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Managing Common Goods in Supply Chain: Case of Agricultural Cooperatives

Tarik Saikouk and Ismail Badraoui

Abstract

This paper synthesizes research findings on managing common goods with an application on the agricultural supply chain. Effective management of common goods highly depends on the effort and contributions of each member of the group and the equitable sharing of the added value. However, this contribution is not automatically guaranteed as some members tend to behave opportunistically, which leads to operations inefficiency and higher costs along the supply chain, resulting in lower benefits for the whole group, and ultimately, in the failure of the business. The objective of the paper is to analyze members' behaviors in an attempt to understand their dynamics within the supply chain. In this regard, we rely on the social dilemmas perspective to suggest a resolution mechanism to reduce opportunism and improve the management of common goods within the supply chain, highlighting the importance of communication, group identity, group size, and informal sanctions. The data collected for the case study accounts for nearly 1500 farmers belonging to 147 cooperatives, each one having to manage a common good. The results of this analysis allow us to confirm the relevance of recognizing and resolving social dilemmas in supply chain. We also discuss implications for the sustainable development of agricultural supply chain.

Keywords: collaboration dynamics, social dilemma, common goods, sustainability, supply chain

1. Introduction

In a context characterized by increasing physical flows, product diversification, pressure to reduce inventory and the soar of energy and transportation costs, collaboration has become essential to every firm in order to survive. In this paper, we try to tackle the cooperation between several firms from a social dynamics perspective, putting the light on social dilemmas as a crucial side to consider in any collaboration. The research focuses on the management of common goods in a collaboration relationship between different actors, with an application of the finding on the case of agricultural cooperatives in Morocco. The effective management of common good relies on the contribution of every member of the alliance, with each one participating through rational usage and maintenance. However, the decisions taken by the members do not automatically tend towards the wellbeing of the alliance, and the contribution in the management of the common goods is not automatically guaranteed. In fact, because of structural and motivational reasons, individuals tend to act opportunistically, and favor the personal interests over the group interests, which leads to different types of defects, operations inefficiency and higher costs along the supply chain, resulting in lower benefits for the whole group, and ultimately, in the failure of the business. Through this paper we attempt to understand members' behavior from a social dilemma perspective and suggest resolution mechanisms both at the structural and motivational levels in order to mitigate the probability of facing opportunistic behavior from the members of the group. As a case study, the paper analyses the case of agricultural cooperatives in Morocco.

In order to cope with the several limitations the agricultural sector has been suffering from, the Ministry of Agriculture and Fisheries launched the Green Morocco Plan (GMP) which aim, among others, is to bring together farmers and their respective lands for the implementation of viable agricultural investment projects. These projects essentially target small farmers in marginal areas with limited financial means and poor management skills.

The state puts in place agricultural projects aiming to bring an initial investment (plantations, irrigation infrastructure, transformation units,...) into those areas and gather the farmers as producers' organizations (cooperatives, Unions, Federation, etc.) capable of managing by themselves the business (technically and economically) once the state's contribution is over. The objective behind this approach is to allow these entities to produce fresh agricultural products, transform them, and sell the added value product, thus, catching the value that used to go to intermediaries. The model adopted by the green Morocco Plan creates entities that produce a higher value product through the management of a common good, which is the transformation unit. Therefore, the success of the business highly depends on the effort and contributions of each member of the group, which makes it an interesting case to consider for this research. The data collected for the case study accounts for nearly 1500 farmers belonging to 147 cooperatives, each one having to manage a common good.

2. Theoretical approach

In the modern economy, a firm can no longer be considered as an isolated entity. It is an actor belonging to a one or several networks of firm called supply chain (Mentzer et al., 2001; Min et al., 2008). A supply chain can be understood as a set of inter-organizational relationships embedded in a social network (Chen and al, 2014) in which continues interactions enable setting its organizational configuration as transverse processes allowing actors to seize the opportunities in their markets and to achieve their economic, ecological and social objectives. This organizational configuration represents à hierarchical, dynamic, and sequential network of autonomous firms that are economically interdependent, from the very first supplier to the very last customer. These firms are generally connected through the different types of flows (physical, financial and informational) both at the upstream and downstream levels, and also by other types of relations from conflict to collaboration strategic alliances.

According to Johnsen and al. (2010), the introduction of supply chain as a research area allowed us to better understand and analyze the inter-organizational relations dynamics. In fact, the management of inter-organizational relations within the supply chain overtakes the traditional frame of contractual arrangements (Vanpoucke and al., 2009) in order to form a particular type of strategic alliances that are favorable to the new competition paradigm that happens between supply chain networks (Vanpoucke and al., 2009). Generally, the objective of alliances is to add superior value to the fundamental activities of the partners by improving flexibility and allowing each actor to focus on its distinctive competencies (Monczka and al., 1998)

In an alliance, benefits must be fairly dispatched between the different parties. The term alliance generally refers to a cooperative strategy and collaboration agreements in which the partners explicitly accept to cooperate and manage the resources and the common activities, believing that they would be more competitive this way than working alone (Zeng and Chen, 2003, McCarter and Fawcett, 2012). In this regard, Ring and Van de Ven (1994) consider that alliances are social mechanisms that facilitate the collective action, and that are constantly shaped and restructured by the actions and interpretations of the concerned parties.

2.1 Social dynamics and supply chain management

The supply chain is a social system which management represents a social dilemma hanging between the individual interest and the supply chain interest (McCarter and Northcraft, 2007). The supply chain management is based on the pooling of and skills of each party and on the synergy that exists to collectively create a value that superior to the sum of all value created separately.

However, despite the fact that cooperation is essential in creating and sharing value, supply chain management is subject to opportunistic behavior which leads to operational failures. In fact, supply chain management is characterized by an acting game between clients and suppliers (Johnsen and Ford 2005), ranging from cooperation to competition through a hybrid cooperation strategies (Zouaghi,

Saikouk and Spalanzani, 2010). Behavioral variations are observed ranging from cooperation to defection, due to social uncertainty, giving place to instabilities and failures compromising the value creation process. The social uncertainty that characterizes the supply chain dynamics comes from a lack of information and the intentions of the supply chain partners. According to (Park and Ungson, 2001), social uncertainty shackles inter-organizational cooperation through lack of trust between partners. This prevents efficient contribution to the value creation process (McCarter and Northcraft, 2007).

In contrast, the fact that the supply chain partner voluntarily choose to cooperate does not necessarily guarantee that the alliance will be a success. Unfortunately many strategic alliances fail to achieve their value creation potential, resulting in several non-performances (Malhotra and Lumineau, 2011) and ultimately the failure of the supply chain management (Fawcett and Magnan, 2001; Vanpoucke and Vereecke, 2010).

In order to explain the failure of alliances, Tenbrunsel and Northcraft (2010) suggest three different causes which are: (1) the partners don't perceive the costs of benefits of the alliance the same way, (2) each partner perceives differently the alliances stakes, and (3) each partner thinks they can pull out their resources while thinking the others will remain cooperative.

In order to better understand the supply chain social dynamics, we suggest rallying the social dilemma perspective according to which mutual cooperation between partners is essential to their performance (Zeng and Chen, 2003).

2.2 Social dilemma perspective

A social dilemma is defined as a choice between undesirable alternatives (Merriam and Webster, 1974). In a social group, a member is in a social dilemma if has the choice to participate or not in the collective actions of the group. A social dilemma is a paradox that emerges in situations where undertaking certain actions requires the intervention of several participants (Van Lange, Joireman, Parks and, Van Dijk, 2013). The social dilemma perspective focuses on how cooperation perception and incentives influence the individual will to find

compromises that can satisfy both individual and collective interests when they are in contradiction (Dawes, 1980).

Research in this area has focused primarily on the collective decision taking and how the motivation to cooperate and the actual situation in which the partner is affects their choice (Weber, Kopelman and Messick, 2004). The main stake in this situation is to know how to persuade the actors to cooperate and contribute to the collective action, when adopting an opportunistic behavior can be more profitable.

A classic social dilemma has been presented by Hardin (1968) called “the common tragedy”. The researcher studied a group of farmers who got together to use range land no member could afford on his own. The collective interest in this situation is that all members should contribute to the maintenance of the common good by rationally using it, while in reality no one really does so, which represents a form of defection. Every farmer relied on the others to maintain and rationally use the land. The group ended up overusing and not maintaining the land, which had a negative impact on the common good and also on the livestock. At the individual level, the defection seems to be a rational choice if all the other continue to participate in the collective action. However, if all farmers think the same, they lose. The major stake in this social dilemma is to find out how to motivate all members to still participate even in situation where adopting an opportunistic behavior seems to be more profitable.

The two reasons that explain the failure of the collective action are the offensive defection (Zeng and Chen, 2003) and the defensive defection (McCarter and al., 2011). A defensive defection happens when a partner does not contribute to the supply chain activities and does not invest in the common resources (Zeng et Chen, 2003), while an offensive defection refers to the situation where a partner wants to reach short term profits while taking advantage from the cooperative with other partners (McCarter et al., 2011). In this regard, Fawcett, Magnan and McCarter, (2008) have shown that when several partners behave opportunistically, the supply chain management fails and so does competitiveness.

2.3 Social dilemmas consequences

In a social dilemma, participating in the collective action does not always have the same signification (McCarter, Mahoney and Northcraft, 2011). On one hand, it sometimes means giving and contributing in the collective action, while on the other hand, it might mean not taking or not overusing the shares resources. These two types of cooperation refer to the defensive defection (to not contribute) and the offensive defection (taking what you should not). The defections can have immediate or long terms impact (Messick and Brewer, 1983; McCarter, Mahoney and Northcraft, 2011). This distinction means that the consequences of those defections on the supply chain management are not necessarily the same. Table 1 presents examples of offensive and defensive defection on the short and long term.

	Short term	Long terms
Defensive defection (ex ante)	- Information retention; - Non-investment traceability systems (Vowels, 2009; Saikouk and al., 2011);	- Bullwhip effect; - Increasing Inventory and lead time (DeMarco and al., 2012; Kumara and al., 2011);
Offensive defection (expost)	-Requiring very short payment plans on the powerful partner; - Take advantage of an innovation in the partners processes (McCarter and Northcraft, 2007);	Increasing need for working capital; Mitigated financial performance for the supply chain (Akgün and Gürnlü, 2011)

Tab. 1: Defection consequences on the supply chain

To conclude this section, we can consider that the existence of social barriers results in decreasing short term investments in the resources dedicated to the supply chain partners, which compromises the long term creation of value (Fawcett, Magnan and McCarter, 2008). This phenomenon characterizes the

situation where a partner decide to outsource one part of his supply chain costs leaving the other partner make the necessary investments to create value. This behavior results a value creation problem (Kollock, 1998). In the offensive defection, a partner expropriates on the short term the value created by several partners. This behavior usually results in maintaining the long term relationship (Kollock, 1998; Fawcett, Magnan and McCarter, 2008).

The success of an alliance depends on the ability of partners to collectively manage the value creation problem in the supply chain. As we have shown earlier, the resolution of these problems depends primarily on managing relationships and contributions among partners. Solving a social dilemma prevents, or at least mitigates the negative impact of the offensive and defensive defections.

Because social dilemma problems have negative consequences on the supply chain success, understanding the structural and motivational mechanisms that trigger defections is of very high importance (McCarter, Mahoney and Northcraft, 2009).

2.4 Solving social dilemmas

In this section, we will analyze the most common solutions present in the literature that enable the resolution the social dilemmas and the motivation of partner to cooperate (Kollock, 1998, McCarter, Mahoney and Northcraft, 2009, McCarter and Fudge, 2012). The presented solutions are split into two main categories, structural and motivational. The motivational solutions assume that partners are not selfish and value the results of their partners, thus giving more importance to non-zero-sum solutions (Kloock, 1998). These solutions do not suggest changing the structure of the dilemma. The structural solutions consider that partners are not completely selfish, and suggest modifications at the level of ground rules on the structure, strategic reorientation, and clear procedure for dispatching the added value (McCarter and Fudge, 2012).

Several taxonomies have been developed in order to solve social dilemmas (McCarter and Fudge, 2012). The first taxonomy appeared in an article published

by Messick and Brewer (1983). This taxonomy focuses particularly on the necessary solutions to motivate partners to cooperate. The objective is to determine whether the solution has to be imposed on the partner who takes independent actions, or on the whole group, and whether it should be a unilateral or joint decision.

Contrarily to the first taxonomy, the second one by Zeng and Chen (2003), essentially based on Kloock (1998) article, suggest a solution that focuses primarily on the way partners perceive the structure of the social dilemma (structural solution) and how these partners perceive each other (motivational solution). These two taxonomies are complementary in several ways. The two consider trust between partners (Ostrom, 1998, p. 13) and their efficiency in the alliance (Bandura, 1977; Kerr, 1996) effective mechanisms to encourage partners to cooperate.

Integrating the two taxonomies has allowed us to group all the solutions found in the social dilemmas literature, as shown in table 2.

	Structural	Motivational
Joint	I Mutual interdependence Number of partners	II Interdependence perception by the partners Orientation of social value
Unilateral	III Informal sanction Alliance efficiency	IV Communication level Alliance identity

Tab. 2: Integrative social dilemmas solutions taxonomy

Quadrant I contains joint/structural solution. These solutions must be coordinated and applied by all partners in order to change the way they perceive the social dilemma that represents the alliance. Quadrant II contains joint/motivational solutions that should be coordinated and applied by all members in order to

change the way they see each other. In parallel, quadrant III regroups unilateral/structural solutions which could be put in place by each member separately, with the objective of changing the way each member perceives the other. Last but not least, quadrant IV contains unilateral/motivational solutions which objective is to influence the way partners perceive each other.

3. Case of the agricultural cooperatives in Morocco

Before beginning this chapter, we would like to highlight the lack of literature that analyses the structure and characteristic of agricultural cooperatives in Morocco. This being said, our analysis is based on primary data collection.

3.1 Brief description of agricultural cooperatives in Morocco

According to the Moroccan law n° 24-83, relative to the cooperatives status, a cooperative is a group of individuals who agree together to create a company that they have to operate and manage in order to provide, for their exclusive satisfaction, the product or services they need. The members of the cooperatives are shareholders who participate in its capital and have equal voting right at the annual assembly no matter their weight in the organization, which can be measured in terms of cash, assets and services/work.

The agricultural cooperatives follow the same structure and obey to the same laws. The analysis their environment and organization allowed us to identify, besides the presence of a common good, five main characteristics which are: high number of members, lack of communication, low schooling level of the members, classic internal organization, and a competitive business environment. As explained in chapter 1, the agricultural sector in Morocco suffers from excessive land fragmentation. Therefore, in order to design viable agricultural project, a high number of farmers need to be gathered into one single organization, i.e. a cooperative, owning a transformation unit (TU), which type depends on the crop chosen for the project. The fresh agricultural products

produced by the farmer's land constitute the primary source of raw materials for the transformation unit. As shown in figure 1, 65% of the created agricultural cooperatives between 2010 and 2012 gather more than 300 farmers (Agency for Agricultural Development, 2012), making control operations and communication very complex.

Members of the cooperatives, who are farmers coming from the rural areas where the project is being implemented, have a low schooling level. According to (Achy, 2010), the illiteracy rate among the population aged 15 and above in rural areas of Morocco is around 63%, which, on one hand would not allow them to effectively run the business operations, and on the other hand, makes them unaware of their rights and obligations towards the group.

Categories of POs size

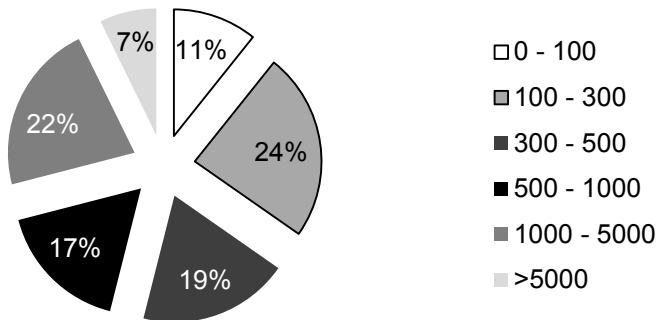


Fig. 1: Cooperatives distributions according to their size (number of farmers)

Moreover, agricultural cooperatives are involved in a highly competitive market. The agro-food sector gathers more than 1981 firms, which represents 25% of the total number of industrial firms in Morocco. Those firms produce annually nearly 67 billion dirham worth production (Ministry of Economy and Finance, 2010). Also, Morocco imports food products for a total value of \$ 5.581 billion (World

trade Organization, 2013), which makes the offer on the market worth 114 billion dirham. In terms of demand, the average annual consumption per household in Morocco is estimated to 49,333 dirham, from which 41% is dedicated to food products (Haut Commissariat au Plan, 2013). In 2012, Morocco has nearly 6.81 million households (Haut Commissariat au Plan, 2013), making the demand for food products worth nearly 138.8 billion dirham. This being said, the ratio demand to supply is 1.2 which shows that there is a very limited gap to cover in terms of demand. This competitiveness requires from the cooperative a high level of efficiency if it wants to survive.

In 2012, the Agency for Agricultural Development, in collaboration with the Regional Directorates of Agriculture, led a survey based evaluation among a sample of farmers and cooperatives from projects launched in 2010 and 2011 in the 16 regions of Morocco. The survey integrated question about farmers' satisfaction, communication within the cooperative, organization of farmers, farmers' capacity development, working capital, management, and other technical issues. The size proportional stratified sampling was used in order to select a representative sample of farmers to interview. The computations led to a sample of 1504 farmers belonging to 146 cooperatives.

Concerning the communication between farmers and the cooperative managers, 45% of farmers said to have no or partial information about the different project components. This represents nearly half of the farmers and shows a clear lack of interaction between the two parties. Furthermore, 55% of the interviewed farmers did not benefit from awareness campaigns, which suggests that 10% of farmers have had the information from other sources than the cooperative official themselves. When asked about whether or not debriefing meetings were held, 56% of the POs said to regularly hold debriefing meetings. However, comparing this to the previous results, we can see that this percentage is similar to the percent of farmers who are informed about all the components of the project (55%), but slightly lower than the percent of farmers who say not to have benefited from any awareness campaign (58%). Perhaps information does not

reach the entire farmers and there should be more efforts on spreading it, or some debriefing meetings may just be held within the board of the PO.

The survey also gives insights about how the cooperative plans to manage the transformation unit. 43% of the POs interviewed said they know how to do so. However, their explanations were limited to who is going to be in charge and not how technically and financially the unit is going to be run. Out of those 43%, only 4 POs stated that they will recruit a qualified person to take care of it, which suggests that most of the cooperative rely on their members to manage the transformation unit.

Moreover, it appears from the survey that the cooperatives also have a classic internal organization, as they try to comply with the minimum legal obligations. They are composed of a president, a vice president, a general secretary and a treasurer. Such an organization is not adapted for managing different sorts of operations, both at the technical and managerial levels. The managing members are the only ones which jobs and attribution are clearly identified, while all the others are considered as simple members.

3.2 Mapping the relationships

Matching the defection identified through the social dilemma approach to supply chain management and the characteristics of the agricultural cooperatives is an imported step in order to identify what applies and what doesn't, and also to test the solutions taxonomy suggested in chapter 2.

As explained in the previous section, the cooperative members are farmers with a low schooling level and very limited managerial capacity. This makes it harder for them to, first understand their rights and obligations, and also to clearly perceive the added value of sticking together as a group to maximize the added value. In order to reach that level of understanding and cohesion, communication and awareness campaigns should be undertaken within the cooperative. However, based on the survey results presented in the previous section, more than half of the interviewed farmers say to not have benefited from any awareness campaigns, which exposes the cooperatives to high risks of

opportunistic behavior from the farmers. This lack of communication is further emphasized by the classic internal organization of the cooperative, which on one hand does not allow them to effectively reach all the members, and on the other hand, when combined with the high number of members, results in information asymmetry and increases the risk of opportunistic behavior (Williamson, 1988). The opportunism can show up in the three different defection forms previously explained, which are the free riding and hold up.

Free riding, which represents an *ex ante* defection, happens when a partner (member of the cooperative) does not fully contribute in the supply chain activities. As a result of poor understanding of their rights and obligations and lack of visibility, and given their position as producers of the fresh agricultural products, farmers might choose to sell their products to other products to higher bidders, to perform intercropping, leak information to competitors, or follow some agricultural practices that seems suitable for their personal interest but that are not in compliance with the cooperative needs. These types of defections have an extremely negative impact on the supply chain such as shortages in supply, quality issues, underutilization of the production capacity, and ultimately unsatisfied demand and poor supply chain performance.

The holdup defection, which happens after the value creation (*ex post*), results from the will of a partner to take short term advantage by taking advantage of the cooperation relationship with the other partners. The holdup defection can show up both at the level of farmers and deciders. In absence a clear procedure for dispatching of the benefits made by the cooperative, some members, who have no contributed as much as other, might claim an equal part of the added value, taking advantage of the poorly informed members and their low level of awareness. In the same situation, deciders (who could also be farmers) might also try to take advantage of the situation by aiming to capture a greater reward for their managerial positions. The holdup defection generally leads to a “giving up” feeling from the other members, leading to discontinuities or free riding defections afterwards.

From the above discussion, we can conclude that the current configuration and internal practices of the agricultural cooperatives expose them to high risks of defections. Matching the characteristics of the cooperatives with the possible defection triggers allow us to identify several actions that should be carried out by the cooperatives.

Action	Description
1. Identifying members and their roles in the PO	Create a transparent governance system within the cooperative by identifying the members and their roles. Increases trust and reduces behavioral uncertainty and opportunistic behavior (Bijman and Wollni, 2008). Reduces free riding
2. Increasing members awareness of their rights and obligations and include them in the decision making process	Make all members aware of their rights and obligations. Reduce free riding
3. Setting up a transparent reward system for dispatching the added-value (benefits).	Clarifies the benefits dispatching procedure in order to avoid conflicts within the PO. Increases trust and mitigates holdup probability.
4. Introducing a penalty system stating the appropriate sanctions to the corresponding defections	Reduces the risk of observing opportunistic behavior from members and falling into defects
5. Creating specialized task units with clear roles in the organization (covering all kinds of operations)	Facilitates operations control and communication within the cooperative.

Tab. 4: Actions that should be undertaken by cooperatives

4. Conclusion and discussion

Nowadays, firms are more aware of the importance of their relationship with the other partners in the supply chain. An efficient management of those relationships becomes an important performance pillar.

We have shown the social dilemma perspective focuses on the mechanisms that influence the mutual cooperation within a group in terms of collective decision making and how motivation and situation perception influences the members' choices. We have also demonstrated that the resolution of a social dilemma enables us to find compromises that can satisfy both personal and collective interests. When costs and benefits of the cooperation are not perceived in the same manner by the different members, disparities will appear in how each member thinks his contribution to the alliance should be. We think that the analysis of the actors' behavior within the supply chain as well as their perception of the situation they are in is critical.

Concerning the specific case of agricultural cooperatives, it is clear that their actual configuration is conducive to the appearance of defensive and offensive defects. The combination between the low communication level, the poor internal organization, the high number of farmers and their low schooling level opens several gaps that could easily trigger opportunistic behavior from the members. It is therefore of high importance to follow the solutions taxonomy and specifically undertake the actions suggested in this paper.

This work has first demonstrated that taking into consideration the social dynamics within the supply chain and solving social dilemmas resulting from it is a lubricant to the relationship between the partners. Second, the results of this research have shown that psychological and relational variables (trust, communication, value sharing) play an important role in the success of the cooperative model. Communication and strengthening the collective identity represent an important complementary governance model to the contractual governance model, which is characterized by the power imbalance between the different parties. The social dilemma perspective allows taking into consideration

the perceptions and will of the supply chain partners. Third, we have shown that the success of a collective action such as the supply chain, three factors should be taken into consideration, which are: communicating on the importance of cooperation in the process of value creation and on the fair dispatching of the added value in order for the members to better perceive the costs-benefits of the collective action, reducing social uncertainty by improving the communication level and reinforcing the group identity, and ensuring complementarity between the contribution of the different partner and avoid redundancies (Kollock, 1998). The methodology followed in this work as well as the results obtained can be easily applied to other countries. Grouping farmers into cooperatives is not a new concept. Several countries have adopted this system in order to restructure the agricultural sector and ensure its development. According to the World Bank Report "World Development Report 2008", from 1982 to 2002, the world has seen a great expansion in the number of producer organizations (PO). An increase from 8% to 65% in terms of villages with POs was recorded in Senegal and from 21 to 91% in Burkina Faso. In India, the dairy cooperative networks gathers more than 12 million farmers and produces 22% of the country's milk supply. The fact that we have tackled this issue from a general theoretical point of view before applying it to the Moroccan context enables us to reuse the findings and apply them to a new situation while following the same methodology. Given the importance agricultural cooperatives in the process of restructuring the agricultural sector in many developing countries around the world, especially in Africa, this research offers a conceptual framework which aim is to help cooperatives to mitigate the risks of falling into defects resulting from adopting such a structure.

Several conceptual contribution of this work should be highlighted. The main one lies in the adoption of a multidisciplinary approach (social psychology, game theory) to explain the actors' behavior within the agricultural supply chain in Morocco, where the cultural inking is very important. We have shown that the behavioral dynamics that govern the supply chain, particularly the simultaneous cooperation and competition, can be understood by rallying the social dilemmas

paradigm. This paradigm, which results from research on both game theory and social psychology, represents a study framework of individual behavior. First, we reviewed the dynamics of social dilemmas by examining the scenarios that illustrate them in the supply chain, the different types of opportunistic behavior that lead to these dilemmas on first and second order. Then, in line with the work of Kollock (1998) and McCarter and Fudge (2013), we developed a taxonomy of possible mechanisms resolving dilemmas. The social dilemmas perspective represents a theoretical framework that strongly explains the inter-organizational dynamics within the supply chain, which are usually forgotten according to Mentzer and al (2001). Therefore it can be a basis for further reflection on inter-organizational management practices such as collaboration, resources sharing, knowledge and capacity sharing.

As any research work, this paper opens several perspectives for further research. We hereby suggest few of them. Using the social network theory approach seems to be an interesting way to analyze and resolve social dilemmas, since it addresses the structural and motivational characteristics of a social network. We also invite researchers to study the impact of all structural and motivational mechanisms to solve social dilemmas on the performance of the supply chain.

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