

Stronger together, but how? Lessons from the Walloon dairy history on the strategic relevance of cooperative models

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ABSTRACT

Agri-food cooperatives evolved towards an increasing diversity of cooperative models, understood as modes of horizontal and vertical coordination of the value chain. This historical investigation informs theory and practice on the strategic relevance of cooperative models for prospective pathways of value chain development. The paper draws on coordination models encountered in the trajectories of consolidation of Walloon dairy cooperatives over the last sixty years. A SWOT analysis based on historical accounts outlines the strengths and weaknesses of cooperative models on several dimensions underpinning their long-term strategic relevance: their cost-efficiency and strategic efficiency in a given market and institutional context, and their impact on commitment. The paper discusses the interplay of cooperative models and contextual factors, from social capital to regulatory frameworks, in the agri-food sector and beyond. The paper identifies cost-efficiency and strategic efficiency as outcomes emerging at the crossover of multiple dimensions. Ostrom's Institutional Analysis and Development framework (IAD) framework illustrates the contextual anchoring of these outcomes. The framework suggests avenues of collective mobilization and future research to manage cooperative models in sustainable value chain development and prevent demutualization. On this basis, the paper outlines the relevance of longitudinal and historically informed studies on cooperative development.

1. Introduction

Cooperatives are important stakeholders in many dairy value chains (Ajates, 2020; Copa-Cogeca, 2015; Hansmann, 1996). They process and market products to raise economic profitability (Chlebicka, Falkowski, & Lopaciuk-Goncaryk, 2017; Forney & Häberli, 2017; Hansmann, 1996; Schneiberg, King, & Smith, 2008). They organise the value chain through collective governance (Cook & Iliopoulos, 2000; Grandori, 2017). Drawing from a historical investigation on Walloon dairy cooperatives, this paper considers different cooperative models of vertical and horizontal coordination of the value chain. The paper analyses these models on two aspects. The first aspect is their influence on the relationship between the cooperative and the farmer-members. The second aspect is their broader strategic relevance in a given context. The paper considers, from an evolutionary perspective (Geels, 2020; Jolink & Niesten, 2012), how value chain coordination models may support cooperative goals in prospective pathways of development.

The collective governance of value chains covers strategy, allocation of resources (Grashuis & Cook, 2017), and redistribution of the

added value (Grashuis & Cook, 2017; Reviron & Python, 2018). The interplay between cooperative governance and farmer-members may hinder some strategic choices (Borgen, 2011; López-Bayón, González-Díaz, & Fernández-Barcala, 2018; Sánchez Navarro, Arcas Lario & Hernández Espallardo, 2019; De Herde, Baret, & Maréchal, 2020). Farmers, in cooperatives, are suppliers of raw material, principal investors and residual claimants of the beneficiary margin (Apparao, Garnevska, & Shadbolt, 2019; Hernández-Espallardo, Arcas-Lario, Sánchez-Navarro, & Marcos-Matás, 2022; Michaud & Audebrand, 2022). As investors, farmers may act from an “opportunistic” standpoint: favour their short-term benefits as suppliers and residual claimants over investments in new development pathways (Cook & Iliopoulos, 2000; Hernández-Espallardo, Arcas-Lario, Sánchez-Navarro, & Marcos-Matás, 2022).

Cooperatives evolved to increase the farmers' commitment to their long-term development (Borgen, 2011; Chaddad & Cook, 2004; Grashuis & Cook, 2017). This includes new types of relationships with the farmers: progressive acquisition of the status of residual claimant, investors' shares, separate contracts for raw material supply (Borgen, 2011; Chaddad & Cook, 2004; Grashuis & Cook, 2017). Cooperatives

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also evolved towards de-integration to secure investments. They separated raw material collection from processing and marketing, managing the latter in joint ventures with private investors (Chaddad & Cook, 2004; Koulytchizky & Mauget, 2003). This development concerns large-scale supranational dairy groups (Filippi, Frey, & Mauget, 2008; Koulytchizky & Mauget, 2003; Mauget, 2008) and smaller-scale cooperatives (Contini, Marotta, & Torquati, 2020; Grashuis, 2018; Grashuis & Cook, 2018). As a consequence, there is an increasing diversity of cooperative models coordinating farmers with other value chain stakeholders (Grashuis & Cook, 2017; Hobbs, 2017).

The cession of cooperative activities to private investors is part of a broader trend of demutualization (i.e. the conversion of cooperatives to investor-owned firms) observed across sectors during the 1990s and 2000s (Battilani & Schröter, 2011; Chaddad, & Cook, 2007; Patmore, Balnave, N., & Marjanovic, O., 2021; Sousa & Herman, 2012). The trend developed under isomorphic pressures like favourable regulations, management interests, and schools of thoughts, emphasizing the sole financial performance of organisations (Battilani & Schröter, 2011; Fulton & Girard, 2015; Patmore, Balnave, & Marjanovic, 2021). A lack of members' commitment can contribute to demutualization or develop as a consequence of demutualization (Battilani & Schröter, 2011; Fulton & Girard, 2015).

The combination of cooperative activities with private interests is not necessarily a negative evolution as such (see e.g. Ruzzier, 2009) provided that cooperatives may pursue their specific goals. Cooperatives hold a dual role, that of having a "social mission with economic returns" (Puusa & Saastamoinen, 2021, 1). Economic success is a means to an end: ensuring the long-term members' economic and social well-being (Fairbairn, 2001; Puusa & Saastamoinen, 2021). Cooperatives may re-interpret this social component over time in light of internal and external influences (Bager, 1994; Diamantopoulos, 2012; Fairbairn, 2001; Anderson & Henehan, 2003). For instance, cooperatives may "degenerate" from goals of social cohesion and responsibility towards "limited, firm-focused business goals" (Diamantopoulos, 2012, 48). This evolution can feed a "vicious cycle" of mutual disengagement and possible demutualization (Diamantopoulos, 2012, 52). Conversely, cooperatives may "regenerate" as a vehicle for renewed social engagement, e.g. in sustainability transitions (Diamantopoulos, 2012, 49; Swagemakers, Domínguez García, Milone, & Wiskerke, 2019; Bauwens, Vaskelainen, & Frenken, 2022). Hence, for cooperatives to maintain themselves *as cooperatives* in value chains, it is important to consider their strategic goals and definition of success in light of this social anchoring (Ajates, 2020; Develtere, 1996; Fairbairn, 2001). Bearing this wider framework in mind, this paper explores how the cooperative model (the vertical and horizontal coordination of the value chain, including in combination with other stakeholders) impacts two particular dimensions contributing to the cooperative's long-term success: 1) members' commitment; and 2) the cooperative's broader strategic relevance in a given market and institutional context.

Commitment influences "the willingness of members to invest equity, improve product quality, or commit supply". Hence, it is a driver of long-term cooperative performance (Grashuis & Su, 2019, 90). The cooperative's strategic relevance in a given market and institutional context matters for its "business continuity" (Puusa & Saastamoinen, 2021, 2). Both dimensions connect to a wider definition of success considered from a social perspective. For instance, they may contribute to the sustainability of prospective value chain development pathways.

This paper considers the lessons of history about the effects of cooperative models on these two dimensions: members' commitment and broader strategic relevance in a given context. The Walloon dairy cooperatives considered and enacted different models of value chain coordination in their historical trajectories. These models organized the relationships of the farmers' cooperatives with the processing and marketing stages (vertical coordination), and the relationships among

farmers' cooperatives (horizontal coordination) in consolidation processes¹. The strategic relevance of cooperative models and their effect on commitment are of particular importance for dairy-producing regions like that of the Walloon Region. The region indeed holds a diversity of dairy farm models, from intensive maize and silage based production to extensive pasture-based models (Lebacqz, 2015; Petel, Antier, & Baret, 2019; Riera, Antier, & Baret, 2020). Cooperative models inclusive of this diversity may be of importance for the future of the region. Their strategic relevance and effect on commitment may thus open a wider theoretical debate on their contribution to prospective pathways of development.

A vast body of literature examines value chain governance (Jolink & Niesten, 2012; Kataike, Molnar, & Gellynck, 2019), from transaction costs economics (Ciliberti, Frascarelli, & Martino, 2020; Gereffi, Humphrey, & Sturgeon, 2005) to business model canvasses (Scaramuzzi, Belletti, & Biagioni, 2020). However, studies re-contextualizing the strategic relevance of governance models are scarce (Kataike, Molnar, & Gellynck, 2019). Research on the farmers' commitment study, using the concept of social capital, internal (connectedness) and external (contextual) factors fostering this commitment to cooperatives (Apparao, Garnevskaja, and Shadbolt 2019; Ciliberti, Frascarelli, & Martino, 2020; Pachoud, Delay, Da Re, Ramanzin, & Sturaro, 2020; Deng, Hendrikse, & Liang, 2021). The dimensions of commitment are complex (Apparao, Garnevskaja, & Shadbolt, 2019). They include an affective dimensions, like a sense of belonging to a group of peers (Apparao, Garnevskaja, & Shadbolt, 2019; Wynne-Jones, 2017, or holding confidence that collective action is mutually beneficial (Chlebicka, Falkowski, & Lopaciuk-Goncaryk, 2017; Paluri & Mishal, 2020). An inclusive cooperative oriented on successful strategic goals fosters commitment (Atkociuniene & Balkibayeva, 2019; Bijman & Wijers, 2019; Ciliberti, Frascarelli, & Martino, 2020; Pachoud, Delay, Da Re, Ramanzin, & Sturaro, 2020). Nevertheless, the role of cooperative coordination schemes in supporting the members' commitment is not often considered, beyond focus on contracts and claimant's rights (Borgen, 2011; Grashuis & Cook, 2017). "A critical line of research concerns (...) how agrifood value chain coordination solution may set up cooperation incentives" (Martino, 2017, 43).

This paper proposes to draw lessons from history on cooperative models and their relevance for prospective pathways of value chain development. From an evolutionary perspective (Geels, 2020; Jolink & Niesten, 2012), we focus on the trajectories facilitated by a specific model. The paper analyses how cooperative models drive commitment and hold a broader strategic relevance in a given market and value chain context.

2. Theoretical background

Three dimensions classically organise collective governance in value chains: the property rights, the contracts framing these rights, and the contract-derived transactions. These three dimensions organise the value chain and the balance of interests between stakeholders (Grandori, 2017; Ménard, 2017).

Alongside property rights, decision rights are another fundamental feature framed by contracts. The joint consideration of property and decision rights provides an adequate framework to consider the diversity of value chain coordination arrangements understood in this paper as cooperative models (Martino, 2007; Ménard, 2017). Some of these coordination arrangements are "hybrids". Hybrids exist as organizational forms between spot market relationships (the exchange of goods and services outside of contractual relationships) and hierarchies (the 'classic' definition of firms where authority directs relationships) (Grandori, 2017; Ménard, 2017). "Hybrids", in organizational studies,

¹ We define consolidation, drawing on Shields (2010), as the shift towards larger firms.

define “organizational arrangements in which two or more partners pool strategic decision rights as well as some property rights, while simultaneously keeping distinct control over key assets” (Ménard, 2017, 38). In this sense, hybrids are polycentric organizations where partners share decentralized property and decision rights (Aligica & Tarko, 2012; Cumming, 2016; Stephan, Marshall, & McGinnis, 2019).

Hybrids present complex coordination mechanisms. These mechanisms are more complex than “arrangements in which parties interact mainly through the price mechanisms” with “no room for mutually negotiated adaptation” (spot markets). They also distinguish hybrids “from integrated organizations (hierarchies) within which adjustments are made in last resort through forms of command and subordination” (Ménard, 2017, 38).

When dairy cooperatives agree on joint investments and/or coordinate milk allocation, processing, and marketing, they enact a hybrid configuration. The interaction between a dairy cooperative and the milk processing stage falling out of the vertical integration category is also a case of hybridity. Additionally, cooperatives present in their relationship with the farmer-members features of hybridity. How farmers relate to the cooperative, interact as milk suppliers and make decisions as cooperative members, ties indeed more with the features of a democracy than those of a hierarchy (Grandori, 2015; 2017).

Organizational studies characterize hybrids on the nature of the contracts binding the partners (Grandori, 2017; Hobbs, 2017). Our focus lies on the outcomes of these contracts: the value chain coordination at horizontal and vertical level. Hybridity may be present:

1. At vertical level: between the milk suppliers (organized in dairy cooperatives) and the processing and marketing stages of the dairy value chain;
2. At horizontal level: e.g. between dairy cooperatives in consolidation processes.

The first dimension of hybridity results from the organization of property rights over processing assets (vertical coordination). The second dimension of hybridity results from the organization of decision rights in consolidation processes (horizontal coordination). We mobilize both dimensions in the results (Section 4.1) to classify the models of value chain coordination enacted by the Walloon dairy cooperatives.

Beyond classification, our objective is to contextualize the strategic relevance of cooperative models. This contextualization is important, given the well-described challenge of incompleteness of contracts (Hobbs, 2017). Relational contracts, as frames of inter-firms relationships, “don’t do it all” (Ménard, 2017, 29). The opportunistic behaviour of a partner may endanger a given arrangement (Hobbs, 2017), for example when partners remain competitors and when alternative value chain arrangements compete against each other (Ménard, 2017). We observed such features in the historical trajectories of the Walloon dairy cooperatives. Dairy cooperatives competed against each other for milk supply in a heterogeneous socio-political and -cultural context. The competition fed the lack of commitment of the farmers to the cooperatives and generated tensions among partners in consolidation processes (De Herde, Segers, Maréchal, & Baret, 2022).

Institutional theorists have long recognized that heterogeneous socio-cultural backgrounds increase transaction costs and that institutions (formal and informal rules of behaviour, structures enforcing these rules) mitigate these costs (see e.g. North, 2016). Ostrom’s Institutional Analysis and Development (IAD) framework is, in this regard, adequate to analyse the dynamic interplay between contextual features and cooperative models’ enactment. The model, illustrated in Fig. 1, conceptualizes collective action in so-called “action situations”. Actors interact in action situations under the influence of contextual features: the biophysical conditions (the biophysical constraints of resource mobilization and transformation, milk processing in our case), the institutional context (rules-in-use and regulations) and the community attributes (e.g. trust, shared values and social capital) (McGinnis, 2011;

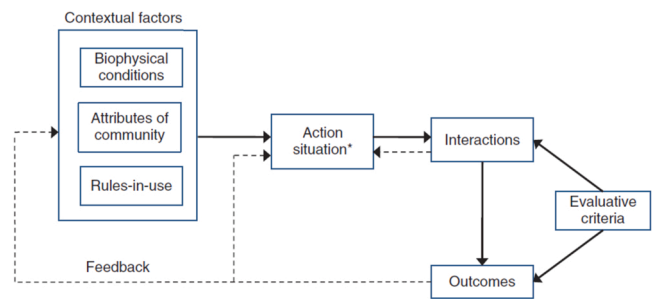


Fig. 1. Representation of the basic components of the Ostrom’s IAD framework (Cole, Epstein, G., & McGinnis, 2019 based on Ostrom 2010, p.646).

Thiel & Moser, 2019). Outcomes of the interactions in action situations may feedback on contextual features (e.g. influence community attributes, like trust and social capital) or on action situations (e.g. lead actors to make strategic decisions on the basis of chosen evaluative criteria) (Cole, Epstein, G., & McGinnis, 2019; McGinnis, 2011). The model is hence adequate to capture the way cooperative models evolve in a given context (Cole, Epstein, G., & McGinnis, 2019).

The model offers room to consider other outcome evaluative criteria than cost-efficiency alone (Garrick, Whitten, & Coggan, 2013; McGinnis, 2011). In accordance with the focus of our study, we consider the cost-efficiency and the strategic efficiency of the cooperative models as features characterizing their strategic relevance. We define strategic efficiency as the capacity of a cooperative model to strive economically, achieve broader social goals in a given context, and foster the farmers’ commitment to their long-term development (Puusa & Saastamoinen, 2021). Two main dimensions contributing to strategic efficiency are the cooperative model’s competitive advantage in a given context and the key features (contextual or related to internal organisation) offering the cooperative model a strategic advantage to fulfil economic and social goals (Hobbs, 2017).

By considering cost efficiency and strategic efficiency as the outcomes of a complex interplay between the cooperative model and contextual features, the IAD model offers a longitudinal perspective on the cooperative models’ strategic relevance (Cole, Epstein, & McGinnis, 2019; Garrick, Whitten, & Coggan, 2013). This theoretical approach fits well with a historical investigation on the topic.

3. Material and methods

This paper builds on a detailed historical investigation of the trajectories of the Walloon dairy cooperatives over the last sixty years (De Herde, 2020). This investigation identified and mobilized a variety of historical sources: archival material, published sources, and oral sources.

Historical sources bring “realism and substance” to the evolution of organizations (Maclean, Harvey, & Clegg, 2016, 4). They also offer room to consider the influence of a changing context on the strategic relevance of an organization (Clark & Rowlinson, 2004; Soosay & Hyland, 2015; Touboullic, McCarthy, & Matthews, 2020).

The paper confronts historical sources to the theoretical background described above. It’s an *analytically structured* approach of history (Clark & Rowlinson, 2004; Leblebici, 2014; Lippmann & Aldrich, 2014; Maclean, Harvey, & Clegg, 2016; Rowlinson, Hassard, & Decker, 2014). In this “social-scientific” mode, history helps “testing, developing and refining theory and arguments” (Maclean, Harvey, & Clegg, 2016, 57). It incorporates “historical complexity within the theorization process” (Maclean, Harvey, & Clegg, 2016, 7). It enriches theorization with context-sensitivity (Lippmann & Aldrich, 2014; Maclean, Harvey, & Clegg, 2016).

The *Supplementary Material* describes and contextualizes the historical sources mobilized in this paper. The sources concern, first,

Table 1

Propositions of horizontal and vertical coordination in the consolidation processes, in chronological order.

Year	Geographical scope	Source of the plan	Vertical coordination	Horizontal coordination
1963	Belgium	1.1 Analysts of a sectoral advisory structure	Participation in milk processing plants	Coordination of milk collection and allocation
1971		1.2 Analysts of a sectoral consultation body	Vertical integration	Merger in eight vertically integrated structures
1973	Western and Central part of the Walloon Region (2/3 of its territory)	1.3 analyst commissioned by a dairy director	Participation in milk processing plants	Coordination of milk allocation, investments in processing plants, and marketing strategies
1974		1.4 analysts commissioned by an academic director	No vertical integration and no participation in milk processing plants. Market coordination (based on price) for milk as raw material	Coordination of milk collection and allocation
1975		1.5 ministry of agriculture	Vertical integration	Merger of the dairy cooperatives in a unique structure
1984	The Walloon Region	1.6 consultancy firm commissioned by regional ministers (1/2)	Participation in milk processing plants	Coordination of milk allocation, investments in processing plants, and marketing strategies
1984		1.6 Consultancy firm commissioned by regional ministers (2/2)	Vertical integration	Merger of the dairy cooperatives in a unique structure
1988		1.7 Consultants commissioned by regional ministers	Participation in milk processing plants (Separation of milk collection and milk processing in distinct entities to enable the participation of external investors in processing plants)	Merger of the dairy cooperatives in a unique structure

propositions of cooperative models in consolidation processes ([Supplementary Material, Section 1](#)). Secondly, they concern considerations on the strategic relevance of cooperative models in given circumstances ([Supplementary Material, Section 2](#)).

The propositions of cooperative models in consolidation processes all come from archival material. The propositions emerge from reports made between the 1960s and the 1980s. The authors of the reports came from diverse backgrounds: consultancy firms commissioned by ministers, analysts of sectoral advisory structures and consultation bodies, analysts commissioned by academic and dairy directors. The authors produced these reports in the framework of sectoral and political debates on the consolidation of the dairy cooperatives, either at a national or a regional level. The [Supplementary Material](#) contextualizes these reports. [Section 4.1](#) of the results characterizes the cooperative models uncovered in these reports and outlines their enactment in the trajectories of the Walloon dairy cooperatives.

The considerations on the strategic relevance of cooperative models come from archival material and oral sources. In the archival material, the accounts span from the 1960s to the 1980s. They stemmed from analysts, ministers, academic experts, dairy cooperative directors, and local processors. Analysts, ministers, and academic experts expressed anticipations on the basis of their observations in other countries. Dairy cooperatives directors, local processors, and oral sources based their accounts on their experience and observations in the Walloon Region. The accounts were either direct (i.e. the archival material was directly produced by the person, e.g. a letter, a report of analysis) or reported (described in a meeting report or in a press interview and attributed to the person, either in quote or in paraphrase).

The oral sources mobilized in this paper are former directors of dairy cooperatives and former analysts of farmers' unions. The oral sources made their accounts in hindsight. It is different than the accounts emerging from the archival material. Indeed, we cannot exclude the influence of time on the accounts of oral sources. Notwithstanding this particularity, we did not find any major discrepancies between the retrospective accounts of the oral sources and the accounts stemming from archival material. More globally, we noticed a strong complementarity between the accounts over the studied decades. The [Supplementary Material](#) describes and contextualizes all accounts.

[Section 4.2](#) of the results outlines the strategic relevance of cooperative models on the basis of these accounts. We mobilized to this end a SWOT analysis ([Ghazinoory, Abdi, & Azadegan-Mehr, M., 2011](#)). A SWOT analysis considers cooperative models in terms of strategic

management ([Hobbs, 2017](#)). Hence, this framework is appropriate to consider the cooperative models' strategic relevance within the influence of a changing market and value chain context.

[Ghazinoory, Abdi, & Azadegan-Mehr, 2011](#) pointed out the intrinsic weakness of the SWOT analysis: its dependence upon the viewpoints reported in the framework. We take this intrinsic weakness for granted. The mobilization of the framework in this paper is indeed instrumental. Its aim is to organize the historical viewpoints in a structured way ([Helms & Nixon, 2010](#)). The SWOT analysis presented in [Section 4.2](#) of the results leads to [Section 5](#) where we discuss the strategic relevance of cooperative models in accordance with our theoretical frame.

4. Results

4.1. Overview and characterization of the consolidation models

4.1.1. A diversity of models considered by the stakeholders

Several reports discussed cooperative models in consolidation processes. [Table 1](#) gives an overview of these reports and outlines the vertical and horizontal coordination of the value chain considered. Their numbering in [Table 1](#) (1.1. to 1.7) corresponds to their order of presentation in the [Supplementary Material](#).

The geographical scope of the reports differs over the course of time: Belgium in the 1960s and the early 1970s; the Western and central part of the Walloon Region in the mid-1970s; the whole Walloon Region in the 1980s. The reports relate to evolving circumstances in the framework of the European Common Market in Milk and Dairy Products: growing market competition; competition for milk as raw material. They also mention situational (1.2) or structural (1.3–1.5) rises in production costs as triggers for a re-organisation of the dairy sector (more context in the [Supplementary Material](#)).

In anticipation of the European Common Market in Milk and Dairy Products, analysts of an advisory structure to the ministry of agriculture, the *Office National du Lait*, proposed a plan (1.1) to reorganise the dairy sector at Belgian level. They proposed to separate milk collection and milk processing in different entities. Milk collection dairy cooperatives would hold participations in industrial processing plants. The plan aimed at rationalizing the allocation of resources at every stage of the value chain. A few years later, analysts from a sectoral consultation body proposed a plan (1.2) to reorganise the Belgian dairy cooperatives in eight vertically integrated structures across the country. The aim was to rationalize the costs at all stages of the value chain.

The three plans for the western and central parts of the Walloon Region in the 1970s (1.3 – 1.5) aimed at rationalizing the cost structure and improving the market position of the dairy cooperatives. The first plan (1.3), commissioned by a dairy director, proposed a horizontal coordination of vertically integrated dairy cooperatives. Coordination would cover milk collection and allocation, investments, processing strategies, and marketing. The second plan (1.4), commissioned by an academic director, is similar to plan 1.1. The plan proposed to separate milk collection and milk processing in separate entities and to coordinate horizontally milk collection and allocation. The third plan (1.5), proposed and implemented by the ministry of agriculture, foresaw the merger of all dairy cooperatives in a unique vertically integrated structure.

In the 1980s, the plans (1.6 – 1/2 and 2/2 – and 1.7) aimed at reinforcing the market position of the Walloon dairy cooperatives, as cooperatives were consolidating in neighbouring countries. A consultancy firm commissioned by the Walloon minister of economic affairs outlined two options. The first option was to coordinate the dairy cooperatives horizontally on milk allocation, investment, and marketing (1.6 – 1/2). The second option was to merge all dairy cooperatives in a unique vertically integrated structure (1.6 – 2/2). The consultants commissioned with the enactment of the second proposition (1.6 – 2/2) proposed a plan (1.7) based on a joint venture: a milk collection dairy cooperative holding participations, alongside investors, in a milk processing plant.

Table 1 hereunder synthesizes the main features of the plans in terms of horizontal and vertical coordination of the value chain.

4.1.2. Three models of vertical coordination

We identify three models of vertical coordination:

1. No link between milk collection and milk processing (model 1);
2. Coordination and participation in milk processing (model 2);
3. Vertical integration (model 3).

Model 1 (no link between milk collection and milk processing – absence of vertical coordination) includes:

- The proposition 1.4 commissioned by an academic director for the dairy cooperatives of central and western parts of the Walloon Region in 1974. It is a non-integrated – non-coordinated model. Milk collection and milk processing interact on the basis of market prices. Dairy cooperatives, in this configuration, would typically act as “bargaining cooperatives” (Hansmann, 1996).

Model 2 (coordination and participation in milk processing) includes:

- The proposition 1.1 made by analysts of a sectoral advisory structure at Belgian level in 1963;
- The proposition 1.3. commissioned by a dairy director for the dairy cooperatives of the central and western parts of the Walloon Region in 1973;
- the proposition 1.6 (1/2) commissioned by the Walloon minister of economic affairs for the Walloon Region in 1984.

Model 3 (vertical integration) includes:

- the proposition 1.2 made by analysts of a sectoral consultation body at Belgian level in 1971;
- the proposition 1.5 made by the ministry of agriculture for the dairy cooperatives of the central and western parts of the Walloon Region in 1975;
- the proposition 1.6 (2/2) commissioned by the Walloon minister of economic affairs for the Walloon Region in 1984;

- The proposition 1.7 commissioned by regional ministers for the Walloon Region in 1988².

4.1.3. Three models of horizontal coordination

We identify three models of horizontal coordination:

1. limited coordination among dairy cooperatives, focusing on milk collection and allocation (model 1);
2. Increasing coordination among dairy cooperatives, focusing on milk allocation, investments in processing plants and marketing strategies (model 2);
3. Merger of the dairy cooperatives (model 3).

Model 1 (limited coordination among dairy cooperatives) includes:

- The proposition 1.1. made by analysts of a sectoral advisory structure at Belgian level in 1963;
- the proposition 1.2 made by analysts of a sectoral consultation body at Belgian level in 1971³;
- The proposition 1.4 commissioned by an academic director for the dairy cooperatives of central and western parts of the Walloon Region in 1974.

Model 2 (increasing coordination between dairy cooperatives) includes:

- The proposition 1.3 commissioned by a dairy director for the dairy cooperatives of the central and western parts of the Walloon Region in 1973;
- the proposition 1.6 (1/2) commissioned by the Walloon minister of economic affairs for the Walloon Region in 1984.

Model 3 (merger of dairy cooperatives) includes:

- the proposition 1.5 made by the ministry of agriculture for the dairy cooperatives of the central and western parts of the Walloon Region in 1975;
- the proposition 1.6 (2/2) commissioned by the Walloon minister of economic affairs for the Walloon Region in 1984;
- The proposition 1.7 commissioned by regional ministers for the Walloon Region in 1988.

4.1.4. Illustration of the identified models and enactment of the course of history

Fig. 2 illustrates the distribution of every proposition in terms of vertical and horizontal coordination. The representation in Fig. 2 aligns with Ménard (2017)'s representation of value chain organizational arrangements. The x-axis illustrates property rights and represents the degree of control over strategic investments (milk processing plants, in our case). The y-axis represents the degree of centralization of decision

² We considered the proposition 1.7 as a case of vertical integration, although the experts foresee a coordination of milk processing through participation. It is indeed an evolution of the integrated model for the sake of investment, not intended to allow multiple participation in various production plants. A model based on participation could evolve towards a similar configuration over time if the dairy cooperatives merge. This proposition 1.7 is the closest to how the models of dairy cooperatives evolved at a wider European scale as from the 80 s (Juliá-Igual, Meliá-Martí, & García-Martínez, 2012; Filippi, Frey, and Mauget, 2008; Koulytchizky & Mauget, 2003) and also how the Walloon dairy cooperatives evolved in their models in the nineties (see Fig. 2 hereunder).

³ We categorized this proposition as such, and not under model 3 (merger), because the plan was mainly featuring vertically integrated cooperatives working independently from each other with limited coordination between them.

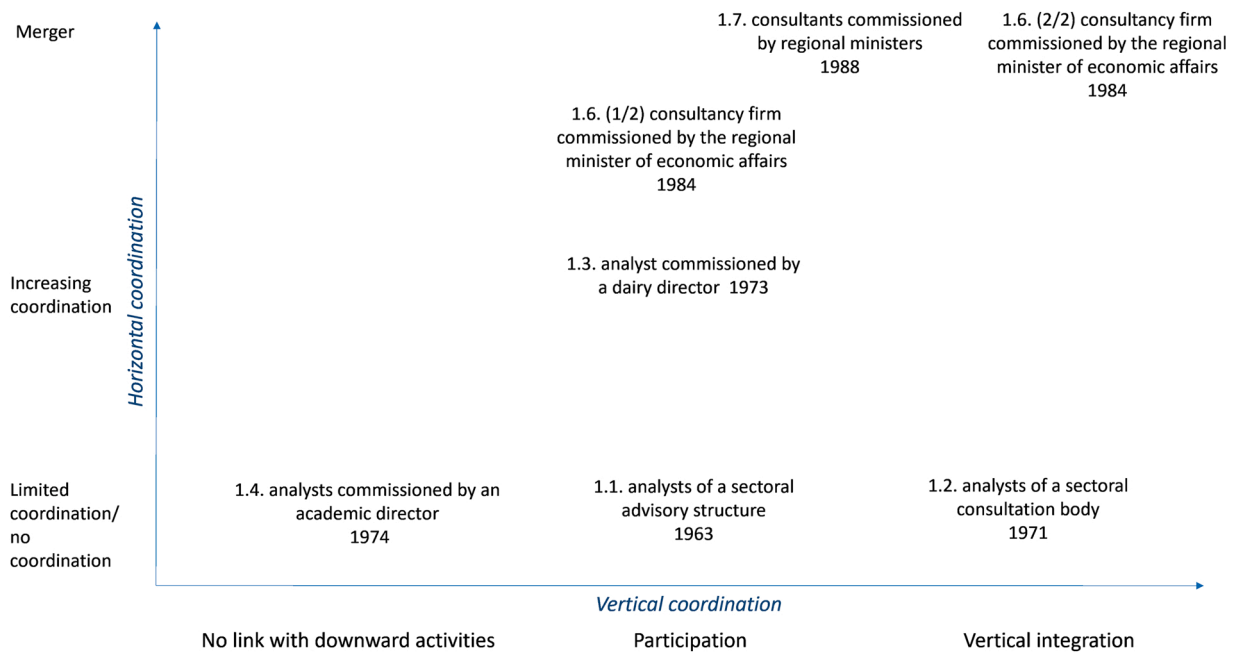


Fig. 2. Representation of the different coordination models, following the axis of growing vertical coordination (x-axis) and growing horizontal coordination (y-axis).

rights on milk allocation, milk processing and marketing of dairy products.

The organization models of the Walloon dairy cooperatives got close to each of the theoretical models exposed above (with variations). Fig. 3 illustrates the course of evolution of the Walloon dairy cooperatives over time.

4.2. A SWOT analysis of the consolidation models

The following SWOT analysis synthesizes considerations on the cooperative models described in Section 4.1. These considerations come from the historical sources described in Section 3. The Supplementary Material presents and contextualizes all accounts. We differentiated them in two main categories. The first category concerns anticipations by analysts and policymakers on the basis of situations in neighbouring regions and countries. The second category concerns considerations by dairy cooperatives' directors or active members of the farmers' unions

(including oral sources) on the basis of their experience in the Walloon Region. We specify, in the tables, whether the synthesis refers to an anticipation (a) or an observation (o).

4.2.1. A SWOT analysis of vertical coordination models

Table 2 presents the SWOT analysis of the three models of vertical coordination identified in Section 4.1.2: absence of vertical coordination (model 1), coordination through participation (model 2) and vertical integration (model 3). Anticipations (a) and observations (o) mainly converge over the decennia in the analysis of the different models of vertical coordination.

The main weaknesses identified in models 1 (no vertical coordination) and 2 (coordination through participation) are the issue of negotiation with the processing stage and the possible inefficiency of coordination. Understandably, these weaknesses resonate with the strength of model 3 (vertical integration): integration circumvents these issues. Conversely, the weaknesses of model 3 - focus on the profitability

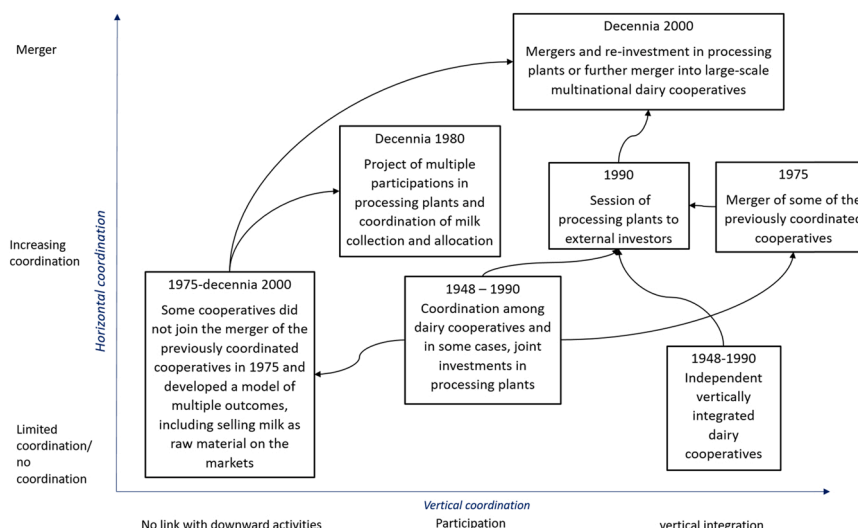


Fig. 3. Illustration of the models of value chain coordination of the Walloon dairy cooperatives during the second half of the 20th century.

Table 2
SWOT analysis of the models of vertical coordination.

Model	Strengths	Weaknesses	Ideal conjuncture for the model – Opportunities	Threats
Model 1: no vertical coordination	Maximizes the profitability of milk allocation independently from milk processing plants (a & o) Independent rationalisation of strategies of milk allocation and milk processing (a)	Permanent situation of negotiation on the market of milk as raw material (risks associated in case the market situation changes) (a & o)	High demand for milk as raw material, and/or demand oriented on milk quality/ specific milk features (a) Absence of size differential with the companies active at the milk processing stage (a)	When milk, as raw material, is abundant on the market, vulnerability of negotiation (a) An aggravating factor is the differential in size with the companies owning milk processing plants (a)
Model 2: coordination through participation	Opportunities to participate in multiple milk processing plants (a) Allows participation in a variety of milk processing models, including those with a focus on regional/ niche productions (o)	Risks of inefficient coordination, leading to a non-operative model (a) Possible imbalances in the relationships with the processing stage in case there is a size differential (o)	Context of mutual trust among partners (a) Homogeneous cultural landscape and institutional support for coordination (o)	For given market segments, integrated models can act to lower costs (o)
Model 3: vertical integration	Diminishes the risks of inefficient coordination (a) Secures the supply to the processing plants, in case the demand on the market for milk as raw material is high (a) Cost-effective management of the value chain in some processing pathways (butter, milk powder, consumption milk) (o)	The profitability of the processing stage can prevail over other strategic choices for milk processing. Possibly less attention to issues of local development (a & o) Farmers may lack commitment and consideration for the long-term objectives of the cooperative (a & o)	Market for mass production with economies of scale (butter, milk powder, consumption milk) (a & o)	Risks to the profitability of the processing plants in case the milk production diminishes/the demand of competitors for milk is high (a & o) If unprofitable, farmers do not have the flexibility to consider another combination of outcomes - their commitment to the dairy cooperative may diminish (o)

of the processing stage, less attention for issues of local development – resonate with the strengths of models 1 and 2. Both offer opportunities for more flexible and diverse milk allocation.

Model 1 (no vertical coordination) may thrive in a market situation where there is a high demand for milk as raw material or where processors request specific milk features. The same context may be challenging for model 3 (vertical integration) if farmers do not commit to sustain supply to the cooperative. Conversely, when milk is abundant on the market, model 1 is in a weak negotiating position, particularly if there is a size differential with other value chain stakeholders. Model 2 (coordination by participation) mitigates this contextual risk. The model remains nevertheless vulnerable to the effects of a size differential between coordinating partners. Model 3 (vertical integration) annuls this contextual risk for the farmers.

Model 2 (coordination by participation) may thrive in a context of mutual trust, cultural homogeneity and institutional support for coordination. This model may be less competitive than model 3 (vertical integration) for market segments characterized by economies of scale.

4.2.2. SWOT analysis of horizontal coordination

Table 3 presents a SWOT analysis of the models of horizontal coordination identified in Section 4.1.3: coordination limited to milk collection and allocation (model 1), increased coordination, including on investments and marketing (model 2), and merger (model 3). We gathered models 1 and 2 in a sole category of models of horizontal coordination (model 1–2).

The anticipations (a) and observations (o) converge over the decennia, similarly to the convergence observed in the SWOT analysis on vertical coordination. We also find in this analysis the same correspondence between the strengths and weaknesses of the models. For instance, the weaknesses of model 1–2 (coordination) are the risks of inefficiency, imbalance of power, and free-riding behaviour of the partners. Model 3 (merger) curbs these weaknesses and offers room for a group policy. Similarly, the weaknesses of model 3 (merger) are a possible lack of connection to the farmers and to issues of sub-regional development. Model 1–2 (coordination) addresses these weaknesses. Model 1–2 indeed allows an autonomy of strategy among partners and possibly more proximity to subregional needs and goals.

Table 3
SWOT analysis of the models of horizontal coordination.

Model	Strength	Weaknesses	Opportunities	Threats
Model 1–2: horizontal coordination between dairy cooperatives without merger	Autonomy in strategy among partners (a). More freedom to seize opportunities, for example on productions with a high added value (o). Consistent unity in facing other stakeholders (clients, processors, public authorities) (o) Room for a development policy taking sub-regional specificities into consideration (o)	Risks of lack of consistency in the actions of the partners (a) and ensuing loss of efficiency (o) Risks of imbalances in the coordination process, in case there are important differences in size among partners (o) Free-riding behaviour (o)	A context where the coordination can be negotiated in good conditions, in a climate of mutual trust (a) Homogeneous cultural landscape and institutional support for coordination (o)	Increase of governance costs – lack of efficiency (o) Coordination can be endangered in situations of competition among partners or lack of trust (o)
Model 3: merger of dairy cooperatives	Room for an operational group policy (a) Reduces general costs (o)	Lack of connection to the farmer-members (perceived) (a) and to the needs of sub-regional development (o) Lack of direct communication with the farmer-members (o)	Context of homogeneous production models (o)	When the demand for milk on the market is important, groups of farmers who feel unrepresented in the dairy cooperative may be tempted to leave (o)

Compared with an absence of horizontal coordination, model 1–2 offers the benefit of unity in front of other stakeholders (from clients in the value chain to public authorities). Model 1–2 (coordination) thrives in a context of trust favourable to partnerships. It is vulnerable in a context of competition among partners. This model also runs the risk of being less efficient than a merger (model 3) due to the importance of its governance costs.

Model 3 (merger) may see farmers tempted to leave the cooperative if they feel unrepresented, especially when the demand for milk on the market is high.

5. Discussion

The SWOT analysis outlines the strengths and weaknesses of the cooperative models, and the effect of context on their strategic relevance. The analysis provides an opportunity to discuss cooperative models from a strategic management perspective.

This discussion accounts for the fact that cooperative models do not develop in a vacuum and encounter failure or success in a given context. Section 5.1 frames the research results within their epistemological boundaries. Section 5.2 analyses the cooperative models' cost and strategic efficiency from a relative (contextual) perspective. Section 5.3 discusses upscaling in consolidation as magnifying lens on the strategic failures of cooperative models. Drawing from Sections 5.2 and 5.3, Section 5.4 conceptualizes the strategic relevance of a cooperative model at the crossover of multiple dimensions. On the basis of Ostrom's IAD framework, Section 5.4 proposes an illustration of the complex combination of factors influencing the cooperative models' cost and strategic efficiency. This theory informing illustration may support choice and management of cooperative models, and outline avenues for future research on value chain development.

5.1. Framing of the research results in their epistemological boundaries

Our SWOT analysis results from a historical investigation. This entails critical considerations: 1) on the mobilization of historical sources; 2) on the specificity of the epistemological process; and 3) on the anchoring of the research outcomes in a given timespan.

Historical sources cannot be "produced", they can only be "found" (Rowlinson, Hassard, & Decker, 2014). Their mobilization as evidentiary material depends on their accessibility and availability at the time of the investigation (see the introductory section of De Herde, 2020 and the Supplementary material, point 1.3, footnote 7). Several elements support the validity of the analysis despite this limitation. First, the mobilized archival material reported the anticipations and observations of a wide variety of actors. It includes actors related to dairy cooperatives whose archival funds have not been kept. Second, some actors, while questioning the validity of a model for their cooperative, nevertheless understood its added value in other circumstances. They were also realistic about the threats related to their own model (see e.g. the Supplementary material, sections 2.2.1.2 and 2.1.4.1). The evidence-based analytical set of this historical investigation offers thus an opportunity to discuss the strategic relevance of cooperative models from an abductive perspective (Folger & Stein, 2017; Rowlinson, Hassard, & Decker, 2014).

A historical investigation does not fall under the common heuristics of inductive and deductive processes. These processes provide respectively probable and necessary inferences and test their validity for generalization by means of experimental protocols (Shani, Coghlan, & Alexander, 2020; Shook, 2016). A historical investigation is, rather, an abductive process: it provides evidence-based and logically derived "conjectures about possible reasons for an observed fact (in need of being explained)" (Witt, 2009, 364; see also Rowlinson, Hassard, & Decker, 2014). Abductive processes act in this regard on the register of speculation and fallibility rather than certainty (Catellin, 2004; Folger & Stein, 2017). However, a historical investigation offers the added value

of "historical veracity, the quality of ringing true that stems from faithfulness to available evidence, involving source analysis and evaluation to determine the quality of evidence and its interpretive value" (Maclean, Harvey, & Clegg, 2016, 16). Such heuristic processes supports interpretative "past-to-present" theoretical developments (Maclean, Harvey, & Clegg, 2016, 12) and may outline further lines of inquiry (Folger & Stein, 2017; Maclean, Harvey, & Clegg, 2016).

The outcomes of this investigation reflect the challenges of a given timespan: the timespan ranging from 1960 to 1990 in the framework of the European Common Market. At the end of the 1960s and in the 1980s, for instance, the dairy cooperatives of the Walloon Region competed for milk supply in the framework of the European measures to curb overproduction. Additionally, the cultural and political heterogeneity among dairy cooperatives induced a lack of social capital. The consequent weak commitment of farmer-members in consolidation processes impacted the cooperatives' long-term development (De Herde, Segers, Maréchal, & Baret, 2022; De Herde, 2020). The circumstances revealed the weaknesses of, and threats on vertically integrated and merged dairy cooperatives. In the circumstances of the Walloon Region at the time, no source identified similar weaknesses and threats in models of vertical and horizontal coordination. This does not mean that challenges linked to farmer-members' commitment don't exist in these models. These models are, for example, of relevance for quality-oriented value chains (Cechin, Bijman & Omta, 2013; De Herde, Baret, & Maréchal, 2020; Ruzzier, 2009). A lack of commitment to cooperative development and quality provision may induce cost-inefficiency (Cechin, Bijman, J., & Omta, 2013; Hernández-Espallardo, M., Arcas-Lario, N., Sánchez-Navarro, J.L., Marcos-Matás, G., 2022). The commitment of farmers to quality-oriented value chains is an issue of our time. Understandably, it did not appear under past market and contextual circumstances. The coordination models in the Walloon region at the time indeed handled milk as an industrial raw material. Additionally, they only reached a limited scale. These circumstances did not offer a background for issues of commitment to rise.

Drawing from these considerations, the discussion aims at broadening the reflection beyond the historical results, towards a wider contemplation of cooperative models from a strategic management perspective.

5.2. Cost-efficiency and strategic efficiency from a relative perspective

Hansmann (1996) identifies two types of costs in coordination models: transaction costs and governance costs. Transaction costs are the costs of interaction with stakeholders external to the model's ownership structure. Governance costs are the costs of the model's ownership structure: the costs of making decisions and monitoring the managers; the cost incurred in case of ill-management, "poor decision and excessive managerial discretion that result when collective decision-making or managerial monitoring are imperfect" (Hansmann, 1996, 21). Cost efficiency requires optimization of transaction and governance costs.

A successful strategy of value chain coordination also relies on the model's competitive advantage in a particular context. Several factors play a role in this regard, namely the market approach, and the contextual or internal features offering strategic advantages (knowledge, social capital, internal communication and decision-making processes likely to influence members' or partners' commitment) (Apparao, Garnevskaja, & Shadbolt, 2019; Hobbs, 2017)).

We use these managerial approaches to discuss the strategic relevance of cooperative models on the basis of our results, focusing on:

- Their transaction and governance costs;
- Their context-dependent competitive advantage;
- The features offering strategic advantages;
- The interplay of the model with the farmers' commitment and with the commitment of partners in coordination schemes.

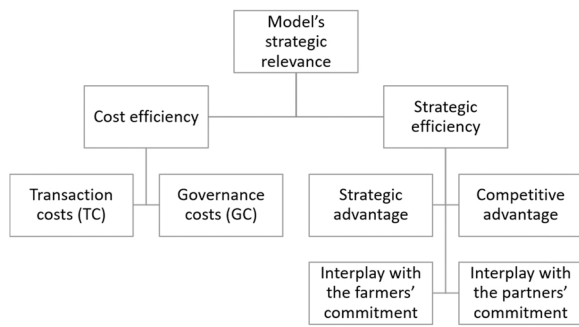


Fig. 4. Illustration of the dimensions of strategic relevance considered in the analysis of cooperative models.

Transaction and governance costs define the cost-efficiency of a cooperative model. Competitive advantage, strategic advantages and interplay with commitment participate to the strategic efficiency of a cooperative model. We analyse how context influences these dimensions of strategic relevance (illustrated in Fig. 4), in the agri-food sector and beyond.

Section 5.2.1 (including Table 4) discusses the strategic relevance of models of vertical coordination. Section 5.2.2 (including Table 5) discusses the strategic relevance of models of horizontal coordination.

5.2.1. Strategic relevance of models of vertical coordination

In the absence of vertical coordination (model 1), cooperatives hold a permanent situation of negotiation on the market of milk as raw material. This may lead to high transaction costs and conversely reduce governance costs. The model is competitive in a context where the demand for milk as raw material is high. It offers room for an optimal allocation of milk. Conversely, a reverse market situation, where milk is abundant, may render the model uncompetitive, unless the cooperative offers a milk with differentiating features on a specific market segment.

The strategic success of model 1 is dependent upon the negotiation capabilities of the cooperative managers. According to our result, differences in size among partners complicate negotiations. Power differentials grounded in imbalances in size may indeed affect the cooperative's autonomy in decision-making and negotiation. It is the

Table 4

Strategic relevance of models of vertical coordination, considering the transaction costs (TC), the governance costs (GC), the competitive advantage, the strategic features of the model, and its interplay with commitment.

Model	Transaction costs	Governance costs	Competitive advantage	Strategic features	Interplay with commitment
Model 1: no vertical coordination	High	Limited	Optimization of resource allocation	Negotiation	Success in negotiation likely to have a positive feedback on members' commitment
Model 2: vertical coordination through participation	Medium	Medium to high	Diversification of participation and resource allocation	Negotiation and dialogue	Long-term commitment relies on trust – to be considered in the organizational features (e.g. democratic control)
Model 3: vertically integrated model	Limited	Medium to high	Cost-effectivity on segments with low profitability and economies of scale	Response to monopsony Secures long-term investments	Long-term commitment of members needed for raw material supply and investments Declining profitability undermines commitment

Table 5

Strategic relevance of models of horizontal coordination, considering the transaction costs (TC), the governance costs (GC), the competitive advantage, the strategic features of the model, and its interplay with commitment.

Model	Transaction costs	Governance costs	Competitive advantage	Strategic features	Interplay with commitment
Model 1-2: horizontal coordination	Limited	Medium to High	Maintaining autonomy, while pooling resources	Pooling of resources on investments and bargaining	Possible tension when partners are competitors or embrace different institutional logics, which may increase governance costs
Model 3: merger	Limited	Limited	Cost-effective model for long-term large-scale unifying strategies	Cost-optimization in bundling strengths and resources	Loss of community logics may affect trust and members' commitment.

case, for example, when a processor accounts for the majority of the cooperative's outcomes (Hooks, McCarthy, Power, & Macken-Walsh, 2017).

The strategic success of the model may have a positive feedback, through farm-gate price, on the farmers' commitment to the cooperative (see e.g. the analysis conducted by Cechin, Bijman, & Omta, 2013). However, a good farm-gate price may also attract farmers who are not committed to the cooperative's long-term development (Hooks et al., 2017).

Vertical coordination through participation (model 2) diminishes transaction costs and secures milk allocation through participation. This model, however, increases governance costs. The model may be cost-ineffective for specific market segments, compared to vertical integration (model 3). Institutional frames supporting dialogue across the supply chain mitigate these costs. Conversely, an imbalance in size between partners increases governance costs. Our findings align with Ménard (2017)'s recent considerations on the social and institutional embeddedness of contractual relations in hybrids.

Model 2 allows a diversity of participations in processing initiatives, including at the sub-regional level. This feature, in connection with issues of our time, may foster value chain sustainability and resilience (Eakin, Connors, Bertmann, Xiong, & Stoltzfus, 2017; Vroegindewey & Hodbod, 2018). The coordination model may, for example, support value chains that "promote the uniqueness of both territories and agri-food districts"(Contini, Marotta, & Torquati, 2020, 2). The strategic success of the model hence depends upon the capability of farmers – traditionally the "weaker ones" onto which "market failures are unloaded" (Contini, Marotta, & Torquati, 2020, 2), to negotiate their participation and actively dialogue with other value chain stakeholders on common goals (Contini, Marotta, G., & Torquati, B., 2020; De Herde, Baret, & Maréchal, 2020). In this regard, the model may strongly interplay with the farmers' commitment. Its strategic success indeed relies on the fact that farmers trust that the model considers their interests. Trust, as underlying factor of commitment, is interlinked with the model's governance, e.g. adequate democratic control (Apparao, Garnevska, & Shadbolt, 2019; Paluri & Mishal, 2020).

Finally, vertical integration (model 3) internalizes transactions with the processing stage in a hierarchical relation. The model hence reduces transaction costs. It may have medium to high governance costs

depending on its internal processes of decision-making. Our results pointed at the cost-effectiveness of this model for several market segments and processing pathways. This model is indeed the most cost-effective model for long-term investments in market segments characterized by risk on return, low profitability margins and economies of scale (Hansmann, 1996; Ruzzier, 2009; Williamson, 1987). It is also a strategic response to monopsony and the ensuing loss of bargaining power of the farmers in these segments (Contini, Marotta, & Torquati, 2020; Hansmann, 1996). The profitability of the processing stage requires, however, that farmers commit to raw material supply and to long-term investments. According to our results, a lack of profitability of the processing plant may in turn have a negative feedback effect on that commitment (see also De Herde, Segers, Maréchal, & Baret, 2022). Like model 2, its strategic success relies on trust and democratic control, albeit within the farmers' cooperative.

At the other end of the value chain, consumers' cooperative models in the agri-food and energy sectors face similar challenges and opportunities of strategic relevance. Participation through coordination (model 2) and integration (model 3) are effective ways to secure supply with less power effects than in absence of vertical coordination (model 1) (Hatanaka, 2020; Huybrechts & Mertens, 2014). Participation (model 2) offers opportunities for investment in distributed and sustainability-oriented production pathways (Bauwens, 2013; Hatanaka, 2020). Model 2 may face identical challenges of dialogue with the processing stage on visions and goals (Bakker & Wiering, 2020). In participation (model 2) and integration (model 3), democratic control and alignment on values, including in upscaling, also underlie the members' trust and long-term commitment (Bauwens, 2013; Hatanaka, 2020; Huybrechts & Mertens, 2014). A notable element that did not appear in our results is the effect of the regulatory context on consumers' models of participation or integration (models 2 and 3). Regulations on loans, planning procedures and related support schemes may act as "barriers to entry" (Bauwens, Gotchev, & Holstenkamp, 2016; Huybrechts & Mertens, 2014). Producers' cooperatives traditionally benefit from support instruments for investment (Hansmann, 1996). Both producers and consumers' cooperatives may however face difficulties in securing long-term and large-scale investments. Their members' commitment and investment capabilities play a part there (Grashuis & Su, 2019; Huybrechts & Mertens, 2014).

Table 4 synthesizes the main points outlined in this section on the strategic relevance of models of vertical coordination.

5.2.2. Strategic relevance of models of horizontal coordination

When farmers' cooperatives organize their interactions in horizontal coordination (model 1–2), they limit transaction costs, compared to an absence of coordination. However, they increase governance costs. By doing so, they also increase their competitive advantage. While maintaining their strategic autonomy, partners pool their resources and may consider joint action, for example in bargaining and investment. We can again connect our results with observations made at the other end of the value chain. Consumers' cooperatives in the energy sector embraced, through horizontal coordination, a wider portfolio of participations in energy production. They also increased their bargaining power. "Coordinated actions may (...) be seen as an attempt to reach a more balanced distribution of political power in (...) markets, which is still very biased in favor of large-scale players" (Bauwens, Gotchev, & Holstenkamp, 2016, 146). The parallel is accurate with agri-food value chains. The European Commission recognizes the relative weakness of farmers in value chains. Accordingly, it has provided a regulatory frame for producers' organisations (Sorrentino & Cacchiarelli, 2018; Ciliberti, Frascarelli, & Martino, 2020; European Commission, 2021).

We observed an effect of market, institutional and regulatory context on the efficiency of horizontal coordination (model 1–2). Partners acted as competitors for milk in a context of high demand stimulated by the European regulatory policies. They also had little institutional support for dialogue in a heterogeneous socio-political landscape

(Supplementary Material, section 2.2.3.1) (see also De Herde, Segers, Maréchal, & Baret, 2022). Partners in horizontal hybrids are indeed likely to compete against each other on resource provision or allocation. In the energy sector, their long-term success depends upon the ability of competing partners to align strategically and curb competition on the short-term. Institutional support to dialogue indeed favours such alignment (Bauwens, Vaskelainen, & Frenken, 2022).

A horizontal coordination offers the partners freedom to seize opportunities separately. In the energy sector, Bauwens, Gotchev and Holstenkamp describe polycentric energy systems where cooperatives invest jointly while maintaining "a strong local component" (Bauwens, Gotchev, & Holstenkamp, 2016, 146). Decentralized management indeed offers room to generate and explore a greater diversity of opportunities (Burgelman, 2002; Germain & Ngijol, 2010). A merger of dairy cooperatives (model 3) conversely allows less strategic autonomy. It is very cost-effective for long-term large-scale unifying strategies. A merger bundles cost-effectively strength and resources on given market segments.

A merger may (model 3) may affect the trust of the farmers and reduce their commitment to the cooperative. In our results, this effect comes from a perceived loss of services to farmers and local processors and from a loss of democratic representation (Table 3; Supplementary material section 2.2.4.2). Literature refers to these observations as losses of community logics in mergers (Apparao, Garnevskaja, E., & Shadbolt, 2019; Bauwens, Vaskelainen, & Frenken, 2022). Filippi, Frey, & Mauget, 2008 point out the strategic importance of the services granted to the cooperative members in mergers. An equivalent level of services to the farmers before and after the merger is a source of success in upscaling. Hansmann (1996) stresses the importance of democratic control in agricultural cooperatives of growing size. "Where a cooperative covers a large region, it is both possible and a common practice to structure the cooperative in ways that continue to permit active and informed member control. For example, many large cooperatives in the United States, including those that handle basic grains such as wheat, have a federated structure in which a number of small and highly responsive local cooperatives serve as members of regional or national cooperatives. Similarly, in many cooperatives, directors are elected by district rather than at large" (Hansmann, 1996, p.134–135). The recent paper by Michaud & Audebrand, 2022 and their considerations on the importance of democracy in cooperative steering, echoes these considerations.

Table 5 synthesizes the main points outlined in this section on the strategic relevance of models of horizontal coordination.

5.3. Consolidation as magnifying lens on the strategic failures of cooperative models?

The impact of a lack of dialogue and trust on the strategic relevance of the cooperative models leads us to the following question. Is upscaling in consolidation processes providing a magnifying lens on the possible strategic failures of cooperative models?

Co-operatives, because they hold a dual role – social and economic (Puusa & Saastamoinen, 2021) – act at the crossover of at least three institutional logics: the community, the market and the corporate logics (Bauwens, Vaskelainen, & Frenken, 2022). On top of that, co-operatives are more than just "self-sufficient structures created by individuals working together to deal with specific market or social problems" (Fairbairn, 2001, 26). They often emerge "as parts of a web of social ideas and organizations, rather than as isolated and self-contained structures" (Fairbairn, 2001, 27).

The choice of cooperative model in upscaling strategies can follow a range of options: coordination or merger at the horizontal level, participation or integration at the vertical level. This choice may follow complex rationales driven by isomorphic pressures of a competitive, normative or coercive nature (Bager, 1994). For instance, the selection of a merged vertically integrated model for the reorganization of some

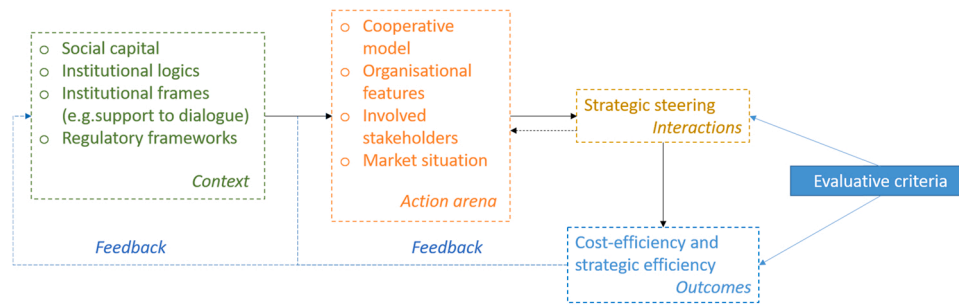


Fig. 5. Illustration of the complexity of factors determining cost-efficiency and strategic efficiency of cooperative models, based on Ostrom's IAD framework.

dairy cooperatives of the Walloon Region in 1975 followed a particular rationale. It was a top-down process steered by the ministry of agriculture. The aim was to rationalize production costs and increase competitiveness on the markets. To this end, the ministry of agriculture, with the approval of the ministerial committee of economic and social coordination, put the newly merged cooperative under the strategic direction of another dairy cooperative – deemed more successful in its strategies⁴. The lack of commitment of the farmers in these circumstances had to do with a lack of dialogue, a loss of services, and the power of the main stakeholder steering the merger according to its own business rationality (see in this regard the [Supplementary Material](#), sections 2.1.2.3 and 2.2.4.2). This episode is illustrative of what [Diamantopoulos \(2012\)](#) calls a degenerative dynamic: a cooperative development disconnected from anything else than “firm-focused business goals” ([Diamantopoulos, 2012](#), 48). The circumstances revealed the effect of vertically integrated models on issues of sub-regional development and on the farmers' commitment.

Upscaling through vertical and horizontal coordination, as explained in [Section 5.1](#), was not present in the studied timespan. This model may reveal incompatibilities between institutional logics or degenerative pressures of a different nature. For example, degenerative pressures may emerge from complex power and network dynamics in larger-scale structures. Market, regulatory and institutional context all play an aggravating or mitigating role on these tensions ([Bauwens, Vaskelainen, T., & Frenken, K., 2022](#)).

Upscaling, while offering many positive outcomes in terms of bargaining, investment and market power, hence acts as a revelatory magnifying lens on the strategic failures of cooperative models. It is thus important to study cooperative models at different scales and in their longitudinal evolution to grasp which internal and external factors may feed or mitigate the adverse effects of a given model.

5.4. The “best” cooperative model grounded in context: a theoretical tool informing practice and future research

[Sections 5.2 and 5.3](#) lead us to consider the strategic relevance of a cooperative model - its cost-efficiency and strategic efficiency - at the crossover of multiple dimensions. A cooperative model's strategic relevance is the outcome of a complex combination of:

- cooperative model and organizational features;
- market context;
- regulatory framework;
- institutional frames;

⁴ See, in this regard, the [Supplementary Material](#), sections 1.5 and 2.1.2.3. Extended details on this episode can be found in the initial report of analysis ([De Herde, 2020](#)) on p. 50–71. The ministerial committee of economic and social coordination (CMCES) included the prime minister and several ministers of the Belgian government, including the minister of finances and economic affairs.

- involved stakeholders;
- institutional logics at play;
- stakeholders' degree of social capital;
- Etc...

Cost-efficiency and strategic efficiency are thus relative rather than absolute concepts. They link to a more complex combination of factors than market only.

[Fig. 5](#) mobilizes Ostrom's IAD framework ([Cole, Epstein, & McGinnis, 2019](#)) to illustrate this complex combination of factors. Ostrom recommended using the term “action situation” to define the conceptual space where actors “observe information, select actions, engage in patterns of interaction and realize outcomes from their interaction” ([McGinnis, 2011](#), 11). [Hagedorn \(2008\)](#), within the same institutional tradition, distinguishes the action situations themselves, i.e. the situations in which actors (inter)act, from the action arena, i.e. the structuring components of this conceptual space: the actors involved, the governance models, and the nature of the transactions faced in action situations ([Hagedorn, 2008](#)). This distinction allows us to illustrate, in accordance with our results, how the type of cooperative model, their organisational features (e.g. their degree of democratic representation), the stakeholders involved (e.g. whose size differentials may affect dialogue), and the market situation (influencing transactions) define the action arena. Context, i.e. social capital, the institutional logics guiding the stakeholders' strategy, institutional frames (e.g. support frameworks for dialogue), and regulatory frameworks (defining market conditions and cooperative development) influence this action arena.

Strategic steering in the action arena and its outcomes in cost-efficiency and strategic efficiency may generate feedbacks on context and action frames. For example, negative feedbacks can lead to a loss of social capital, as discussed in [Sections 5.2 and 5.3](#). Conversely, an increase of bargaining power through coordination ([Section 5.2](#)) could support positive feedbacks on institutional frames and regulatory frameworks.

The factors contributing to the cost-efficiency and strategic efficiency of cooperative models are thus interlinked. Hence, stakeholders should select cooperative models as a “means to an end”, that of ensuring economic profitability within broader collective goals ([Puusa & Saastamoinen, 2021](#)), in full consideration of this complexity.

We can further read this illustration on two accounts: as a theoretical tool to inform practice, and as a theoretical tool to outline avenues for future research.

In terms of practice, the model invites to consider the cost-efficiency and strategic efficiency of cooperative models (e.g. their effect on members' commitment) as the outcomes of contextual features and organisational choices. The key to avert strategic failures likely to feed demutualization hence resides in the proactivity of agents to choose and manage their cooperative models in full awareness of their strategic features and interplay with context.

In terms of choices of cooperative models, cooperatives get increasing attention as vehicles for new combinations of institutional logics in sustainability transitions ([Bauwens, Vaskelainen, T., & Frenken,](#)

K., 2022). Cooperatives, as user-driven and user-oriented organisations, may indeed support bottom-up driven transition of practices grounded in negotiated and “specific local institutional settings” (Vermunt, Negro, Van Laerhoven, Verweij, & Hekkert, 2020, 246; Cholez, 2019; Swagemakers, Domínguez García, Milone, & Wiskerke, 2019; Billiet, Dufays, & Staessens, 2021). For cooperatives to avert demutualization in these evolving value chains, the question might not be “is consolidation the best way to organize activities in agriculture?” and beyond (Falkowski, Ménard, Sexton, Swinnen, & Vandeveldel, 2017, 77). Rather, *can we organize this consolidation in polycentric cooperative models accounting for these local institutional settings?* This calls for a consideration of the role of regulations on such value chain arrangements (Bauwens, Gotchev, & Holstenkamp, 2016; Falkowski, Ménard, Sexton, Swinnen, & Vandeveldel, 2017). The strategic steering enabled by cooperative models, their outcomes in cost and strategic efficiency (Fig. 5) may be evaluative criteria for sectoral stakeholders and policymakers to support changes in institutional and regulatory frameworks. The so-called “hybrids” enacted through horizontal and vertical coordination, object of this article, may indeed thrive provided they “transcend their local experience in order to form networks at higher levels and articulate their interests to national and European strategies” (Bauwens, Gotchev, B., & Holstenkamp, L., 2016, 146; Cholez, 2019; Falkowski, Ménard, Sexton, Swinnen, & Vandeveldel, 2017).

In terms of avenue for future research, it seems crucial to understand how to support “organizational alternatives to integration within a firm and to pure market arrangements” (Falkowski et al., 2017, 74). This paper underscores in this regard the relevance of two underexplored streams of research on value chain organization and cooperative governance. The first is the impact of value chain organization on strategic performance, including commitment to collective organization (Falkowski et al., 2017; Grashuis & Su, 2019). The second is the consideration of performance under the eye of the value chain’s context of development (Bauwens, Gotchev, & Holstenkamp, 2016; Grashuis & Su, 2019). The paper outlines the relevance of following cooperative models in their longitudinal evolution to assess their strategic relevance in evolving contexts (see also Cholez, 2019; Cholez & Magrini, 2020). The paper also calls for historically-informed studies to understand how context influences the strategic relevance of cooperative models, including for prospective pathways of sustainable development.

6. Conclusion

Drawing on the cooperative models enacted in the historical trajectories of the Walloon dairy cooperatives, this paper describes different models of horizontal and vertical value chain coordination. A SWOT analysis based on historical accounts outlines the strategic features of each model on two dimensions underpinning its long-term success: its effect on commitment; its broader strategic relevance in a given context. Going beyond the epistemological limits of these historical accounts, we discuss the effect of market, regulatory and institutional frameworks on the cost-efficiency and strategic efficiency of cooperative models in the agri-food sector and beyond. We also discuss how upscaling in consolidation processes acts as magnifying lens on the strategic failures of cooperative models. None of these models mechanically alleviates the challenges related to the management of commitment, especially in upscaling dynamics. None of these models presents a strategic profile that could be best in all market circumstances and institutional contexts. Drawing from these insights, the paper proposes, based on Ostrom’s IAD framework, a theory-informing illustration of the complex combination of factors defining a cooperative model’s outcomes in cost-efficiency and strategic efficiency. This theoretical illustration may inform practices, in particular choice and management of cooperative models in prospective pathways of sustainable development. It may also define avenues of collective mobilization and research on the institutional and regulatory evolutions needed to support polycentric value chains. The paper calls for longitudinal and historically informed studies on cooperative

models. In particular, the paper stresses the need to clarify which internal and external factors influence the strategic relevance of cooperative models as enablers of prospective pathways of sustainable value chain development.

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CRedit authorship contribution statement

Véronique De Herde. Conception and design of the study, acquisition of data, analysis and/or interpretation of data, drafting the manuscript, revising the manuscript critically for important intellectual content, approval of the version of the manuscript to be published.

Competing interest statement

The author declares no commercial or financial relationships constitutive of a potential conflict of interest.

Data Availability

Supplementary material file provided.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.jcom.2023.100198](https://doi.org/10.1016/j.jcom.2023.100198).

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