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► To cite this version:

D. Diakité, A. Royer, D. Rousselière, L.D. Tamini. Formal and informal governance mechanisms of machinery cooperatives: The case of Quebec. *Journal of Co-operative Organization and Management*, 2022, 10 (2), 10.1016/j.jcom.2022.100181 . hal-03833870

HAL Id: hal-03833870

<https://hal.inrae.fr/hal-03833870>

Submitted on 22 Jul 2024

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Formal and informal governance mechanisms of machinery cooperatives: The case of Quebec

The case of the machinery cooperatives in Québec

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1 ABSTRACT: Although embedded in a regulatory framework, studies suggest the important role
2 of informal (relational) mechanisms in agricultural cooperatives, mostly viewed as complements
3 to formal mechanisms. However, the interaction between these two mechanisms remains unclear.
4 To improve our understanding of this interaction, we investigate governance mechanisms in
5 agricultural machinery cooperatives, especially the “Coopératives d’Utilisation de Matériel
6 Agricole” (CUMA). Machinery cooperatives allow producers to share machinery within a legally
7 defined structure, but the traits of these cooperatives cause to rely heavily on informal
8 mechanisms. This paper analyses how the interaction between formal and informal mechanisms
9 minimizes coordination and motivation problems. Based on a multiple case study approach, the
10 paper shows that the use of informal mechanisms results from the failure of formal mechanisms
11 to minimize opportunism among members. As a result, CUMA members will primarily resort to
12 informal mechanisms, using formal mechanisms as a complement when needed.

13

14 KEYWORDS

15 Cooperative governance, relational governance, formal mechanism, machinery cooperatives,
16 informal mechanism, opportunism

17 **JEL classification: Q130, L640, D860, D23, L14**

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26 **Introduction**

27 A vast body of literature has focused on the internal governance of cooperatives (Feng &
28 Hendrikse, 2011; Liang & Hendrikse, 2013). Property rights first attracted the interest of
29 researchers (Cook, 1995). Another aspect mentioned in the cooperative literature is the
30 importance of trust as an organizational strategy (Jensen-Auvermann et al., 2018). Trust would
31 allow the members of the cooperative to maintain a degree of independence from the
32 management but would also promote more flexibility between the members of the cooperative
33 (Borgen, 2001). Most studies on cooperative governance focus on what we could consider
34 “conventional” agricultural cooperatives, that is, cooperatives involved in the upstream or
35 downstream segment of the chain relative to the production segment. In that respect, machinery
36 cooperatives, which are set up to share machinery among a limited number of members, have
37 attracted much less attention thus far. One study identified is by Cornée et al.(2020), who adopt a
38 methodology based on a systematic literature review to define the conditions for a successful
39 common-property asset (CPA) organization. Other past studies include Harris and Fulton (2000)
40 and Artz et al. (2010). The particularity of machinery cooperative characteristics lies, among
41 others, in the internal governance structure with “branches of activity” and the sharing of
42 “pooled assets”, which is different from that of conventional cooperatives. A branch of activity
43 refers to a piece of agricultural equipment shared by a subgroup of machinery cooperative
44 members and implies frequent and close interactions among members. Similarly, by pooling
45 assets, members benefit from reduced machinery costs while simultaneously exposing
46 themselves to tensions between self-interest and group-interest. In agricultural machinery
47 cooperatives, this tension occurs when, for instance, a specific type of machinery is used only
48 during a very short period due to weather conditions. This particularity induces specific
49 challenges to members of a branch since a failure to use the machinery can result in product
50 quality and economic losses. In addition, the sharing of agricultural machinery is subject to
51 moral hazard, as misuse (not observed) can lead to eventual breakage and costs. When self-
52 interest predominates over the interests of the group, this indicates the potential for opportunistic
53 behaviour (Williamson, 1985). Given these particularities and given the lack of research on
54 machinery cooperatives, this article explores the governance mechanisms at work in them,
55 specifically the interaction between formal and informal governance mechanisms in the

56 “Coopératives d’Utilisation de Matériel Agricole” (CUMA). Governance mechanisms aim to
57 minimize governance problems, such as coordination and motivation problems¹. While
58 coordination problems refer to the difficulty of coordinating interdependent activities,
59 motivation² problems are related to the difficulty of preventing self-interest behaviour due to
60 incomplete contracts (Bijman, 2007). For this purpose, seven case studies of CUMAs in the
61 province of Quebec in Canada were conducted.

62 Our research makes several contributions to the existing machinery cooperative literature. First,
63 we further explore the duality of their governance, i.e., formal and informal. Second, we
64 contribute to the broader debate in the cooperative literature regarding formal and informal
65 governance mechanisms. We show that the formal cooperative structure that frames sharing in
66 CUMAs is what distinguishes them from other forms of machinery sharing and simultaneously
67 makes them vulnerable to opportunistic behaviour. Because of opportunistic behaviour and the
68 need for coordination, we identify relational governance as a complementary governance
69 mechanism in CUMAs. Specifically, our results show that the role of formal mechanisms is
70 residual compared to relational mechanisms. This result brings new insight to the debate on more
71 formalization in cooperatives, as suggested by some authors (Cheney et al., 2014). Third, we
72 provide insight into opportunism by members in machinery cooperatives. Opportunism was
73 discussed in relation to the self-interested behaviour of the cooperative managers (Vitaliano,
74 1983), and Iliopoulos and Valentinov (2012) introduced an opportunism behaviour practised by
75 the board members. Our study shows that in addition to the forms of opportunism mentioned by
76 previous authors, opportunism between cooperative members matters, following the findings of
77 other recent studies (Hernández-Espallardo et al., 2021).

78 The paper is organized as follows. Section 2 introduces our theoretical framework on formal and
79 informal governance mechanisms. Section 3 presents the empirical context of the study. Section
80 4 specifies the methodology, which is based on a multiple case study approach. Section 5
81 presents the results and various theoretical proposals derived from the empirical results. Section
82 6 concludes.

¹ Charreaux (1996) proposes that governance mechanisms aim to limit conflicts of interest between the organization's leaders and stakeholders. This approach is more concerned with the control mechanisms of managers.

² As one referee pointed out, the motivation problem is often referred to as an agency problem. However, we have retained the terminology "motivation" used by Bijman (2002). This term is also used by Feng and Hendrikse (2012)

83 **2 Theoretical background**

84 2.1 Formal and relational arrangements in machinery cooperatives and opportunism

85 Formal mechanisms emanate from a cooperative law (Fici, 2013). In contrast, relational
86 mechanisms are mainly based on social norms such trust. In a machinery cooperative, users share
87 machinery through a formal cooperative arrangement. However, machinery sharing may occur
88 without a formal structure. A simple example is sharing between neighbouring producers based
89 on social norms such as reciprocity (Sutherland & Burton, 2011). In this form of sharing,
90 producers can organize themselves and participate in decision-making processes related to their
91 governance, referring to self-governance (Kooiman, 2003). Machinery cooperatives may also
92 involve self-governance between users but framed by the cooperative arrangement. Because of
93 recognized organizational principles (Alliance Coopérative Internationale, 2018), and social
94 recognition, producers can benefit from cooperative arrangements (Eid & Martínez-Carrasco
95 Pleite, 2014). Legalistic organizations and their formal governance mechanisms have often been
96 criticized in the literature for their propensity to undermine relational governance (Sitkin & Roth,
97 1993). Another view supported in the literature is the complementarity between formal and
98 relational governance mechanisms. The reasons supporting complementarity are diverse
99 (Lazzarini et al., 2004). One reason is the incompleteness of formal mechanisms, i.e., that a
100 contract or any other formal mechanism is unable to provide for all eventualities (Hart, 1988).
101 Because of the incompleteness of contracts, opportunistic behaviour could occur. Recent studies
102 show that opportunism could be present in cooperatives and practised by cooperatives leaders to
103 the detriment of cooperatives members as well (Garrido, 2019). In machinery cooperatives,
104 examples of opportunistic behaviour often take the form of ex post behaviour of members, such
105 as carelessness with equipment or failure to meet initial commitments. Producers may be less
106 careful because of the lack of monitoring due to the geographic distance between them. In terms
107 of commitment, [Artz et al. \(2010\)](#) show that in some cases, because of a producer's off-farm
108 occupation, a producer could reduce his or her share hours of the machinery, which would
109 require readjustments within the group. Since machinery cooperatives involve collective action,
110 opportunistic behaviour is detrimental to the whole group and could undermine the coordination
111 of activities.

112 2.2 Governance problems in CUMAs

113 Bijman (2007) considers two main governance problems in cooperatives : coordination and
114 motivation. In a CUMA, because producers share the same machines, they need to coordinate to
115 do the work on time in each member's field. On the other hand, CUMA producers have a
116 “stronger common property regime”, as they are framed by cooperative laws (Cornée et al.,
117 2020). Common property implies economic benefits related to reduced capital investment.
118 However, by sharing a common resource, members expose each other to risks of opportunism.
119 Opportunism can be active or passive (Wathne & Heide, 2000). Active opportunism occurs when
120 a person engages in explicitly or implicitly forbidden personal behaviour, whereas passive
121 opportunism occurs when a company or individual shirks previously agreed on obligations or
122 refuses to adapt to new circumstances. [Artz et al. \(2010\)](#) show evidence that producers may be
123 passively opportunistic by shirking their obligations due to their personal occupations.
124 Coordination and motivation problems require effective governance mechanism. These
125 mechanisms and their advantages have been widely addressed in the interorganizational
126 literature (Dekker, 2004), while few studies have addressed these in the context of cooperatives.
127 Recently, [Hernández-Espallardo et al. \(2021\)](#) analysed governance mechanisms in the context of
128 marketing cooperatives. However, it is not clear how these mechanisms might affect
129 coordination and motivation problems in the context of a machinery cooperative.

130 2.3 Conceptual model of the CUMA governance mechanism

131 - **Formal governance mechanism in a CUMA**

132 Formal mechanisms are observable rules from written documents that can be executed via an
133 authority (Zenger et al., 2000). Formal governance mechanisms would also imply delegating
134 authority to a cooperative manager or programming activities that imply deciding in advance
135 how activities may be executed (Gulati et al., 2005). These mechanisms may help mitigate
136 opportunistic behaviour by limiting partners' actions and improve coordination through
137 centralized decision-making. Moreover, since a CUMA is engaged through fixed claims
138 contracts with different stakeholders (financial institutions, supplier), the bylaws and le contrat

139 d'engagement³ may also function as guarantees for the latter. However, these mechanisms are
140 not very specific or are incomplete (le contrat d'engagement⁴) because of uncertainties arising
141 from the problems of credible commitment (Ostrom, 1990) and the lack of carefulness (moral
142 hazard), among other things. On the other hand, delegating authority to a single cooperative
143 manager may involve control costs arising from agency (Vitaliano, 1983). In addition, recent
144 studies show that centralized decision-making in cooperatives tends to exacerbate conflicts
145 between members (Slade Shantz et al., 2020). Finally, programming activities implies the ability
146 of producers to plan for all eventualities in their production activities, which could be complex
147 due to the uncertainties associated with agricultural activities.

148 - **Relational governance in a CUMA**

149 Relational governance mechanisms are closely linked to individuals and their relationships
150 (Hoetker & Mellewigt, 2009). Relational norms such as flexibility, honesty, reciprocity,
151 encouraging partners, solidarity, and preservation of the relationship are examples of relational
152 governance (Macneil, 1977). Relational mechanisms also refer to the existence of a pre-
153 established informal authority as a means of mitigating conflict (Slade Shantz et al., 2020) or the
154 development of informal communication between members of a group (Lucas et al., 2019).
155 Flexibility may enhance the capacity of partners to adapt to unforeseeable events (Poppo &
156 Zenger, 2002). Valentinov (2004) suggests that one of the specificities of cooperatives is the
157 importance of interpersonal relations, which makes them social capital-based organizations. The
158 lack of social capital would explain the failure of large cooperatives (Nilsson et al., 2012).
159 Relational governance also has negative aspects, such as the lack of objectivity, ineffectiveness
160 in decision-making, or the recrudescence of opportunistic behaviour (Villena et al., 2011). In
161 machinery sharing, [Artz et al. \(2010\)](#) found that a sense of trust mitigated the moral hazard
162 problem among partners, while flexibility tends to facilitate exchanges between them. The
163 conceptual framework of formal and informal mechanisms of governance within CUMAs is
164 summarized in Figure 1. Due to their relations with different stakeholders, such as suppliers and
165 financial institutions⁵, and their cooperative legal form, formal mechanisms are necessary in

³ le contrat d'engagement commits members to using a particular piece of equipment through an activity branch (Harris & Fulton, 2000a)

⁴ For example, this contract is not explicit regarding control, specifically regarding monitoring behaviour.

⁵ In Québec, some financial institutions such as Caisses populaires (credit cooperatives) have been active in providing credit to new CUMAs. Most of the time, CUMAs finance the capital through members' investment shares, debt and members fees.

166 CUMAs. However, because of uncertainties and the possibility of opportunism, formal
167 mechanisms may be limited in their ability to minimize coordination and motivation problems.
168 Relational governance could minimize motivation problems because of the trust between the
169 partners and facilitate coordination through informal exchanges and flexibility. At the same time,
170 relational mechanisms are not necessarily a panacea, as they also have their limits. Thus, because
171 of their respective limitations, formal and relational mechanisms could function as
172 complementary mechanisms in CUMAs. However, the net effect of these two mechanisms when
173 they coexist remains ambiguous and depends on several parameters, such as their relative
174 strength in the relation, the features of exchanges, and the outcome of interest (Poppo & Zenger,
175 2002). We empirically address the interaction of formal and informal mechanisms in the case of
176 CUMAs and show how these mechanisms combine to minimize coordination and motivation
177 problems. **(Figure 1 to be inserted here)**

178 **3- CUMA in Québec**

179 In the province of Quebec, it was not until 1991 that the first CUMA emerged from 10 producers
180 in the Bas-Saint-Laurent⁶ region (Harris & Fulton, 2000b). Today, there are 61 CUMAs
181 operating in the province (Ministère de l'Agriculture des Pêcheries et de l'Alimentation du
182 Québec, 2018). Figure 2 shows a typical CUMA governance structure. CUMAs are democratic
183 member-based organizations with all members forming the general assembly (GA). According to
184 the Quebec Cooperatives Act, the GA adopts the cooperative's bylaws, elects the board of
185 directors (BoD), appoints an auditor, and may adopt any matter relating to the cooperative, such
186 as its affiliation with the cooperative association. In general, the GA delegates authority to a
187 board of directors whose role may be to oversee the activities of the CUMA. A salaried manager
188 most often manages the administrative affairs of the CUMA (compilation of member invoices),
189 while the branch manager is a volunteer producer that is responsible for organizing the use of the
190 machine. There are as many branch managers as there are branches in the CUMA. **(Figure 2 to**
191 **be inserted here)**

192

⁶ The Bas-Saint -Laurent is an administrative region located northeast of Quebec City.

193 **4 Case studies**

194 4.1 Data collection

195 We use multiple case studies that can provide more robust results than a single case (Eisenhardt,
196 1989). One of the challenges related to the case study is how to define the sample size. The
197 saturation sampling strategy was used in our study. Saturation indicates that adding a new case
198 does not improve the data quality (Eisenhardt, 1989). In total, seven CUMAs were retained in
199 our final sample (Table 1). Our sample size is justified theoretically but also pragmatically.
200 Theoretically, 4 or 5 cases are sufficient for a single study (Creswell & Poth, 2016). On the other
201 hand, given the seven cases' responses, adding more CUMAs would not improve the study's
202 quality following the saturation principle. The data on the CUMAs were collected via semi-
203 structured phone interviews or the zoom platform, each lasting between 45 and 120 minutes. The
204 data collected via semi-structured interviews were supplemented by data from archival
205 documents available on the internet and other internal documents provided by the CUMAs. Our
206 questionnaire addressed themes related to the governance of the CUMA, including the
207 governance body and mechanisms. The interviews were conducted with a member of the
208 CUMA's governance body. In all the CUMAs, we were able to interview the president. In 3
209 CUMAs, we were also able to talk to another governing body member, such as a board member
210 or the manager, in addition to the president. To protect the privacy of the participants, we used
211 letters A to G to identify the CUMAs. The details of the cases are presented in Table 1. (**Table 1**
212 **to be inserted here**)

213 4.2 Data analysis

214 We conducted an intercase analysis to identify recurrences and differences between cases
215 (Huberman et al., 2014) and performed a content analysis associated with each theme of our
216 questionnaire.

217

218

219 **5 Results**

220 5.1 Governance problem

221 - **Coordination problem**

222 The challenge of the CUMA members is to organize the activities so that each producer can
223 carry out his activities at the right time (De Toro & Hansson, 2004).

224 “I have the dethatcher at home, and three of us use it (...), that is why I said we should not have
225 four or five members because it is getting complicated to manage the distribution of the machine,
226 especially since almost everyone needs it at the same time.” (President of F)

227 To address this problem, CUMAs rely on reducing the number of members in the group
228 depending on the specificity of the machinery. For example, for a stripper, the number of
229 members could reach 15-16 members, while for a mower, the number of members would be
230 limited. Reducing the number of members in the group implies higher individual costs since the
231 individual cost of using the material decreases when the number of members increases.

232 “We had a maize planter; 8 producers used it; when the loan expired, we split up, (...) then we
233 bought another planter, we have four members for less surface, but, about the same costs; it is a
234 slightly more expensive, but there is much less stress regarding the availability of the machine.”
235 (Board Member of C)

236 Therefore, the producers in a CUMA could face the following dilemma: save on individual costs
237 by accepting more members or limiting the number of members to minimize the costs of not
238 completing agricultural tasks on time, referred to here as the timeliness cost. Faced with this
239 dilemma, CUMAs must find appropriate coordination mechanisms to strike a balance between
240 reducing machinery costs and timeliness costs.

241 - **Motivation problem**

242 Motivation problems are related to the difficulty of preventing opportunistic behaviour. An
243 example of passive opportunism in a CUMA is the misuse of equipment in a context that is not
244 suitable for agricultural activities.

245 “We had a problem with a combine (...) there were three producers using it in the branch, one
246 of them decided in January that he would take the combine to do his corn in the field (...) there
247 were two feet of snow.” (President of B)

248 The interdependence of the group members means that an individual mistake is paid for
249 collectively. For example, not declaring the units of use would imply fewer costs for the
250 opportunistic producer and a cost of wear not captured by the CUMA since the actual units of
251 use would not correspond to the units declared. In the same way, when a producer changes
252 activity, this implies one fewer person in the group. Therefore, individual costs increase unless
253 the outgoing producer finds a replacement or continues to meet his or her commitment. If the
254 producer cannot meet the contract requirements, the costs fall on the CUMA since it is
255 committed to fixing claims contracts with the supplier or financial institutions.

256 “All the payments not made by the producer are automatically reimbursed by the CUMA to the
257 financial institution, so this eats into our liquidity, and then reduces our ability to make changes,
258 to make purchases, to do maintenance (...).” (President of D)

259 Opportunistic behaviour (passive or active) results from the CUMA's inability to anticipate
260 members' intentions, their propensity to behave well, or the lack of an adequate monitoring
261 mechanism. **(Table 2 to be inserted here)**

262 5.2 Formal governance mechanism

263 - **The limited role of governance bodies in CUMAs**

264 Figure 2 shows the various governance bodies of the CUMA investigated, the most important of
265 which are the GA, the BoD, and the administrative and operational manager. Traditionally, the
266 GA has decision control (ratification and monitoring) (Bijman et al., 2014). In a CUMA, the
267 ability of the GA to minimize coordination and motivation problems depends on member
268 involvement in collective decision-making. However, our results show the low participation of
269 CUMA members in collective decision-making. **(Table 3 to be inserted here)** Concerning the
270 BoD, there is a consensus among the presidents on their role, which is mainly to supervise the
271 general activities of the CUMA (relations with suppliers, banks) and to make final decisions, as
272 exemplified by the following quote: “If the members cannot agree among themselves, the Board
273 makes the final decision” (President of D). This suggests that the BoD's action about motivation

274 problems occurs ex post, which only partly solves the problems faced by producers. In some
275 cases, the fact that the decision-making process in CUMAs is based on the “one member, one
276 vote” principle means that the board may have little room to manoeuvre in its ability to become
277 involved in member control. For example, some CUMAs (A, F) opt for stricter control of
278 member behaviour by using wheel counters. In other CUMAs (B), members have rejected this
279 type of technology.

280 “(...) Other CUMAs use electronic boxes that measure usage, (...) the members have not accepted
281 it, but I have proposed it (...) there are many things I propose, but they have not necessarily been
282 accepted yet.” (President of B)

283 Finally, all the CUMAs studied have a governance structure with a double delegation, i.e.,
284 administrative and operational. this could imply a double agency problem (Vitaliano, 1983).
285 However, the agency problem would be less important at the operational level than at the
286 administrative level. The rationale behind this statement is simple: the CUMA manager is not a
287 residual claimant, whereas the operational manager, being a member of the group, automatically
288 is. Since the CUMA manager is not a residual claimant, his incentives might differ from those of
289 a CUMA member.

290 - **The incompleteness of written contracts**

291 The contractual arrangements in a CUMA are mainly based on the internal rules and le contrat
292 d’engagement. Iliopoulos (2003) suggests that cooperatives should define clauses in their bylaws
293 to constrain opportunistic behaviour. The CUMA bylaws define various general provisions,
294 including the general conditions for forming a branch of activity and handling conflicts. These
295 provisions are usually helpful ex post as a basis for final decisions.

296 “When, say, a breakage occurs, then the general CUMA rules apply in the sense that, usually
297 when equipment breaks, the cost of repair is shared by all members, unless the breakage is
298 caused by misuse.” (President of D)

299 The fact that the internal regulations only apply to producers who are already members of the
300 CUMA implies that, formally, there is a gap in the CUMA's capacity to anticipate various
301 opportunistic behaviours, particularly regarding the carefulness of the members. In these cases,
302 the CUMA can only intervene when the careless producer's performance has been observed ex

303 post. The mechanism used then, as observed in one CUMA, was to exclude the opportunistic
304 producer at the time of machine renewal.

305 “Sometimes, during use, we get to know the other person better; when the machine is renewed,
306 when we change the machine, we say, this producer, we put him aside.” (President of B)

307 Le contrat d’engagement is the other side of the formal contractual arrangements in a CUMA. In
308 contrast to bylaws, the contrat d’engagement functions as a specific formal guide that makes
309 explicit how the group members intend to coordinate with each other and meet the requirements
310 of the CUMA. In terms of coordination, the contrat d’engagement specifies that the members
311 define the formal order of equipment use. However, in several of the cases analysed, the
312 systematic use of the contrat d’engagement as an instrument of coordination in machinery
313 sharing remains limited.

314 “It is written in the contrat d’engagement, the priority list is written there, who's first, who's last
315 (...) it is quite rare that the branch manager has to take out the list, but if there is a conflict, the
316 one who's higher in the list obtains use of the machine.” (President of A)

317 Finally, the contrat d’engagement is based on the strong assumption that group members will
318 respect their promises (careful use of materials, declaration of units of use). The possibility of
319 opportunistic behaviour by group members may make these promises null and void.

320 5.3 Relational governance

321 - **Mutual adjustment and good understanding**

322 CUMA also relies on relational governance mechanisms. CUMA members will, for example,
323 resort to mutual adjustment, which relies mainly on informal communication (Mintzberg, 1993).
324 By engaging in mutual adjustment, CUMA members can coordinate with each other without
325 strict planning and, thus, have a better ability to adapt to unforeseen circumstances.

326 “In a branch, especially branches that have been operating for years, we all know each other, we
327 all have a phone in our pockets, we all have our contacts too, so we talk regularly (...). This year,
328 we had a mechanical shovel; normally, the mechanical shovel use is limited to a week
329 maximum; this fall, one producer who is a member of the branch was building a barn, which

330 takes a lot of time (...) the mechanical shovel spent a lot of time at their place, at the same time,
331 no one loses out because as the shovel works more, our hourly rate decreases.” (President of C)

332 An understanding between members may stem from good communication between members.
333 Good understanding introduces flexibility in the relationships of the members and facilitates the
334 organization of machinery sharing. In the presence of a good understanding, members can
335 function autonomously and settle their disputes. In this respect, it is common for CUMAs to
336 initially allow the members themselves to find solutions to their conflicts.

337 “They try to agree; if they cannot agree, the branch manager will contact the president, the
338 president will contact the board and the board will make a decision; at that point, it becomes the
339 final decision; then the member has to abide by it.” (President of A)

340 - **Selection ex ante**

341 The ability of CUMA members to easily take advantage of unforeseen situations depends on the
342 identities of the group members. Ouchi (1979) identifies two ways for organizations to achieve
343 adequate control, which are selecting people who align with the organization's way of doing
344 things or selecting nonconforming people and placing them under supervision or evaluation. In
345 general, the CUMAs interviewed are selective about new members, and their objective is to
346 select members who correspond to their expectations.

347 “(...) I will tell you that we all know each other; we all have affinities with each other; it is
348 certain that if there is a producer who would like to join, if there are members who know him,
349 who know that he is not someone who wants to work actively with other producers, we would be
350 more reticent to include him in the CUMA (...)” (President of C).

351 In addition, as Table 1 shows, there is little or no change in the number of members of several
352 CUMAs.

353 “I do not think that there is any possibility of growing at the moment; I think that we have
354 reached a ceiling, and I would say that, given the size of the farms, it is more inclined to go
355 down, because the bigger the farms are, the more the others do not want to be in CUMA, because
356 the others all want to have their own equipment, because, when it is time, they have to run.”
357 (President of F)

358 When the CUMA presidents are asked if their objective is to expand, the answers are mixed, as
359 several presidents seem to indicate that their CUMA remains open but has not necessarily
360 adopted the idea of expansion. In some cases, the presidents seem to be reluctant to expand; the
361 concept of remaining a small group where good understanding prevails appears to be the
362 ultimate goal of the CUMA. For other CUMAs, the idea of expanding is entirely out of the
363 question.

364 “We keep our core membership, then we can add branches, but we truly do not want to have
365 more members (...) sometimes it is necessary to add a new member to a new branch, but if three
366 new members wanted to create a new branch, I think we would refuse them.” (Board member of
367 C)

368 Membership selection and close memberships are characteristic of hybrid organizations
369 (Iliopoulos, 2003). Although this seems to be a departure from the basic cooperative principles
370 (free membership), CUMA members need to select candidates who are compatible with the
371 group's methods. The issue here is to integrate a member who aligns with the group's
372 organization rather than one who destroys it. The ability of CUMAs or the group member to
373 select candidate members is crucial to their compatibility (Harris & Fulton, 2000b)

374 - **Reputation**

375 Reputation creates positive incentives to comply with a contract because the present gains from
376 opportunistic behaviour can be quickly offset by the risk of loss in future transactions (Mazé &
377 Ménard, 2010). In CUMAs, the effect of reputation is powerful because the groups are generally
378 very close-knit; thus, bad behaviour is quickly detected and sanctioned. The most common
379 sanction is the removal of the member, who would subsequently have difficulty finding a new
380 partner.

381 “They (member) do not want to partner with just anyone, because we have 2 or 3 members who
382 we do not want to have; they do not pay attention, it often breaks down when they use it because
383 they are more careless, which undermines the confidence in the system and makes some of the
384 other members of the group lose confidence.” (Manager of F)

385 When the members' trust is eroded because of a producer with a bad reputation, the
386 consequences can be disastrous for both the offending member and the CUMA. For the CUMA,

387 the result could be the withdrawal of good members, representing a loss for the CUMA in
388 membership.

389 “There is one who is always breaking everything. Unfortunately, he caused two members to
390 leave; every time there is a renewal, we say, we will not renew if he is there (...) I have one of
391 my best friends who left the branch; he does not’ believe in the CUMA, because unfortunately he
392 was involved with three machines, and this guy was also involved with the same three
393 machines.” (President of F)

394 The fact that a bad reputation can weaken the group's trust and dilute CUMA membership causes
395 CUMAs to be attentive to cases of bad behaviour. The challenge is to maintain a working
396 environment conducive to the achievement of each member's objectives. Even if this mechanism
397 intervenes ex post, that is, after the producer's behaviour has been observed, it still constitutes a
398 credible threat. If a producer is tempted to violate the rules, there is a chance that he will not be
399 discovered, but it is inevitable that if he is found, he will be quickly sanctioned.

400 - **Trust**

401 Trust is essential because other values flow from it, such as honesty, which in turn reinforces
402 mutual trust. In a CUMA, mutual trust leads the group members to disclose hidden information
403 and, thus, prevents opportunism. Similarly, a lack of trust between members leads to more
404 mistrust and generates a working environment that is not conducive to achieving individual
405 objectives.

406 “Often, someone who accidentally breaks the machine will say so straight away and even get it
407 fixed straight away, and this wins the trust of others; when someone tries to hide something to
408 save costs, trust is broken.” (President of B)

409 The value of trust between members also lies in the fact that without mutual trust between
410 members, the sustainability of the branches of activity in a CUMA is limited. Trust will manifest
411 in the ability of the members to renew a given piece of equipment regularly. Thus, members
412 must trust each other to minimize opportunistic situations and hope to continue sharing activities.

413 “There are members who have been in a branch for ten years and who continue to do so, so you
414 can say that they have confidence.” (President of G)

415 5.4 Relational governance and/or formal governance in a CUMA? theoretical proposition

416 The formal aspect of CUMAs stems from the fact that a cooperative law governs them. Most
417 often, the presidents of the CUMAs acknowledge the importance of formal governance
418 mechanisms, as the following quote exemplifies: “When things go wrong, when it is not written
419 down, it is more complicated” (President of B).

420 **Proposition 1:** Because of possible opportunistic behaviour and relationships with suppliers and
421 financial institutions, CUMAs use formal governance mechanisms as a basis for decision-making
422 and as a means of coordination with stakeholders.

423 Even if CUMAs do not seek excessive formalization, they need to comply with the basic formal
424 rules set out in the cooperative law and its internal regulations. According to Fici (2013),
425 cooperative law and rules must take precedence over all other sources of regulation, which
426 should only be applied in a residual way to fill the gaps left by the formal sources. This statement
427 leads to the idea of a possible complementarity between formal and relational governance in
428 cooperatives. Liang et al.(2018) show that informal governance’s impact on producers'
429 performance is larger when there is stronger formal governance in the cooperative. CUMAs
430 combine both formal and relational governance mechanisms. The idea of complementarity is
431 therefore also applicable to the CUMA context.

432 **Proposition 2:** In a CUMA, formal and relational governance mechanisms function as
433 complementary governance mechanisms.

434 Although complementary to formal mechanisms, relational governance does not seem to play a
435 residual role in a CUMA. In contrast, coordination and motivation in CUMAs seem to rely
436 mainly on intense relational governance mechanisms, while the role of formal governance
437 remains residual.

438 “We rarely open contracts, (...), you know, the key to a CUMA, and to good branches, is to have
439 members who get along well; in a CUMA, you have to be able to put water in your wine.”
440 (Board member of C)

441 Thus, interpersonal relationships seem more critical in a CUMA than a relationship based on
442 strict planning of activities defining all possible contingencies.

443 “In spring, when everyone is pressing (hay bales), we have machines that run 24 hours per day,
444 we know that there is one waiting afterwards; then, they announce rain in 2 days, but we will
445 take turns sometimes, saying, we will not stop the machine; then we talk to each other; then there
446 is another one who will come at night, (...), I am in certain branches that are like that; we found
447 each other; there are four members of the CUMA who have more or less the same philosophy
448 regarding having high-performance machines.” (Board member of C).

449 **Proposition 3:** Relational governance does not play a residual role in CUMAs. In fact, its role is
450 essential to the ability of CUMA members to build and maintain trustworthy groups to deal with
451 situations not foreseen by the formal aspect of governance.

452 **6 Discussion and Conclusion**

453 - **Relational governance mechanism importance**

454 Although framed by the cooperative law that imposes different formal governance mechanisms,
455 machinery cooperatives rely essentially on relational governance. [Bijman et al.\(2014\)](#) show that
456 cooperatives have made various significant innovations in their internal governance by using
457 professional managers, introducing a voting system based on the importance of the members,
458 integrating non-members in the BoD, etc. But because of the nature of their operations and
459 specific challenges, it becomes necessary for CUMA members to rely on other types of
460 mechanisms. Our findings also reveal the presence of opportunistic behaviour within CUMAs
461 that can undermine the success of the group. Theoretically, our results make it possible to
462 highlight two points of view on governance, namely, that of Williamson (1985) and that of
463 Ostrom (1990). While the first author emphasises the problems of governance linked to the
464 opportunism of individuals, the second shows their capacity to organize themselves via relational
465 governance.

466 - **Back to square one?**

467 One of the strengths of CUMAs is their ability to combine formal and relational governance
468 mechanisms. Relational mechanisms minimize coordination and motivation problems while
469 allowing producers to organize themselves through mutual adjustment. However, a large use of
470 relational mechanisms can be detrimental to performance by increasing the occurrence of

471 opportunism (Villena et al., 2011). In the case of CUMAs, one of the problems encountered with
472 the strong socialization between members is the fact that producers tend only to be concerned
473 with patronizing the CUMA without any real involvement in the associative life in the CUMA.
474 Specifically, in some CUMAs, the presidents remain pessimistic about the continuity of the
475 activities because of the members' lack of interest in becoming involved with the board.

476 “In our case, there is not much competition (...), when we look for a new director, it is slightly
477 difficult; at the general assembly, it is almost only the board of directors who are there; there are
478 few members who are not directors who are at the general assembly. They are not interested in
479 getting involved; some of them are good users; they are only happy to pay.” (President of B). In
480 CUMAs, the economic commitment of the members is evident, while from the associative point
481 of view, there seems to be a certain distance between the members and their CUMA. In any case,
482 this distancing implies a form of individualism within cooperatives that contradicts the very
483 nature of agricultural cooperatives. The commitment of members is necessary for the cooperative
484 to be viable. Thus, the lack of commitment could impact the ability of these organizations to
485 continue over time. This study has several limitations. First, by adopting a multiple case study
486 approach, the generalizability of our study may be limited. Second, this study is based solely on
487 the CUMA board's perspective, which does not exclude desirability bias (Bergen & Labonté,
488 2020). Moreover, our study may suffer from selection bias because the CUMAs included are
489 mostly small. The size effect could favour more homogeneity, which would facilitate the
490 development of social mechanisms between members (Höhler & Kühl, 2018). At the same time,
491 since CUMAs are organized as several branches of activity, each branch having a limited
492 number of members, the total number of members of the cooperative might not greatly affect the
493 governance mechanisms at work. Future studies could analyse in-depth how the size effect
494 influences governance mechanisms in the context of machinery cooperatives. Finally, we have
495 identified the governance mechanisms at work in CUMAs. Another step would be to link these
496 governance mechanisms to the performance of these organizations following Silva and Morelo
497 (2021).

498 **Declaration of Competing Interest**

499 The authors report no declarations of interest.

500 **Acknowledgements**

501 The authors thank the referees for their valuable comments. The paper was presented at the ICA-
502 CCR 2021 Europe conference and at EMNET 2021. We would like to thank all the comments
503 received from participants at these conferences. Special thanks to Mr. Bruno Guérard, the
504 CUMA respondent in the province of Quebec. Thanks also to the CUMA president for their
505 availability.

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Table 1 : Details of the cases

CUMA ⁷	Date of creation	Active member 2015 → 2020	Estimated Value of Equipment (in Canadian dollars) 2015 → 2020	The dominant type of production	Interviewed
A	1994	25 → 30	1 228 681 → 2 000 000	Dairy production	PRE ⁸ MCA ⁹
B	1999	23 → 23	190 229 → 150 000	Dairy production	PRE
C	2003	27 → 27	681 000	Dairy production	PRE PREF ¹⁰
D	1991	36 → 37	561 743	Dairy production Ovine producers	PRE Manager
E	1997	12 → 16	561 086 → 1 000 000	Dairy production Hog production	PRE
F	1999	65 → 70	711 632 → 1 850 000	Dairy production	PRE Manager
G	1998	57 → 28	365 955	Dairy production Grain producer	PRE

640 Source: Based on the information provided by study participants

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⁷ To protect the privacy of the participants, we use anonymous names to identify the CUMA

⁸ President of CUMA

⁹ Board members

¹⁰ Founding president of the CUMA

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Table 2: Forms of opportunism in CUMA from survey

Opportunism forms		A	B	C	D	E	F	G
Passive opportunism	Change of activity	x		x		x		x
	Equipment misuse		x		x		x	
	Undisclosed equipment breakdown				x			x
Active opportunism	Makeshift repair				x			
	Retention of equipment				x			
	Undeclared unit of use		x				x	
	Bad faith						x	

Source: Based on the information provided by study participants

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665 Table¹¹ 3 :Collective decision making in CUMA

	A	B	C	E	F	G
Participation in collective decision	Strong	Weak	Weak	Strong	Variable	Weak
BoD members	(6)	(5)	(6)	(3)	(6)	(8)
Administrative control	++	-	+	-	++	+
Formal coordination	+	+	-	-	-	-
CUMA manager	An salaried employee					
Branch manager	A volunteering group Producer					

666 Source: Based on the information provided by study participants

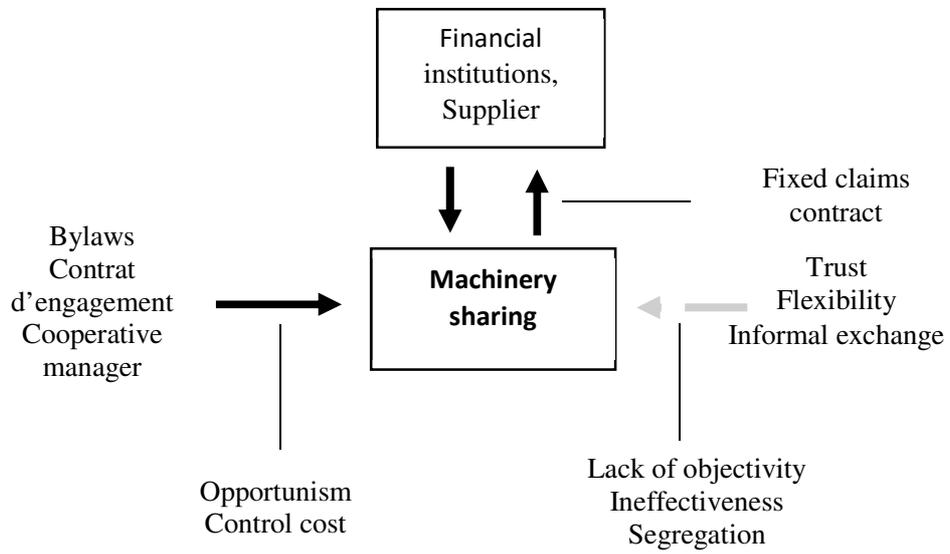
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¹¹ The D has not been included in this table due to lack of specific data.

Figure 1: Conceptual framework of CUMA formal and informal governance mechanism



Source : Authors

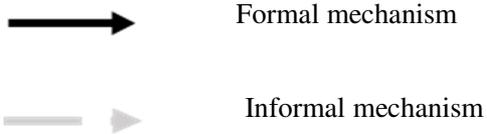
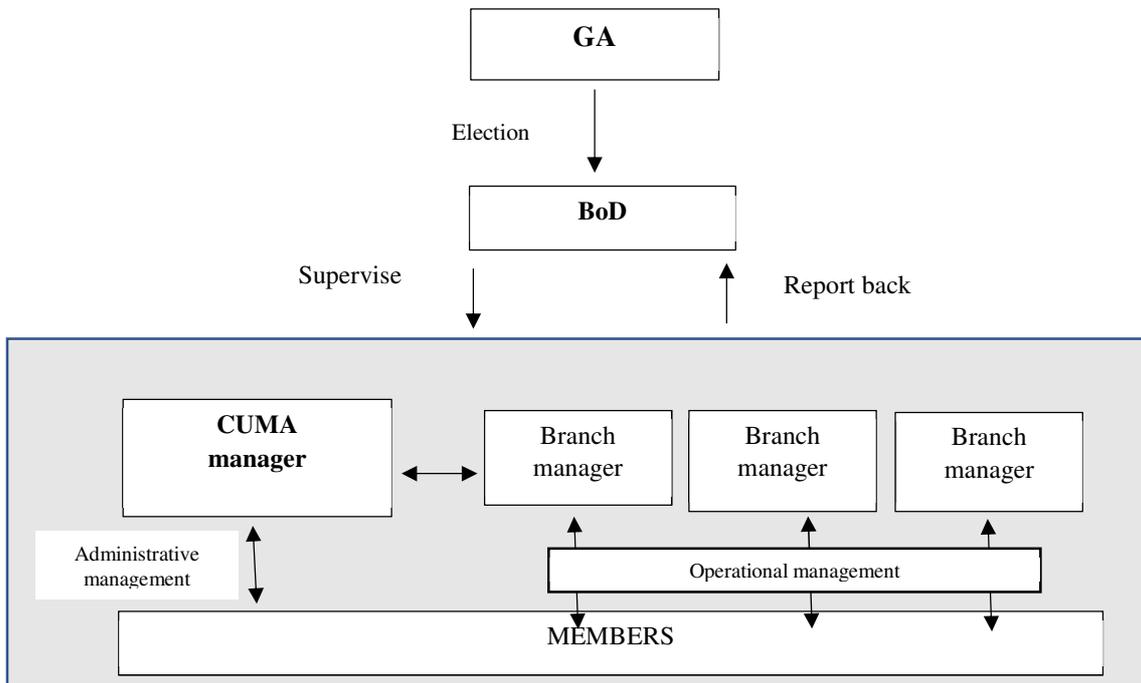


Figure 1: CUMAs internal governance in Québec (2015)



Source : Adapted from Harris and Fulton (2000)