the inaccessibility of



targeted companies. Future research can integrate, alongside CRM, trust, competitive advantage, product quality. They can also reinforce the aspects of subjective performance through the company brand image or attempt a more objective measure of performance.

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**Appendices**  
**Table 1**

	SR	CRM	PERF	IS	OR
<b>Strategic risks (<math>\alpha = 0,809</math>)</b>					
Les prestataires ne respectent pas toujours la stratégie de l'entreprise	0,794				
Les délais de livraison ne sont pas toujours respectés par les prestataires	0,785				
A chaque fois que nous sous-traitons une activité, nous perdons le contrôle de celle-ci	0,765				
Le fait que nous n'ayons pas notre propre logistique de transport entraîne les risques liés à la sécurité des produits (perte, vole, accident)	0,747				
La gestion des réclamations est faite dans les délais	0,586				
<b>Customer Relationship Management (<math>\alpha = 0,807</math>)</b>					
La discussion permanente avec les clients est une marque de confiance entre l'entreprise et ses clients		0,859			
Les visites de la clientèle sont un gage de la confiance avec eux		0,805			
L'information sur les stocks des distributeurs permet d'anticiper sur leurs besoins		0,698			
Nous sommes assez flexibles face aux sollicitations de nos clients		0,689			
Les délais de traitement des réclamations sont satisfaisants au sein de notre entreprise		0,633			
<b>Performance (<math>\alpha = 0,717</math>)</b>					
La confiance entre l'entreprise et les clients			0,779		
Le respect des délais de livraison			0,755		
Le temps de livraison			0,722		
<b>Information system (<math>\alpha = 0,668</math>)</b>					
C'est à travers les rapports des vendeurs que nous obtenons les informations nécessaires pour la gestion de notre distribution				0,704	
Le système de reporting des vendeurs limite les erreurs dans la transmission des données du marché				0,645	
Le rythme de réunion accélère l'actualisation des informations				0,633	
Le téléphone nous permet de limiter les pertes de temps dans la transmission des informations				0,630	
Nous élaborons nos prévisions en collaboration avec les clients				0,564	
<b>Operational risks (<math>\alpha = 0,67</math>)</b>					
Le nombre de ceux qui interviennent dans le processus de livraison des commandes est assez élevé au sein de notre entreprise					0,828
Le traitement des commandes est fait en collaboration avec plusieurs départements au sein de notre entreprise					0,793