Asian Journal of Agriculture and Rural Development
Volume 12, Issue 3 (2022): 148-156.

http://www.aessweb.com/journals/5005

# IDENTIFYING AND ADDRESSING INSTITUTIONAL PROBLEMS CONSTRAINING THE FINANCIAL PERFORMANCE OF RICE COOPERATIVES IN THE PHILIPPINES

**Brenda Dimas**[a]
**Michael Lyne**[b †]
**Alison Bailey**[c]

[a,c]*Department of Land Management and Systems, Lincoln University, New Zealand.*
[b]*Department of Agribusiness and Markets, Lincoln University, New Zealand.*

† ✉ michael.lyne@lincoln.ac.nz *(Corresponding author)*

## Article History
**Received:** 10 March 2022
**Revised:** 20 May 2022
**Accepted:** 8 June 2022
**Published:** 24 June 2022

## Keywords
Cooperative marketing
Institutional arrangements
Governance practices
Hierarchical cluster analysis
Philippine cooperative code.

## ABSTRACT
Farmer-controlled cooperatives contribute significantly to the growth of the rice sector in the Philippines, the country's most important agricultural sector. Despite ongoing financial support from various government agencies, many of the country's rice cooperatives struggle to remain viable. Cooperative failure is often attributed to poor management, inadequate capital, and opportunistic side selling by members. However, a growing body of literature views these problems as symptoms of much more fundamental flaws in the institutional arrangements that characterize traditional cooperatives. Relationships between indicators of financial performance and institutional attributes observed in case studies of four Philippine rice farmer cooperatives were identified using hierarchical cluster analysis. The results of this analysis were interpreted against causal relationships predicted by the New Institutional Economics theory. Financial performance improves when cooperatives require their members to invest in proportion to their patronage, allow members to adjust their shareholding, and periodically redeem members' shares. Other performance-enhancing institutional arrangements could be adopted if the Philippine Cooperative Code authorized directors to issue class B shares. The findings also highlight operational and governance practices that improve financial performance, which directors can and should apply.

**Contribution/Originality:** This study contributes new information about property rights and governance practices observed in Philippine rice cooperatives. It examines relationships between these institutional arrangements and indicators of financial performance and identifies specific arrangements these cooperatives should adopt to improve their performance.

DOI: 10.55493/5005.v12i3.4527
ISSN(P): 2304-1455/ ISSN(E): 2224-4433
**How to cite:** Brenda Dimas --- Michael Lyne --- Alison Bailey (2022). Identifying and Addressing Institutional Problems Constraining the Financial Performance of Rice Cooperatives in the Philippines. *Asian Journal of Agriculture and Rural Development*, 12(3), 148-156. 10.55493/5005.v12i3.4527


## 1. INTRODUCTION
Rice is the single most important crop in the Philippines (Arnaoudov, Sibayan, & Caguioa, 2015; Boquet, 2017; Bordado, Orden, Oliva, & Domingo, 1996). Rice is the primary food staple for 80% of the Filipino population, and its production accounts for more than one-third of the country's land area (PSA, 2021; Suministrado, 2013). However, stagnating yields and rising input costs have reduced farm incomes, and domestic farmers are struggling to compete with imported rice in an increasingly liberalized trade environment (FAO, 2014). The government has responded to these challenges by prioritizing the rice sector in its agricultural policies and programs. Since 2005, a disproportionately large share of the Department of Agriculture's (DA's) budget has been allocated to the national rice

program.[1] In essence, this program subsidizes the farmer's cost of inputs, credit, machinery, storage, and processing services. Farmers can access some or all of these program benefits by joining and patronizing producer associations or cooperatives. Cooperatives are key among these organizations as they are mandated to offer a wide range of services to their patron-members.

Agricultural marketing cooperatives can play an important role in the development of smallholder agriculture (Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009), but they do not have a good track record in the Philippines. Financial failure has been attributed largely to poor management, inadequate capital, and opportunistic side-selling by members (Araullo, 2006; Balgos & Digal, 2016; Ferrer, 1956; Manalili, Yaptenco, & Manilay, 2015; Tadem, 2002). However, the New Institutional Economics (NIE) theory views these shortcomings as symptoms of more fundamental problems arising from ill-defined benefit and voting rights that discourage members of traditional cooperatives from investing in the organization and complying with supply contracts (Cook & Iliopoulos, 1999; Harris, Stefanson, & Fulton, 1996). The nature of these property rights is constrained by formal laws governing cooperative societies and, to some extent, by the practices of the government and non-government agencies that help smallholders organize as cooperatives. The Philippine Cooperative Code of 2008 is the principal law governing the country's cooperative societies.[2] This law imposes a traditional structure on cooperatives and remains at odds with trends in developed countries, where cooperative legislation has been relaxed to accommodate investor-friendly institutional arrangements (Lyne & Collins, 2008).

There are, however, strategies cooperative leaders can adopt to mitigate some of the disincentives created by ill-defined property rights. This study asks what cooperative leaders are doing to make their cooperatives more investor-friendly, what more they could do within the law, and what policy changes would improve their prospects of achieving value-adding business goals. In the first instance, this paper summarizes information about financial performance and *de facto* institutional arrangements observed in case studies of four rice farmer cooperatives located in Davao del Norte province. Second, it applies hierarchical cluster analysis to identify institutional arrangements that correlate positively with indicators of financial performance. The results of this quantitative analysis are then interpreted against causal relationships predicted by the NIE to highlight institutional problems affecting cooperative performance and to formulate recommendations for cooperative policymakers, facilitators, directors, and managers.

## 2. LITERATURE REVIEW AND RESEARCH METHODS

### *2.1. Conceptual Model*

The NIE literature dealing with agricultural marketing cooperatives focuses largely on institutional problems created by ill-defined property rights, and the adverse effect that these problems are likely to have on member investment. Ill-defined benefit rights can result in free-rider, horizon, portfolio, and control problems, while ill-defined voting rights can lead to an influence problem (Sykuta & Cook, 2001). Traditional cooperatives are prone to all these institutional problems as they adhere strictly to the historical cooperative principles of member economic participation, open membership, and democratic control. Each of these institutional problems is expected to discourage members from investing in their cooperative, limiting its ability to borrow and hence its ability to finance assets needed to pursue a value-adding business strategy (Nilsson & Ohlsson, 2007).

The free-rider problem can be alleviated by obliging members to invest in proportion to their patronage, while the horizon, portfolio, and control problems can be mitigated by selling members a class of shares that is non-redeemable and therefore tradable and appreciable. The success of New Generation Cooperatives has been attributed in large part to tradable delivery rights, which members must buy in proportion to their patronage (Cook & Iliopoulos, 1999; Harris et al., 1996). Less attention has been given to the important role that tradable delivery rights play in facilitating and incentivizing patron compliance with supply contracts. Predictable quantity and quality are important when cooperatives seek to build long-term supply relationships with premium buyers (Awolu, Ajibola, Adeloye, & Ogwu, 2020; Beverland, 2007; Esnard, Lyne, & Old, 2017; Zaman, Aker, & Nishat, 2022). Conservative cooperative legislation, like that in the Philippines, does not allow cooperatives to issue non-redeemable shares that members can trade at market prices. However, they can require members to invest in proportion to their patronage, and they can redeem shares on a regular basis. These strategies alleviate the internal free-rider problem and, to a lesser extent, the horizon problem. Salazar and Galve (2011) found that periodic redemption of shares improved the value-adding performance of proportional investment cooperatives studied in Spain.

With few exceptions, cooperatives worldwide are legally required to assign equal voting power to their patron members. This introduces an influence problem that may discourage investment because control does not reside with majority investors. A study of producer organizations in Sri Lanka (Rosairo, Lyne, Martin, & Moore, 2012) found empirical support for the argument that democratic control is less likely to create meaningful influence problems if the organization's governance arrangements clearly separate ownership from control – i.e., ordinary members should be consulted but should not participate in strategic or management decisions. At the same time, the study found that influence problems attributed to the (bad) practice of allowing external agencies to appoint directors to the producer organization's board were a leading cause of business failure. A key point to take from Rosairo et al. (2012) study is that the advantages of well-defined property rights are easily lost if these rights are not upheld by (good) governance practices that promote transparency and accountability.

Governance arrangements impact performance via their effects on management as they determine who gets to direct and manage the organization, to whom the directors and managers are accountable, and the ease and extent to which they can be held responsible for poor decisions (Cadbury, 1992). Good governance practices are therefore

[1] http://www.da.gov.ph/transparency/ .
[2] https://www.officialgazette.gov.ph/2009/02/17/republic-act-no-9520/.

expected to improve the quality of management, and there is a view that better managers tend to implement better governance practices. However, the ability to hold directors and managers accountable diminishes if property rights are not well-defined. If shares are not tradable, there is no market to signal managerial performance, and members cannot sanction poor management promptly by disinvesting. In short, well-defined property rights and good governance practices are expected to impact positively on financial performance, and the relationship between good governance and well-defined property rights is expected to be both positive and bi-directional. Figure 1 illustrates the conceptual model.

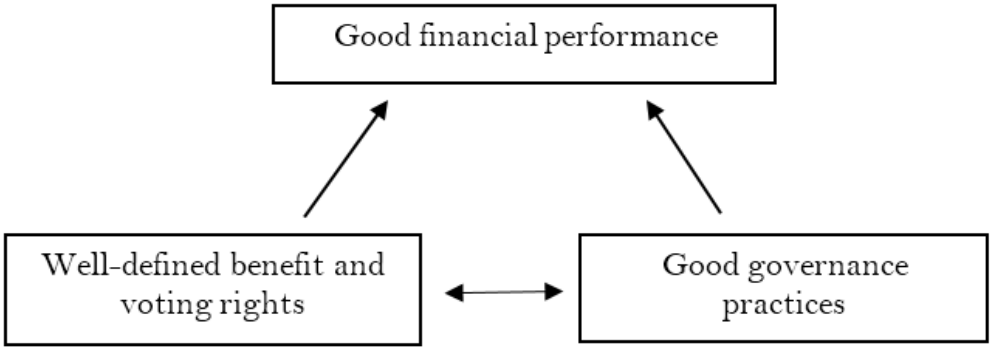


**Figure 1.** Conceptual model of relationships between institutional arrangements and performance.
**Source:** Adapted from Chibanda, Ortmann, and Lyne (2009).

### *2.2. The Study Area and Selection of Cases*

This research was conducted in Davao del Norte province, partly because it is typical of most provinces where rice is one of the three most important crops grown, and partly because the lead researcher had strong professional and social networks in the province to support the research. Data were gathered using a case study approach because reliable information about an organization's *de facto* institutional arrangements calls for in-depth answers to "how" and "why" questions (Yin, 2018), as well as triangulation of responses across the organization's members, directors, and managers (Yin, 2003).

Records maintained by the Provincial Agriculture Office (PAGRO) and the Cooperative Development Authority (CDA) listed a total of nine rice-marketing cooperatives in the province, all operating under similar agro-climatic conditions and the same government support programs. Four of these nine cooperatives were selected for study between July and December 2020. The selection was purposeful in that prior information about each cooperative's financial health was used to ensure variation in performance across cooperatives of different membership sizes. In the absence of *a priori* information about the cooperatives' institutional arrangements, variation in size was considered important as influence problems are more likely to occur in larger cooperatives - particularly if their governance practices do not adequately separate ownership from control.

Personal interviews were conducted with respondents selected from each case study. The respondents included the chair of the cooperative's Board of Directors (BoD), its principal manager, and members selected using snowball sampling to identify patrons willing and able to provide additional information. Semi-structured interview guides were developed for directors, managers, and ordinary members. It was anticipated that directors and managers would be the most reliable sources of information about their cooperative's property rights and governance practices, whereas members would provide more reliable information about motives for patronizing and investing in their cooperative. Most interviews were conducted face-to-face, but COVID-19 regulations introduced towards the end of 2020 necessitated some online and telephonic interviews. Fifteen respondents, including twelve ordinary members, were interviewed at each of the four cooperatives studied.

Qualitative and quantitative information gathered in these interviews was complemented with and triangulated against information drawn from secondary sources provided by each cooperative (including their constitutions, bylaws, annual reports, and AGM minutes) and personal observations of their physical assets made by local research assistants. Although the data were analyzed qualitatively (Dimas, 2021) using the pattern matching technique recommended by Yin (2018), this paper reports the application of a quantitative method to identify relationships within and between institutional characteristics and indicators of financial performance observed in the case studies.

### *2.3. Hierarchical Cluster Analysis*

Hierarchical cluster analysis offers a suitable method of detecting positive relationships between binary variables when the number of cases is small, as the technique can be applied to variables rather than cases. Broadly speaking, the objective of cluster analysis is to classify a set of observations into mutually exclusive clusters based on a measure of their similarities (Chatfield & Collins, 1980). A hierarchical cluster analysis of variables starts with a single cluster containing all the variables and, at each successive step, merges the variables into fewer and fewer clusters such that homogeneity within the clusters, or heterogeneity between the clusters, is maximized (Norusis, 1994). Although there is no objective way of choosing an optimum number of clusters, the decision is usually guided by a substantial increase in a measure of proximity showing the loss of homogeneity (heterogeneity) within (between) groups. In this instance, the variables measured the presence of "good" performance, property rights, and governance attributes. Following the logic presented in Figure 1, it follows that each cluster produced by the analysis should contain a healthy mix of

performance and institutional indicators. Rosairo et al. (2012) applied this method to triangulate the results of pattern matching in a similar study investigating the failure of farmer companies in Sri Lanka.

## 3. RESULTS AND DISCUSSION

### *3.1. Indicators of Financial Performance*

Table 1 lists some general demographic features of the four case studies and nine indicators of their financial performance. Financial data reported by the cooperatives for the years 2016–2019 were expressed in constant 2019 prices to account for inflation. Measures of profitability (return on equity), leverage (debt/equity), and liquidity (current ratio) in 2019 were then estimated from trend lines to account for random variation in the financial data. For these indicators, a "Yes" reported in Table 1 shows that the estimate was better than a critical value recommended by the University of Minnesota Extension.[3] Indicators of change in financial performance over the period 2016–2019 were based on slope coefficients estimated for the (deflated) trend lines. For these indicators, a "Yes" shows that the slope coefficient was positive and statistically significant, implying improvement since 2016. Case B maintained relatively high levels of profitability over the period 2016–2019 and outperformed the other cases. For convenience, Table 1 lists the cases from left to right in decreasing order of financial performance.

**Table 1.** Features of the cooperatives and differences in their financial performance (2019=100).

| Indicator | Case B | Case C | Case A | Case D |
|---|---|---|---|---|
| **Cooperative demographics** | | | | |
| Years in operation as a registered cooperative | 29 | 25 | 28 | 21 |
| Members in 2020 (#) | 104 | 138 | 183 | 189 |
| Provide market, machinery, and financial services | Yes | Yes | Yes | Yes |
| **Financial performance** | | | | |
| Profitability (ROE in 2019 within acceptable range) | Yes | Yes | Yes | No |
| Leverage (debt/equity in 2019 within acceptable range) | Yes | Yes | No | No |
| Liquidity (current ratio in 2019 within acceptable range)[a] | Yes | No | Yes | No |
| Positive growth in profitability 2016–2019 | No | No | Yes | No |
| Positive growth in assets 2016–2019 | Yes | No | Yes | Yes |
| Positive growth in equity 2016–2019 | Yes | No | No | Yes |
| < 10% contraction in book value of shares 2016–2019 | Yes | Yes | No | Yes |
| Low level of government support[b] | Yes | Yes | No | No |
| Long-term trading relationships with premium buyers[c] | Yes | No | No | No |

**Notes:** [a] Cases C and D had unusually high liquidity ratios, suggesting inefficient use of working capital. [b] "No" signifies that > 60% of assets were donated by the government; "Yes" shows that < 30% of assets were donated by the government. [c] Case B is the only cooperative that markets certified rice seed, a quality product sold to premium buyers with whom the cooperative had established long-term trading relationships.

### *3.2. Indicators of Institutional Arrangements*

Property rights were not expected to differ much between the case studies owing to (a) national legislation that prevents cooperatives from issuing non-redeemable, tradable shares, and (b) the absence of strategies used by cooperatives in other countries to reward investors with capital gains by revaluing redeemable shares or issuing bonus shares.

**Table 2.** Institutional arrangements that differed between the cooperatives.[a]

| Attribute | Case B | Case C | Case A | Case D |
|---|---|---|---|---|
| **Property rights** | | | | |
| Only members can sell rice to the cooperative | Yes | No | No | No |
| Members use cooperative services on better terms than non-members | Yes | No | Yes | No |
| Investment is proportional to patronage | Yes | No | No | No |
| Members can readily exit and redeem all shares | Yes | Yes | Yes | No |
| Members can redeem some shares without exiting the cooperative | No | Yes | No | No |
| Periodic redemption of excess member capital | No | Yes | No | No |
| **Governance practices** | | | | |
| Members have enough time to review reports tabled at the AGM | Yes | Yes | Yes | No |
| Outsiders excluded from AGMs | Yes | No | No | No |
| Members removed a director from office at the AGM | No | Yes | No | No |
| Members do not participate in policy or operational decisions | No | Yes | Yes | Yes |
| Directors should not be appointed to a managerial position | Yes | Yes | Yes | No |
| Directors are not allowed to participate in management decisions | No | Yes | No | No |
| Directors did not intervene in daily operations | Yes | Yes | No | No |
| The board fired a manager | Yes | No | No | No |
| The manager can be a non-member | Yes | No | No | No |
| The manager must have a tertiary qualification | Yes | Yes | No | No |

**Note:** [a] "Yes" ("No") indicates the presence (absence) of a good institutional arrangement.

[3] https://extension.umn.edu/farm-finance/ratios-and-measurements.

Indeed, few differences were observed in *de jure* property rights, but Table 2 lists observed practices that created some differences in *de facto* property rights, and which help to alleviate at least some of the institutional problems thought to constrain performance in traditional cooperatives. Case B, the best financial performer, alleviates the external free-rider problem by purchasing rice only from members and by charging non-members more for its services. Case B also alleviates the internal free-rider problem by requiring members to buy shares in proportion to the quantity of rice they deliver to the cooperative. Case C, the only other cooperative not heavily dependent on government donations, alleviates the portfolio problem by allowing members to redeem shares without exiting the cooperative and eases the horizon problem by periodically redeeming excess shares.[4]

The governance practices specified by the cooperatives in their constitutions and bylaws were virtually identical and promoted transparency, accountability, and clear separation of ownership from control. The case studies, however, were more concerned with *de facto* practice, and it was often the members, rather than the directors and managers, who revealed some notable deviations from good practice. Cases A and D, the worst financial performers, had no history of holding directors and managers accountable for poor performance, failed to separate control from ownership, and did not look beyond their own members to recruit well-qualified managers.

### *3.3. Hierarchical Cluster Analysis*

Table 3 summarizes the qualitative data presented in Tables 1 and 2 in a quantitative format suitable for use in hierarchical cluster analysis. The performance indicators presented in Table 1 are reported as dummy variables, with a score of one indicating the presence of relatively good financial performance, and zero otherwise. Likewise, all indicators of property rights and governance practices are reported as dummy variables with a score of one indicating a good institutional arrangement, and zero otherwise.

**Table 3.** Variables and data used in the cluster analysis.

| Indicator/Attribute | Variable | Case B | Case C | Case A | Case D |
|---|---|---|---|---|---|
| **Financial performance** | | | | | |
| Profitability (ROE in 2019 within acceptable range) | *Profit* | 1 | 1 | 1 | 0 |
| Leverage (debt/equity in 2019 within acceptable range) | *Leverage* | 1 | 1 | 0 | 0 |
| Liquidity (current ratio in 2019 within acceptable range) | *Liquidity* | 1 | 0 | 1 | 0 |
| Positive growth in profitability 2016–2019 | *Profitgro* | 0 | 0 | 1 | 0 |
| Positive growth in assets 2016–2019 | *Assetsgro* | 1 | 0 | 1 | 1 |
| Positive growth in equity 2016–2019 | *Equitygro* | 1 | 0 | 0 | 1 |
| Less than 10% contraction in share book value 2016–2019 | *Sharegro* | 1 | 1 | 0 | 1 |
| Low level of government support | *Lowgrants* | 1 | 1 | 0 | 0 |
| Long-term trading relationships with premium buyers | *Reputation* | 1 | 0 | 0 | 0 |
| **Property rights** | | | | | |
| Only members can sell rice to the cooperative | *Memsell* | 1 | 0 | 0 | 0 |
| Members use services on better terms than non-members | *Discount* | 1 | 0 | 1 | 0 |
| Investment is proportional to patronage | *Investpat* | 1 | 0 | 0 | 0 |
| Members can readily exit and redeem all shares | *Exitall* | 1 | 1 | 1 | 0 |
| Members can redeem some shares without exiting cooperative | *Exitsome* | 0 | 1 | 0 | 0 |
| Periodic redemption of excess member capital | *Periodic* | 0 | 1 | 0 | 0 |
| **Governance practices** | | | | | |
| Members have enough time to review reports tabled at the AGM | *Review* | 1 | 1 | 1 | 0 |
| Outsiders excluded from AGMs | *Agmclosed* | 1 | 0 | 0 | 0 |
| Members removed a director from office at the AGM | *Firedir* | 0 | 1 | 0 | 0 |
| Members do not participate in policy or operational decisions | *Nopart* | 0 | 1 | 1 | 1 |
| Directors should not be appointed to a managerial position | *Dirnomgr* | 1 | 1 | 1 | 0 |
| Directors not allowed to participate in management decisions | *Dirnomgt* | 0 | 1 | 0 | 0 |
| Directors did not intervene in daily operations | *Dirnoday* | 1 | 1 | 0 | 0 |
| The board fired a manager | *Firemgr* | 1 | 0 | 0 | 0 |
| The manager can be a non-member | *Outmgr* | 1 | 0 | 0 | 0 |
| The manager must have a tertiary qualification | *Qualmgr* | 1 | 1 | 0 | 0 |

In this study, the (N=25) dummy variables listed in Table 3 were grouped into clusters by minimizing the squared Euclidean distance within clusters using SPSS software. Variables within clusters are positively related, with the strength of these positive relationships weakening as the number of clusters diminishes. Relationships between

[4] All the cooperatives studied retained part of payments (price rebates and/or dividends) made to members, crediting them in turn with additional shares. Case C periodically redeemed shares that members accumulated in excess of what shareholders were required to own.

variables within clusters remained strong until the number of clusters dropped below four, resulting in a marked increase in the agglomeration coefficient from 0.679 to 1.051 (see appendix Table A1).

### *3.4. Relationships Between Performance Indicators and Institutional Attributes*

Separation of the performance and institutional indicators into different clusters would not support the NIE argument that good financial performance is more likely to be found in organizations with good institutional arrangements. Conversely, a healthy mix of performance and institutional indicators within each cluster supports the NIE theory. Figure 2 shows the mix of indicators in each of the four homogenous clusters identified in this study. All the clusters combine performance indicators with institutional indicators. This is consistent with NIE theory. The mix of indicators in each cluster also provides more nuanced information about the relationships between aspects of financial performance, property rights, and governance practices.

| | Cluster | *Equitygro* | *Assetsgro* | *Reputation* | *Profit* | *Liquidity* | *Profitgro* | *Sharegro* | *Leverage* | *Lowgrants* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Memsell* | 1 | | | | | | | | | |
| *Investpat* | | | | | | | | | | |
| *Agmclosed* | | | | | | | | | | |
| *Firemgr* | | | | | | | | | | |
| *Outmgr* | | | | | | | | | | |
| *Discount* | 2 | | | | | | | | | |
| *Exitall* | | | | | | | | | | |
| *Review* | | | | | | | | | | |
| *Dirnomgr* | | | | | | | | | | |
| *Exitsome* | 3 | | | | | | | | | |
| *Periodic* | | | | | | | | | | |
| *Firedir* | | | | | | | | | | |
| *Nopart* | | | | | | | | | | |
| *Dirnomgt* | | | | | | | | | | |
| *Dirnoday* | 4 | | | | | | | | | |
| *Qualmgr* | | | | | | | | | | |

Legend: Property rights indicators; Governance indicators

**Figure 2.** Inter-relationships between indicators of performance and institutional arrangements.

Three performance indicators were included in Cluster 1: net equity growth (*equitygro*), positive asset growth (*assetsgro*), and presence of reputation and significant markets (*reputation*). This signals a positive relationship between growth in equity, growth in assets, and market recognition. These performance indicators correlated positively with two indicators of property rights (*investpat* and *memsell*) that strengthen proportionality between member investment and patronage. Proportionality between investment and patronage addresses internal and external free-rider problems, encouraging both investment and patronage by aligning the interests of members as investors on the one hand, and as patrons on the other hand. This alignment of interests also reduces the cost of negotiating and enforcing supply contracts with patrons, which helps the cooperative establish a good reputation for meeting the quantity and quality requirements of its buyers and establish long-term trading relationships that reduce uncertainty in investment plans and inefficiency in operations and resource use.

The performance indicators in Cluster 1 also correlated positively with three governance indicators that curtail external influence problems (*agmclosed*), improve the quality of managers (*outmgr*), and strengthen accountability (*firemgr*). The first of these governance indicators emphasizes the importance of preventing prominent outsiders from influencing the selection of directors and appointment of managers - a problem encountered in development settings where producer organizations tend to be treated as public enterprises (Rosairo et al., 2012). Conversely, the second indicator signals the importance of recruiting managers on merit from a pool of candidates that is not restricted to members of the cooperative. The last of these governance indicators measures the ability and willingness of directors to dismiss managers who perform poorly in growing the cooperative's business.

Cluster 2 included two indicators of current performance, one a measure of profitability (*profit*) and the other a measure of liquidity (*liquidity*). These performance indicators correlated positively with two indicators of property rights, *exitall* and *discount*. Cooperatives that respect decisions made by members to exit and redeem all their shares (*exitall*) need to maintain relatively high levels of liquidity to cope with redemption risk. Profitability is likely to be higher in cooperatives that alleviate the external free-rider problem by offering price rebates only to shareholding patrons (*discount*), particularly if a substantial part of their business is transacted with customers who are not members.

The performance indicators in Cluster 2 also correlated positively with two governance indicators, *review* and *dirnomgr*. Giving members sufficient time to review their cooperative's financial statements ahead of the AGM promotes transparency and signals competent management - a characteristic more likely to be found in profitable cooperatives. Acceptance of the view that directors should not be appointed to managerial positions (*dirnomgr*) is necessary but not sufficient to separate ownership from control, a practice that promotes accountability in management and attenuates the damaging effects of influence problems.

Cluster 3 combined one performance indicator, *profitgro* – which signals on-going profitability, with two indicators of property rights (*exitsome* and *periodic*) and three governance attributes (*dirnomgt*, *nopart*, and *firedir*). Both property rights indicators reflect the ability of members to realize the nominal value of some part of their shareholding before they exit the cooperative. Clearly, this does not resolve the horizon problem, but it would make retentions withheld by the cooperative to grow its equity capital more palatable. Regular redemption of excess shares (as in Case C) also helps to align voting power with investment, thereby alleviating influence problems and reducing conflicts of interest that raise transaction costs and decrease profits.

Two of the three governance indicators in Cluster 3, *dirnomgt* and *nopart*, relate to effective separation of ownership from control, first by excluding directors from management decisions and second by preventing members from participating in board decisions. This does not imply that directors should not canvass members' views. Rather it means that board decisions should be centralized in the hands of accountable directors to promote efficiency in decision-making and curtail influence problems that lead to misallocation of resources. The remaining governance indicator, *firedir*, measures the ability and willingness of members to hold directors accountable for board decisions by exercising their voice and voting power at a general meeting of the cooperative.

Cluster 4 included three highly correlated performance indicators, with the imputed value of shares holding up better (*sharegro*) when debt/equity ratios (*leverage*) are at acceptable levels and most of the cooperative's assets are not donated by the government (*lowgrants*). These performance indicators combined with two governance indicators. The first of these, *dirnoday*, refers to the absence of any interference by directors in the cooperative's day-to-day operations, even in cooperatives that did not explicitly forbid directors from participating in management decisions. This signals the effective separation of ownership from control and a high degree of trust in management. Cornforth (2004) noted that confidence in management also inspires managers to act decisively. Unsurprisingly, the second governance indicator in Cluster 4, *qualmgr*, reflects the quality of the cooperative's lead manager. In essence, Cluster 4 highlights the importance of decisive, high-quality management to a cooperative's financial sustainability.

## 4. CONCLUSIONS

The most obvious finding of this research is that Philippine cooperatives are severely constrained by conservative legislation that prevents them from issuing a class of non-redeemable shares that can be traded at their market price. As a result, cooperatives face several institutional problems that discourage members from investing in their cooperative and from complying with supply contracts. Under these conditions, it is not surprising that Philippine cooperatives rely so heavily on assets donated by the government. This situation is unlikely to change much unless policymakers relax the Cooperative Code to legalize less traditional cooperative models. If cooperatives were allowed to issue non-redeemable class B shares they could operate as New Generation Cooperatives or as hybrid cooperatives depending on their business strategy and capital requirements.

In the meantime, there are strategies that cooperative leaders can adopt to alleviate some of the problems created by ill-defined property rights. Cooperative performance is expected to improve when investment is linked to patronage as proportionality addresses the internal and external free-rider problems and reduces transaction costs in supply contracts. The findings reported in this study support this proposition. Proportionality is manageable in cooperatives that focus their business on buying a single product supplied by their members (as in Case B) but is difficult to manage in cooperatives that focus on selling inputs and machinery services to members and non-members. In this case, proportionality can be incentivized by offering larger investors incrementally higher discounts on prices paid for inputs and services – a strategy that can be easily implemented by issuing personalized discount cards to shareholders.

The results also support the view that performance improves when shares are redeemed periodically. While periodic redemption of shares bought and redeemed at the same nominal price is unlikely to attract voluntary investment, it makes compulsory retentions more palatable and so helps the cooperative to raise additional equity capital. Directors could, however, make periodic redemption considerably more appealing to investors if their cooperative's mutual equity has grown (as in Cases B and D). In practice, this can be achieved simply by revaluing the shares or by issuing bonus shares. Again, these strategies would not fully resolve the horizon problem as the capital gains awarded to shareholders are at the discretion of the directors and are not market related, but empirical evidence shows that it does provide an incentive for members to leave profits in the cooperative to finance future investments rather than withdrawing them as price rebates and annual dividends (Salazar & Galve, 2011).

While the evidence gathered in this research shows high levels of compliance with good governance, the analysis exposed lapses that directors and managers could address to improve their cooperative's performance. The results support the argument that ownership should be clearly separated from control, and that decision-making should be

centralized in the hands of accountable directors and managers. Consequently, directors should not be tasked with management roles as this makes it difficult for the board to hold management accountable for poor performance, and ordinary members should not participate in board and management decisions. Keeping ordinary members out of the boardroom does not mean that directors and managers should avoid canvassing the views of shareholders or consulting outside experts. The results also emphasize the importance of extending the search for well-qualified managers to include candidates outside the membership group.

**Funding:** This study received no specific financial support.
**Competing Interests:** The authors declare that they have no competing interests.
**Authors' Contributions:** All authors contributed equally to the conception and design of the study.
**Acknowledgement:** Authors acknowledge student scholarship support from the New Zealand Aid Programme.



## REFERENCES

Araullo, D. B. (2006). *Agricultural cooperatives in the Philippines.* Paper presented at the 2006 FFTC-NACF International Seminar on Agricultural Cooperatives in Asia: Innovation and Opportunities in the 21st Century, Seoul, Korea.

Arnaoudov, V., Sibayan, E., & Caguioa, R. (2015). Adaptation and mitigation initiatives in Philippine rice cultivation. United Nations Development Programme. Retrieved from https://www.undp.org/publications/adaptation-and-mitigation-initiatives-philippine-rice-cultivation.

Awolu, O. O., Ajibola, C. F., Adeloye, J. B., & Ogwu, F. (2020). Optimization of proximate and minerals compositions of sweet Potato, Soybean and Rice Bran Composite Flours for Production of Low Glycemic Index Dough Meal. *Agriculture and Food Sciences Research, 7*(1), 79-88.

Balgos, C. Q., & Digal, L. N. (2016). Employment generation potential of the rice value chain: The case of Mlang, North Cotabato in Mindanao. *Philippine Journal of Development, 43*(1), 1-27.

Beverland, M. (2007). Can cooperatives brand? Exploring the interplay between cooperative structure and sustained brand marketing success. *Food Policy, 32*(4), 480-495.Available at: https://doi.org/10.1016/j.foodpol.2006.10.004.

Boquet, Y. (2017). *The Philippine Archipelago.* New York, USA: Springer International Publishing.

Bordado, G. J., Orden, M. E. M., Oliva, L. P., & Domingo, A. R. (1996). Marketing of rice by small producer groups in selected regions in the Philippines. In A.R. Librero & A.G. Tidon, (Eds.), Marketing of agricultural commodities by producer groups in the Philippines (pp. 62-119). Manila, Philippines: Philippine Council for Agriculture, Forestry and Natural Resources Research and Development.

Cadbury, A. (1992). *Report of the committee on the financial aspects of corporate governance.* London, UK: Gee Publishing.

Chatfield, C., & Collins, A. J. (1980). *Introduction to multivariate analysis.* London, UK: Chapman and Hall.

Chibanda, M., Ortmann, G. F., & Lyne, M. C. (2009). Institutional and governance factors influencing the performance of selected smallholder agricultural cooperatives in KwaZulu-Natal. *Agrekon, 48*(3), 293-315.Available at: https://doi.org/10.1080/03031853.2009.9523828.

Cook, M. L., & Iliopoulos, C. (1999). Beginning to inform the theory of the cooperative firm: Emergence of the new generation cooperative. *LTA, 4*(99), 525-535.

Dimas, B. (2021). *Factors influencing the performance of rice farmer cooperatives in Davao del Norte, Philippines.* Master's Thesis, Lincoln University.

Esnard, R., Lyne, M., & Old, K. (2017). Factors affecting the value added by agricultural cooperatives in Saint Lucia: An institutional analysis. *Journal of Co-Operative Organization and Management, 5*(2), 73-79.Available at: https://doi.org/10.1016/j.jcom.2017.10.003.

FAO. (2014). Regional rice initiative pilot project Philippines. Food and Agriculture Organization. Retrieved from http://www.fao.org/fileadmin/user_upload/bodies/CL_149/SideEvents_CL149/Rice/Presentation_RRI-Philippines.pdf.

Ferrer, C. M. (1956). The cooperative movement in the Philippines. *Philippine Sociological Review, 4*(1), 33-36.

Harris, A., Stefanson, B., & Fulton, M. E. (1996). New generation cooperatives and cooperative theory. *Journal of Cooperatives, 11*(1142-2016-92720), 15-28.

Lyne, M., & Collins, R. (2008). South Africa's new cooperatives Act: A missed opportunity for small farmers and land reform beneficiaries. *Agrekon, 47*(2), 180-197.Available at: https://doi.org/10.1080/03031853.2008.9523796.

Manalili, N. M., Yaptenco, K. F., & Manilay, A. A. (2015). *How effective are our postharvest facilities? Policy notes 2015-16.* Makati City, Philippines: Philippine Institute for Development Studies.

Markelova, H., Meinzen-Dick, R., Hellin, J., & Dohrn, S. (2009). Collective action for smallholder market access. *Food Policy, 34*(1), 1-7.Available at: https://doi.org/10.1016/j.foodpol.2008.10.001.

Nilsson, J., & Ohlsson, C. (2007). The New Zealand dairy cooperatives' adaptation to changing market conditions. *Journal of Rural Cooperation, 35*(886-2016-64574), 43-70.

Norusis, M. J. (1994). *SPSS professional statistics. 6.1 SPSS Inc.* Chicago, USA: Prentice Hall.

PSA. (2021). *Selected statistics on agriculture.* Quezon City, Philippines: Philippine Statistics Authority.

Rosairo, H. R., Lyne, M. C., Martin, S. K., & Moore, K. (2012). Factors affecting the performance of farmer companies in Sri Lanka: Lessons for farmer-owned marketing firms. *Agribusiness, 28*(4), 505-517.Available at: https://doi.org/10.1002/agr.21312.

Salazar, I., & Galve, G. C. (2011). Determinants of the differences in the downstream vertical integration and efficiency implications in agricultural cooperatives. *The BE Journal of Economic Analysis & Policy, 11*(1), 1-26.Available at: https://doi.org/10.2202/1935-1682.2694.

Suministrado, D. C. (2013). *Status of agricultural mechanization in the Philippines.* Paper presented at the Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific, Quingdao, China.

Sykuta, M., & Cook, M. (2001). A new institutional economics approach to contracts and cooperatives. *American Journal of Agricultural Economics, 83*(5), 1273-1279.Available at: https://doi.org/10.1111/0002-9092.00278.

Tadem, T. S. E. (2002). NGOs organizing cooperatives: The Philippine experience. *Asian Review, 15*(Popular Movements), 62-77.

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). London, UK: SAGE Publications.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). London, UK: Sage Publications.

Zaman, M. R., Aker, T., & Nishat, N. I. (2022). Comparative profitability of the modern and traditional variety of T. Aman rice in Mymensingh District of Bangladesh. *International Journal of Sustainable Agricultural Research, 9*(2), 55-67.Available at: https://doi.org/10.18488/ijsar.v9i2.2971.

# APPENDIX

**Table A1.** Agglomeration schedule for the cluster analysis.

| Stage | Cluster Combined | | Coefficients | Stage Cluster First Appears | | Next Stage |
|---|---|---|---|---|---|---|
| | Cluster 1 | Cluster 2 | | Cluster 1 | Cluster 2 | |
| 24 | 1 | 4 | 1.567 | 23 | 20 | 0 |
| 23 | 1 | 3 | 1.298 | 22 | 19 | 24 |
| 22 | 1 | 5 | 1.051 | 21 | 18 | 23 |
| 21 | 1 | 2 | 0.679 | 17 | 0 | 22 |
| 20 | 4 | 13 | 0.667 | 0 | 11 | 24 |
| 19 | 3 | 6 | 0.533 | 12 | 14 | 23 |
| 18 | 5 | 25 | 0.400 | 16 | 0 | 22 |
| 17 | 1 | 8 | 0.286 | 0 | 15 | 21 |
| 16 | 5 | 7 | 0.000 | 0 | 3 | 18 |
| 15 | 8 | 9 | 0.000 | 0 | 13 | 17 |
| 14 | 6 | 10 | 0.000 | 0 | 0 | 19 |
| 13 | 9 | 11 | 0.000 | 0 | 7 | 15 |
| 12 | 3 | 12 | 0.000 | 0 | 10 | 19 |
| 11 | 13 | 14 | 0.000 | 0 | 9 | 20 |
| 10 | 12 | 15 | 0.000 | 0 | 5 | 12 |
| 9 | 14 | 16 | 0.000 | 0 | 8 | 11 |
| 8 | 16 | 17 | 0.000 | 0 | 4 | 9 |
| 7 | 11 | 18 | 0.000 | 0 | 6 | 13 |
| 6 | 18 | 19 | 0.000 | 0 | 2 | 7 |
| 5 | 15 | 20 | 0.000 | 0 | 0 | 10 |
| 4 | 17 | 21 | 0.000 | 0 | 0 | 8 |
| 3 | 7 | 22 | 0.000 | 0 | 1 | 16 |
| 2 | 19 | 23 | 0.000 | 0 | 0 | 6 |
| 1 | 22 | 24 | 0.000 | 0 | 0 | 3 |