Abstract - Several research surveys have shown that improvement of inter-enterprise processes is one of the major issues in Supply Chain Management. In this context, some researchers have examined the theoretical implications of supply chain collaboration through unilateral supply policies, while others have used theoretical models to examine bilateral information exchange rather than unilateral policy reasons. Some recent studies have stressed on a better characterization of the relationship in Collaborative Supply Chains. In this context, this paper aims to determine how a relation between two partners can be characterized and how the contribution of the relation to the performance can be evaluated. To achieve this goal, we have developed an integrated framework that is able to characterise a dyadic collaborative relation and evaluate the value creation of this relation according to several different attributes.

Keywords - Dyadic Relationship, Supply chain collaboration, Performance, Collaborative Value-Added.

I. INTRODUCTION

According to Crowston and Malone [1], the term relationship can be taken to mean a situation of dependence (or interdependence) of resources and/or activities involving coordination. If this activity of dependence requires coordination, it does not necessarily imply a collaborative relationship. Collaboration between partners has been covered extensively in the strategic management literature [2-4]. Several research surveys have shown that improvement of inter-enterprise processes is one of the major issues in Supply Chain Management [5 and 6].

Recently, the integration of other corporate performance factors, linked to ethics, sustainable development, or Corporate Social Responsibility [7 and 8], emphasized the limitations of models based on a purely financial short-term orientation.

Beyond the classic economic performance that these new relationships can bring to the company and its partners, we propose in this paper a framework to analyse and to characterize inter-enterprise relationships based on the Collaborative Value-Added.

II. Context : Supply Chain Collaboration & Value Creation

A. Supply Chain Collaboration-SCC

SCC is often defined as two or more enterprises working together to create a competitive advantage and higher profits of enterprises that cannot be achieved by acting alone [9]. It has also been defined as the creation of close and long-term partnerships where partners work together and share information, resources, and risk to achieve common goals [10 and 11].

The advent of supply chain collaboration creates the need at inter-enterprise level to pay special attention to the understanding of collaboration. This contributes in preparing partners to create collaborative efforts successfully [13]. In this paper, the term “collaboration” describes the close cooperation between autonomous partners that are involved in mutual efforts. This aims to effectively meet customer needs with lower costs (Figure 1).

Fig. 1. Supply Chain Collaboration [12]

B. Value Creation-VC

The concept of “value” covers several dimensions. Each one of these dimensions defines “a plurality of concepts, or even a plurality of tools or techniques for measuring a given concept” [14]. The figure below (Fig. 2) shows the multiple aspects of value creation beyond the company’s book value.

Fig. 2. The multiple aspects of value creation (adapted from [15])
### III. Literature review: Analyse of Collaboration and its Value

#### A. Attributes of relationships characterisation

Several authors discussed the question of collaborative relations from different viewpoints:

- Degree of engagement in a relation;
- Long-term orientation of a relation;
- Interdependence between partners;
- Centralisation of decisions;
- Degree of exchange and information shared;
- Formalisation of a relation.

Trust between partners also appears to be an important variable in analysing relationships. Table I below synthesises and classifies some studies according to the used attributes.

#### B. Measuring Value Creation in relationships

Several works focused on identification and characterisation of value creation; usually omit balance sheets (intangible capital). However, measurement of this intangible capital becomes indispensable in the context of changing economy in de-industrialization and wholly informational society [17]. In this context, several models/repositories have been proposed: Balanced Score Card (BSC); Model of Skandia; Global Reporting Initiative (GRI); Model of Baldrige (USA); EFQM Excellence Model (EU); etc. Section below, briefly reminds, principles of each model with modality of value created integration (or intangible capital).

**Balanced Score Card (BSC):** The concept of the Balanced Scorecard (BSC) was developed by Kaplan and Norton [18] in the early 1990s. It was proposed as a new approach for measuring performance to overcome limitations of short-termism theories and accounting approaches. The BSC concept is based on the assumption that tangible capital is no longer the only criterion determining competitive advantages, but other factors may be used such as intellectual capital, knowledge or customer orientation. Kaplan and Norton have suggested an approach that focuses on business strategy through four perspectives: finance, customers, processes, learning and innovation. According to the authors, this representation allows any company to link strategy and action and then to evaluate performance by adopting a global and balanced vision of its activities (Fig. 3).

The innovative idea of the Balanced Scorecard was to complete evaluations that were too often focused on only the financial aspects (oriented towards the managers and the shareholders) by other indicators related to customers satisfaction, quality of internal processes and more intangible dimensions such as organisational learning (improvement).

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**Table I. Synthesis of used attributes in literature review**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Analyzed works</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confidence</td>
<td>100</td>
</tr>
<tr>
<td>2. Power</td>
<td>80</td>
</tr>
<tr>
<td>3. Conflicts intensity</td>
<td>50</td>
</tr>
<tr>
<td>4. Conflicts resolution</td>
<td>30</td>
</tr>
<tr>
<td>5. Control</td>
<td>20</td>
</tr>
<tr>
<td>6. Interdependence</td>
<td>10</td>
</tr>
<tr>
<td>7. Formalisation</td>
<td>5</td>
</tr>
<tr>
<td>8. IT usage</td>
<td>2</td>
</tr>
<tr>
<td>9. Commitment</td>
<td>1</td>
</tr>
<tr>
<td>10. Exchange of information</td>
<td>0.5</td>
</tr>
<tr>
<td>11. Relationship lifecycle</td>
<td>0.2</td>
</tr>
<tr>
<td>12. Others</td>
<td>0</td>
</tr>
</tbody>
</table>

Observe, these research works (Table 1) do not agree a unique set of criteria (attributes) in typifying relations between supply chain partners.

By analysing independent attributes of a relationship, this paper provides a brief presentation of various frameworks characterising it. Actually, the outline in this subsection encompasses different scopes which can describe each type of relationship. As well, it is based on the context of this relationship and its performance (Fig. 2).
The BSC was then gradually transformed to integrate the issue of societal performance (see [19]), seeking to develop and disseminate the concept of sustainability balanced scorecard.

**Skandia Model/Navigator:** Skandia is considered as the first large company to have made a truly coherent effort at measuring knowledge assets. Skandia first developed its Intellectual Capital-IC report internally in 1985, and became the first company to issue an intangible capital addendum accompanying its traditional financial report to shareholders in 1994 [20], called the Navigator with five areas of focus: financial, customer, process, renewal and development, and human capital. This new accounting taxonomy sought to identify the roots of a company’s value by measuring hidden dynamic factors that underlie “the visible company of buildings and products” [20].

![Skandia’s Value Scheme](image)

Edvinsson and Malone [20] argue that their model represents such a fundamentally new way of looking at organizational value that it will never be confined to playing an adjunct role to traditional accounting.

The approach of Edvinsson and Malone can be enhanced by more recent research, carried out within the Observatory of the Immaterial that proposes the SAS model (http://observatoire-immateriel.com/).

**GRI (Global Reporting Initiative):** known as GRI is an international independent standards organisation that helps businesses, governments and other organizations understand and communicate their impacts on different issues. As of 2015, 7,500 organizations used GRI Guidelines for the sustainability reports.

The GRI Standards are the global standards for sustainability reporting. They feature a modular, interrelated structure, and represent the global best practice for reporting on a range of economic, environmental and social impacts (Fig. 5).

![GRI standards 2016](image)

**EFQM Excellence Model (EU):** The European Foundation for Quality Management-EFQM Excellence Model was first used in 1992 with the effort to improve the position of European companies in the competitive fight on global markets. It is a practical, non-prescriptive framework that enables organizations to assess where they are on the path to excellence; helping them to understand their key strengths and potential gaps in relation to their stated vision and mission.

The EFQM Excellence Model is based on nine criteria (Fig. 6). Five of these are “Enablers” and four are “Results”. The “Enabler” criteria cover what an organisation does and how it does it. The “Results” criteria cover what an organisation achieves.

![Criteria of EFQM Model](image)

Finally, below each criterion part are guidance points. Many of these guidance points are directly linked to the Fundamental Concepts.

**Value Reference Model-VRM:** This model lists all categories of processes required to support and enable the value chain execution under Govern and Plan categories. This includes processes supporting human capital management, assets management, performance management, etc. The structure of the VRM supports and enables corporations to integrate four critical domains: Enterprise Management, Product Development, Supply Chain Integration and Customer Relationship Management, using one reference model to support the vision of an integrated value chain. Key elements of the standard process VRM dictionary include inputs/outputs, metrics and best practices.
Through this literature analysis, we show that multiple approaches/models attempted to analyse value creation and/or intangible capital. Nonetheless, there is no consensus on a terminology or typology in defining value generated between partners. Besides, even if several models propose measures to evaluate tangible and intangible capitals, no model integrates the spectrum of different forms of relationship based on value created. Moreover, after a deep analysis of literature [21], we highlight an existing disparity between attributes that are used in analysing partners’ relationships in Supply Chain. In order to overcome these limitations, we propose, in next section, a first outline of a framework that integrates two dimensions (a relationship context and a collaborative value generated by this relationship).

IV. Towards a framework to analyse collaborative inter-enterprise relationships and its value creation

Commonly, an enterprise agrees collaborating with its partner in the purpose to achieve some objectives. Depending on the performance accomplished from this relationship, this enterprise decides to intensify this collaboration or, in contrary, to restrict (or to stop) it (Figure 7). According to Anderson and Narus [22], we consider this dimension as a global evaluation of relationships between partners. This dimension can be defined by the following two attributes: the perceived satisfaction; and the perceived effectiveness [20].

In this added dimension, the level represents improvement (versus degradation) of effectiveness and satisfaction of the enterprise in the achievement of tasks. Additionally, it is able to evaluate efficiency and effectiveness of processes between partners. We also assume that this dimension (“the perceived returns of a relationship”) has a direct impact on the other dimensions.

Figure 8 shows a primary template of this dashboard. It summarizes results of analysis and displays brief replies of participants.

![Fig. 8. Dashboard to analyse a dyadic relation in the network](image)

Fairly, this dashboard does not aim to provide exhaustive information of all company’s relationships with partners, but remains, for the moment, focusing on the characterisation of these relationships. The framework is built on analysis according to attributes characterising each type of relationship, as well as attributes sensitivity and perceived performance. In future prospects of this work, we already start introducing the concept of measuring collaborative value added along the supply chain from a collaborative perspective.

![Figure 9. A Collaborative Supply Chain Balanced ScoreCard Framework](image)

On the fact, “value added” refers to any additional value created at a particular stage of collaborative relationships between partners. In addition, in practical context, we integrate Brewer and Speh’s framework [23] in swapping the second level in our previous framework “Performances perceived: Perceived satisfaction and Perceived effectiveness” by “Total Value added: Tangible Value added and Intangible Value added”. Undeniably, this stills a primary work of a future tool, able to measure a total collaborative value added between partners.
V. CONCLUSION

This paper has described a framework that has been developed to understand B2B relationships. The objective was to identify different parameters and attributes that characterize interactions between two companies. Furthermore, it allowed identifying the impact of these attributes on the relationship performance. Even if this study may be highly qualitative and very subjective in evaluating performance, it gives some useful indications on how managers might consider the role of each attribute and its impact. In the extension of this work, we are currently developing a more comprehensive framework. This will replace the second level of our previous framework, where “Performances perceived” will be substituted by “Collaborative Value Added: Tangible Value added and Intangible Value added”. Nonetheless, we are aware that this complex task may be challenging. Therefore, we opt to develop a survey with managers, in advance. By the way of this survey, managers can evaluate the Collaborative Value Added of interactions with other partners.

REFERENCES