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Article in *Agricultural and Resource Economics International Scientific E-Journal* · December 2023

DOI: 10.51599/are.2023.09.04.02

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CONVENTIONAL VS MODERN: WHICH APPROACH IS BETTER FOR THE SUCCESS OF AGRICULTURAL COOPERATIVES?

Purpose. *This paper describes the relationship between organizational management, network usage, quality of services and products, and HR productivity of members regarding the success of East Kalimantan agricultural cooperatives in a conventional versus modern perspective. A goal is based on improving landscape in conventional agricultural cooperatives, which is analogous to the lag of the four factors above.*

Methodology / approach. *Comparative-descriptive analysis is used to dissect the main objectives. Enumerators collect data via interviews with owners or managers who oversee 2,748 active cooperatives. Specifically, the sample focuses on active cooperatives from ten branches in East Kalimantan which are divided into two types: 1,860 modern agricultural cooperatives and 888 conventional agricultural cooperatives.*

Results. *The empirical results present the following four outputs: (1) in terms of success, there is no significant difference between conventional agricultural cooperatives and modern agricultural cooperatives even though the operating techniques are also different; (2) network usage, quality of services and products, and HR productivity of members play a superior role in the sustainability of conventional agricultural cooperatives or modern agricultural cooperatives; (3) on the other hand, i.e organizational management is proven to be able to fight for conventional agricultural cooperatives in a positive way; (4) in the case of modern agricultural cooperatives, organizational management does not support success.*

Originality / scientific novelty. *This paper proposes a thematic study in a new direction that compares the performance of modern agricultural cooperatives with conventional agricultural cooperatives based on a measure that represents the level of success.*

Practical value / implications. *Today, the presence of technology is a practical solution that controls the majority of jobs, such as operating cooperatives. Recognizing crucial changes, one that must be addressed by agricultural cooperatives is the latest adjustments. However, it is not enough to focus only on the innovation aspect, but also to improve the internal organization of the cooperative, which will enable cooperation between generations of members to foster ethics, awareness and commitment. These findings offer valuable education to supervisory commissions, especially modern agricultural cooperatives, to modify organizational management mechanisms according to the capacity of members.*

Key words: *agricultural commodity cooperatives, modern working methods, conventional working methods, comparative-descriptive methods, East Kalimantan.*

Introduction and review of literature. In addition to small and medium enterprises (SMEs), cooperatives are also the foundation of the domestic economy (Haryono et al., 2021; Lavie, 2023). Literally, the growth of cooperatives is followed by progress across sectors. In micro contemplation, the existence of agricultural cooperatives is inseparable from the urgency of the agricultural economy which

encourages farmers' intuition to join a group that aims to achieve collective benefits (Abhar et al., 2023; Tran et al., 2022; Zhang et al., 2021). Conceptually, agricultural cooperatives are built to support the institutional structure and become a strength for small farmers as an economic movement based on the principles of kinship, justice and welfare related to agricultural product commodities, for example the business of procuring fertilizers, seeds, agricultural tools and selling agricultural products together. Implicitly, Darma et al. (2020) argue that synergies for pioneering agricultural business cooperatives are often dynamic, where the initial motive is to build social connections and bring preferences that open the business for further improvement. Ultimately, institutions in agricultural cooperatives will reach a wider range of parties, accommodate members, direct agricultural needs, and develop skills.

From the macro landscape, a cooperative is a legal entity formed on the principle of kinship which targets the welfare of its members. It can be understood that cooperatives are associations of people who voluntarily fight for welfare. The contained regulations refer to the Law of the Republic of Indonesia No. 17 of 2012 about "Cooperatives" which explains the definition of cooperatives. In these rules (Article 1), cooperatives are articulated as entities established by legal entities or individuals which separate the wealth of its members to become capital for running a business that emphasizes shared responsibility, aspirations and enthusiasm, as well as mastery in the cultural, social and economic fields which does not contradict cooperative principles (Kusmiati et al., 2023; Maria et al., 2019). Specifically, there are many variations on cooperatives, for example:

- Cooperatives based on function: (1) production cooperatives, (2) service cooperatives, and (3) consumption cooperatives;

- Cooperatives based on regional work area and hierarchy: (1) primary cooperatives, (2) secondary cooperatives, and (3) tertiary cooperatives;

- Cooperatives based on their membership: (1) school cooperatives, (2) Republic of Indonesia employee cooperatives (2) scout cooperatives, (3) women's participation cooperatives, (4) employee cooperatives, (5) market traders cooperatives, (6) batch cooperatives land, (7) student cooperatives, (8) Islamic boarding school cooperatives, and (9) village unit cooperatives;

- Commodity-based cooperatives: (1) service cooperatives, (2) mining cooperatives, (3) industrial and handicraft cooperatives, (4) livestock cooperatives, and (5) agricultural cooperatives.

Specifically in Indonesia, the most popular type of cooperative is the agricultural cooperative. In its premise, the meaning of an agricultural cooperative is a cooperative that drives business for certain agricultural commodities. Agricultural cooperatives concentrate on the Law of the Republic of Indonesia No. 25 of 1992 (Article 16) which contains "Interests and Economic Equality of Cooperative Members". So far, East Kalimantan, which is part of a province in Indonesia and is vital to the planning of moving the center of government in 2024, is known for its rich resources (Jiuhardi et al., 2023). Yet, the regional economic situation is not as solid as other regions that highlight local wisdom, including agriculture. Natural

resources such as mining for natural gas, minerals, coal and oil creates a dilemma that is contrary to the essence of autonomy. In practice, natural resource exploitation activities have an impact on the depletion of green open space, so that agricultural land is decreasing. In other words, the project to explore the agricultural sector is also disrupted. Take the example of the farming profession which relies on agricultural diversification for the benefit of the household. At the same time, agricultural cooperatives depend on donations from farmers. The external obstacles relating to the above case are much greater than the internal problems.

More fundamentally, the frameworks in agricultural cooperatives often overlap. Technically, four internal factors further weaken agricultural cooperatives. Many narratives highlight these organizational management, networks, quality of service and product, and incompatibility among members influencing the future of agricultural cooperatives. Barraud-Didier et al. (2012), Keerati-angkoon (2022), Violinda & Sunjian (2018), and Yu et al. (2023) described that the behavior, tradition, doctrine, and implementation of the actions contained in the guidelines for agricultural cooperatives will determine the direction of farmer entrepreneurship. In the long term, competitive agricultural co-operative management is closely related to member commitment. Boards in agricultural cooperatives must take the initiative through selective career priorities to creating regeneration and develop talent. Collaboration among members with controlled agricultural cooperative managers has the opportunity to maximize incentives. The key, cooperative management involves interpersonal interaction between members to share ideas. Farmers' trust in agricultural cooperative management is mediated by psychological elements, such as affective traits and cognitive effects. With mutually synergistic trust, members can be motivated to fully increase the productivity of agricultural cooperatives.

Regarding the topic of network usage on the success of agricultural cooperatives, Alimohammad et al. (2022) and Alotaibi & Kassem (2022) showed that rational improvements to handle agricultural cooperatives start with revitalizing the network. Sequentially, advanced scenarios are prepared by assigning actors who are in charge of alliance affairs such as cooperatives. From here, the final step is to provide an investment channel via an agreement between farmers and agricultural cooperative stakeholders. Interestingly, some consensus from the literature predicts that the failure of cooperatives is caused by gaps in network knowledge (Wang et al., 2019). Due to limited network facilities, the competency of cooperative administrators is weak in operating tools or systems that support the performance of agricultural cooperatives.

In agricultural cooperative chains, developing of service and product quality is claimed as the right alternative to study market anomalies. Every consumer has different tastes. The main reason is that the level of customer insight also varies, level of income/purchasing power, interest, nominal price, and so on. Agricultural cooperatives are created to increase the bargaining power of farmers. The participation of not only commercial but also social capital allows farmers to share experiences. Unequal understanding in finding product and service differentiation has

a negative correlation with the image of agricultural cooperatives. Ideally, maintainers should maintain, protect, and control service attributes. To eliminate weak service criteria, agricultural cooperatives have undergone a new transformation to include more cooperative standards. Furthermore, agricultural cooperatives also consider the external environment or outside of the organization's ecosystem, where everyone can pay attention to the service mechanism. In addition to services, added value/final product is reflected in the quality of the inputs sent. Agricultural cooperatives are required to strengthen service procedures and ensure product safety (Li et al., 2021; Liu et al., 2023; Pham, 2022; Rosyadi et al., 2023). To optimize product durability and service techniques, solutions that depend on internal management strategies are required. Decision-making involves the head of the agricultural cooperative and members who are oriented towards the designed targets. Concretely, fixing problems in the field is carried out by implementing performance monitoring and evaluation.

One of the areas of restructuring of agricultural cooperatives is productivity among members. The productivity of human resources is not only related to competitiveness, but also awareness in responding to work styles, adapting to technological changes, being rational, and synergizing in parallel. Issues raised by Feisali & Niknami (2021), Hernández-Espallardo et al. (2021), Kenkel & Crossan (2019), Majid et al. (2020), Marsh (2023), and Pokharel et al. (2020) covers the specialization and compliance of cooperative members. Towards a conducive agricultural cooperative, a holistic program is needed. Extension and guidance can attract new members to continue solidarity. Another option is also to motivate the conscience of the members to be involved in the democratic change of cooperative leaders. In addition, rotation in cooperatives is established from the stage of recruitment, wider assistance and target career assessment regimes. In the cycle of agricultural cooperatives, farmers can voice, dialogue, choose and control the process of planting, harvesting, processing and marketing their creations. The nuances of cooperation in cooperatives are attached to each member. Gains or losses shared together give a signal if trust among members is growing. Often, farmers in cooperatives buy farming equipment or seeds at low cost to distribute them among members. At another level, for example, a more systematic sensitivity, where agricultural cooperatives can buy or rent tractors for use by all members or get agreements on relatively cheap seed prices from farmers by purchasing them in bulk to share them with other members. Automatically, this method saves capital expenditure while increasing production capacity including: animal feed, grain, irrigation, fertilizer, and a series of other production costs. Normally, the segmentation of agricultural cooperatives refers to asset entities (Ndlovu & Masuku, 2021; Wossen et al., 2017; Zwane & Kekana, 2014). The fragility of consolidation due to the controversy over financial volatility leads to a reduction in the cooperative's assets.

In the midst of a shift in era, technological sophistication offers instant ways for various jobs. When it comes to technology, responsive work design can drive and

increase productivity, thereby reducing errors. But, the risk of choosing the old format has consequences. In the context of agricultural cooperatives, to ignore contemporary work processes shows a lack of prudence. Preferably, cooperatives that leave the traditional scheme, will guarantee a comfortable level of work and boost creativity. Unfortunately, there is still little academic foundation. With that in mind, this study offers a way to fill the gaps in agricultural cooperatives that operate in the old way and move towards implementing technologies to ensure quality work. Besides that, the role of technology is expected to be an important capital for the sustainability of agricultural cooperatives. By prioritizing the technological aspect, it will guarantee performance productivity and reduce uncertainty. Past studies from Khan et al. (2022), Manda et al. (2020), Yang et al. (2021), and Zhang et al. (2020) concluded that agricultural cooperatives with adequate access to technology are increasingly beneficial to the profits of members in Pakistan, Zambia, and China. On the other hand, past studies have revealed that agricultural cooperatives that do not prioritize technology further reduce their success rate. This happens to the majority of rural farmers in China, especially in Sichuan Province (Ma & Abdulai, 2017; Jia et al., 2023; Liu et al., 2022). In other words, the failure or success of agricultural cooperatives is also determined by the technology used. Agricultural cooperatives need to prioritize technological facilities to complement managerial competencies.

The purpose of the article. Following up on the existing phenomenon, it is necessary to identify the debate on the issue of agricultural cooperatives in East Kalimantan-Indonesia, which is reflected in the structure of organizational management, network usage, quality of services and products, and productivity of members' personnel. The essence of this scientific paper is to assess the success of agricultural cooperatives that combine the four terminologies above. In addition, this paper also compares the two scopes of agricultural cooperatives, i.e. cooperatives that are modernly integrated vs. conventional cooperative pattern. The fundamental difference between the two lies in management techniques, where modern cooperatives use relatively sophisticated technology, so that operating strategies are more practical with broad market access. Meanwhile, conventional cooperatives still focus on old patterns, such as decision-making processes for production, marketing and sales that are not integrated with digital. To confirm the research question, the following hypothesis building was made:

- Hypothesis 1 (H₁). Conventional approaches in organizational management, network usage, quality of services and products, and HR productivity of members can contribute to the agricultural cooperatives;

- Hypothesis 2 (H₂). Modern approaches in organizational management, network usage, quality of services and products, and HR productivity of members can advance agricultural cooperatives.

Methodology. This scientific work focuses on four variables that support the sustainability of agricultural cooperatives: (1) organizational management, (2) network usage, (3) quality of services and products, and (4) HR productivity of members. The success model in cooperatives is measured by these four components

which are divided into the following two instruments:

- Conventional version of cooperatives: organizational management (6 points), network usage (4 points), quality of services and products (5 points), and HR productivity of members (5 points).

- Modern version of cooperatives: organizational management (6 points), network utilization (4 points), quality of services and products (5 points), and HR productivity of members (5 points).

Each instrument has the same dimensions which totaling twenty materials, but in each dimension the questions are set differently based on cooperative identity (conventional and modern). The composition of the data comes from the first party (primary) which is transformed using a questionnaire. To compile the questionnaire into a table, data expressed in five formats: very relevant = 5; relevant = 4; sometimes = 3; irrelevant = 2; and very irrelevant = 1. The data collection mechanism uses an experimental technique that invites the population to participate in the survey. In its application, the case study chose active cooperatives in East Kalimantan as a cluster sample. During 2020, the number of active cooperatives is 2,748 (n = 89.42 %) of all cooperatives (N = 3,073 units). The number of cooperatives that were not active was 325 units (10.58 %) as confirmed in Table 1. The accuracy of the investigation depended on the relations and insights of key informants (internal cooperatives) who had the status of supervisory commissions in ten cooperative branches: 242 units from Bontang (95.65 %), 68 units from Samarinda (94.44 %), 436 units from Balikpapan (78.28 %), 23 units from Mahakam Ulu (95.83 %), 59 units from Penajam North Paser (93.65 %), 228 units from Berau (76.51 %), 660 units from East Kutai (98.22 %), 520 units from Kutai Kartanegara (88.89 %), 353 units from West Kutai (98.06 %), and 213 units from Paser (87.30 %).

Table 1

Selected sample, n = 89.42 %

Cooperative branch	Units	Active	Not active	Proportion, %
Bontang	253	242	11	95.65
Samarinda	72	68	4	94.44
Balikpapan	557	436	121	78.28
Mahakam Ulu	24	23	1	95.83
Penajam North Paser	63	59	4	93.65
Berau	298	228	70	76.51
East Kutai	617	606	11	98.22
Kutai Kartanegara	585	520	65	88.89
West Kutai	360	353	7	98.06
Paser	244	213	31	87.30
<i>East Kalimantan</i>	<i>3,073</i>	<i>2,748</i>	<i>325</i>	<i>89.42</i>

Source: online publication released by BPS of East Kalimantan (2023).

Of the 89.42 % active cooperatives, they are divided into two types of cooperatives, namely conventional and modern. Figure 1 compiles identical cooperatives with a modern approach totaling 1,860 units (67.69 %). The details for each branch are as follows: 178 units in Bontang (9.57 %), 59 units in Samarinda

(3.17 %), 402 units in Balikpapan (21.61 %), 16 units in Mahakam Ulu (0.86 %), 43 units in Penajam North Paser (2.31 %), 185 units in Berau (9.95 %), 417 units in East Kutai (22.42 %), 300 units in Kutai Kartanegara (16.13 %), 139 units in West Kutai (7.47 %), and 121 units in Paser (6.51 %). In the conventional category, cooperative data totaled 888 units (32.31 %) which were grouped into ten branches: 64 units from Bontang (7.21 %), 9 units from Samarinda (1.01 %), 34 units from Balikpapan (3.83 %), 7 units from Mahakam Ulu (0.79%), 16 units from Penajam North Paser (1.8 %), 43 units from Berau (4.84 %), 189 units from East Kutai (21.28 %), 220 units from Kutai Kartanegara (24.77 %), 214 units from West Kutai (24.10 %), and 92 units from Paser (10.36 %). Samples from conventional cooperatives are visualized in Figure 2.

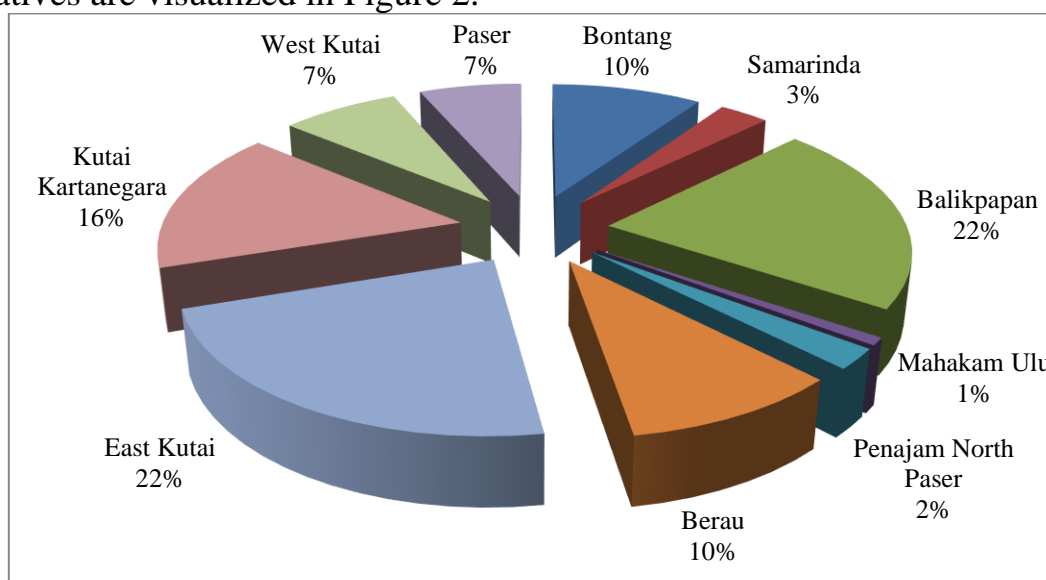


Figure 1. Modern agricultural cooperatives, n = 67.69 %

Source: online publication released by BPS of East Kalimantan (2023).

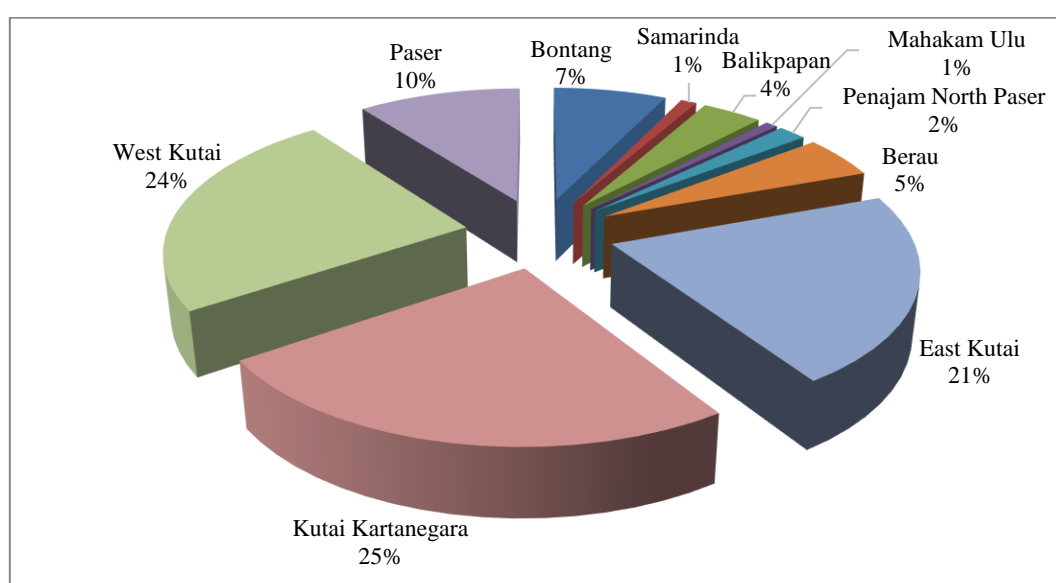


Figure 2. Conventional agricultural cooperatives, n = 32.31 %

Source: online publication released by BPS of East Kalimantan (2023).

Sample data was extracted using descriptive comparative analysis. In econometrics, comparative-descriptive analysis is intended to verify all questionnaire items taken from informants. The stages in the test are the mean, standard deviation (SD), and Chi-square. The mean formulation is written as follows:

$$\bar{X} = \frac{\sum f_i \cdot X_i}{\sum f_i}, \quad (1)$$

where \bar{X} – mean; X_i – midpoint of class i ; f_i – frequency of class i ; Σ – sigma notation.

The function of the equation on the standard deviation based on two elements (population and sample) is illustrated below:

$$\sigma_1 = \sqrt{\frac{\sum_{i=1}^N f_i (X_i - \bar{X})^2}{\sum_{i=1}^N f_i}}, \quad (2)$$

$$\sigma_2 = \sqrt{\frac{\sum_{i=1}^N f_i (X_i - \bar{X})^2}{(\sum_{i=1}^N f_i) - 1}}, \quad (3)$$

where σ_1 – the standard deviation in the population; σ_2 – standard deviation in the sample; N – population; i – natural numbers (1, 2, 3,...N); X_i – the middle value of class i ; f_i – frequency of class i ; \bar{X} – mean value.

In the last parameter, Chi-square is formulated as follows:

$$\chi^2 = \sum_{j=1}^r \sum_{i=1}^k \frac{(o_{ij} - e_{ij})^2}{e_{ij}}, \quad (4)$$

where χ^2 – Chi-square; r and k – contingency table (row x column); o – observation frequency; e – frequency of expected/theoretical; ij – degrees of freedom ($k - 1$).

Results and discussion. Table 2 illustrates the comparison of cooperatives of all groups in East Kalimantan with Indonesia. In general, the volume of cooperatives from East Kalimantan is not as large as other regions in Indonesia, such as: Java, Sulawesi and Sumatra. Throughout 16 years, the peak period was 2010 with a contribution of 2.84 % to the number of national cooperatives. With an average contribution of 2.54 %, cooperative units in East Kalimantan are not worth the sacrifices that are draining attention. In 2016, East Kalimantan cooperatives played a much less national role at 2.33 %. Additionally, there is a contradictory growth of East Kalimantan cooperatives. In aggregate, the average growth is 1.44 %. This is evidenced by the transition in growth from 2007–2010 which accumulated 29.01 %. If we take a deeper look, growth stagnation occurred in 2011–2013 reaching 1.02 %. Then, it rose again in 2014 (14.23 %) and the worst thing was that it dropped dramatically in 2019–2020, namely – 22.09 %. Even though cooperative achievements in 2017–2018 grew again by 5.23 % and 2021–2022 reached 5.69 %, in 2015–2016 growth with a negative slope (-11.44 %).

Likewise with the average growth in cooperatives at the national level which shows 1.91 %. Even so, the sharp decline in the number of cooperative units in

Indonesia is not as bad as the conditions in East Kalimantan. In fact, for one decade, from 2007–2018, Indonesian cooperative units were so resilient, that their accumulation grew beyond 44.31 %. Surprisingly, it is also consistent with what is experienced in East Kalimantan, where in 2019–2020, cooperative growth has fallen sharply by -19.58 %. Uniquely, growth will start to return to normal in 2021–2022 which will reach 3.88 %. Generally, both in Indonesia and in East Kalimantan, the the quarantine affected on people’s life (Fitriadi et al., 2022; Paramita et al., 2020; Wahyuhadi et al., 2022). According to Besley & Stern (2020), Donthu & Gustafsson (2020), Evgeniou et al. (2022), and Onyeaka et al. (2021), the lockdown policy actually extended the isolation in various strategic pillars. Ironically, the Coronavirus disease outbreak at the end of 2019 also hindered the activities of agricultural cooperatives (Haque et al., 2022; Rivera-Ferre et al., 2021).

Table 2

Comparison of cooperative units between East Kalimantan and Indonesia

Year	East Kalimantan	Growth, %	Indonesia	Growth, %	Contribution, %
2007	2.613	-	98.944	-	2.64
2008	2.691	2.99	104.999	6.12	2.56
2009	2.849	5.87	108.930	3.74	2.62
2010	3.423	20.15	120.473	10.60	2.84
2011	3.458	1.02	124.855	3.64	2.77
2012	3.458	0	133.666	7.06	2.59
2013	3.458	0	139.321	4.23	2.48
2014	3.950	14.23	143.117	2.72	2.76
2015	3.524	-10.78	147.249	2.89	2.39
2016	3.501	-0.65	150.223	2.02	2.33
2017	3.632	3.74	151.170	0.63	2.40
2018	3.686	1.49	152.174	0.66	2.42
2019	3.478	-5.64	126.343	-16.97	2.75
2020	2.906	-16.45	123.048	-2.61	2.36
2021	3.036	4.47	127.124	3.31	2.39
2022	3.073	1.22	127.846	0.57	2.40

Source: annual document released by BPS of Indonesia (2023).

Figure 3 shows East Kalimantan cooperatives referring to commodity basis. In its realization, for 16 periods, agricultural cooperatives were more dominant among other commodity cooperatives. Proportionally, agricultural cooperatives are in first position with an average number of 1,125 units, while in second position are service-focused cooperatives (900 units), and industrial and craft cooperatives in third position (791 units). On the one hand, cooperatives in mining and farming commodities are in fourth position (269 units) and fifth position (211 units). The advantage of agricultural cooperatives also lies in their contribution to total commodity cooperatives on the East Kalimantan scale, which averages 34.1 %. The figure below detects that the average contribution to service commodity cooperatives: 27.29 %, mining commodity cooperatives: 8.16 %, industrial and craft commodity cooperatives: 24.01 %, and farming commodity cooperatives: 6.41 %. Furthermore, the four cooperatives grew an average of 1.88 %, 15.70 %, 3.30 % and 10.68 %. In

the medium term, the most superior average growth will be mining commodity cooperatives.

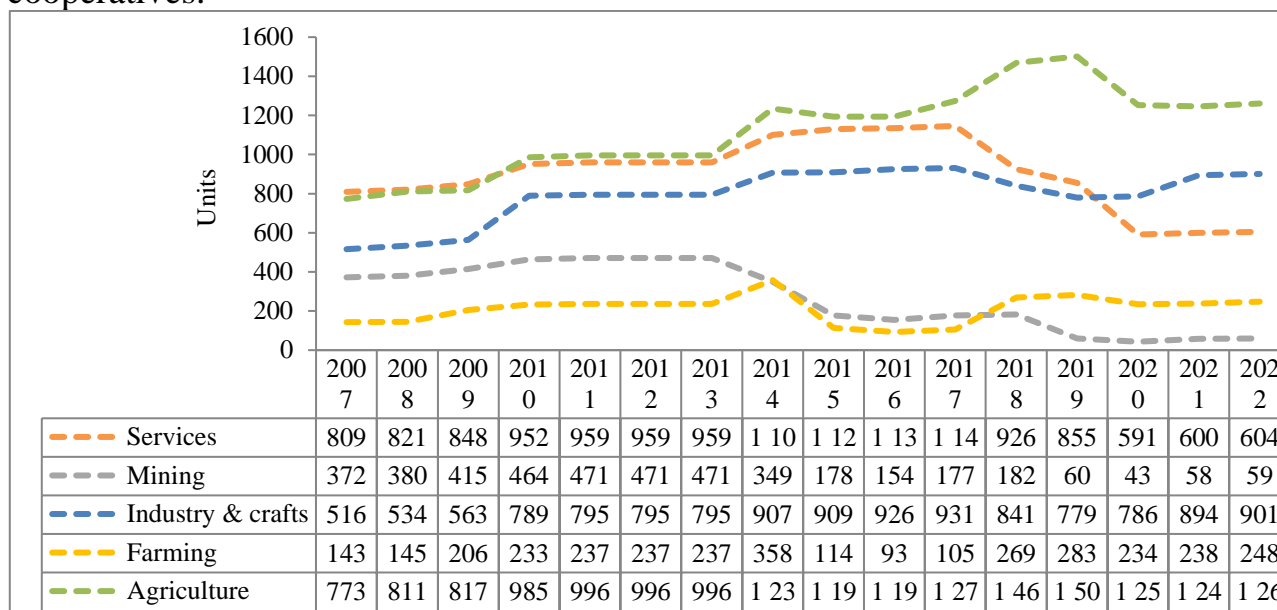


Figure 3. Classification of cooperatives in East Kalimantan based on their commodity

Source: annual document released by BPS of Indonesia (2023).

Most notably, although it also experiences ups and downs and stagnation like other commodity cooperatives, aggregate growth in agricultural cooperatives is relatively stable at 3.8%. This positive growth was not matched by serious institutional optimization and renovation by stakeholders, especially the directors of cooperative management. Surprisingly, the majority of problems in agricultural cooperatives are managerial professionalism. This is at the same time the biggest challenge that is difficult to actualize and understand comprehensively.

Basically, active agricultural cooperatives in East Kalimantan have varied demographics. Based on the category, cooperative centers engaged in agricultural commodities tend to be dominated by consumer cooperatives of 950 units (34.57%). Consumer cooperatives are a favorite for farmers to elaborate agri-food products along with the increasing demand for diversity, health safety, and food quality compared to marketing cooperatives, which total 674 units (24.53%) or savings and loan cooperatives, which total 315 units (11.46%). The remaining 809 producer cooperative units (29.44%) are for service and goods producers. Agricultural cooperatives in this category sell goods produced by their members. Referring to the ownership structure, 1,269 units (46.18%) of agricultural cooperatives in East Kalimantan were developed through a joint determination in a profit sharing system. In fact, the initial formation of cooperatives was driven by farmers. As many as 738 units (26.86%) of agricultural cooperatives owned by partnerships or generally affiliated with SMEs in the concept of sharing the remaining business results (SHU), 447 units (16.27%) of agricultural cooperatives with franchises in the form of agreements between managers and investors with share royalties, and 294 units (10.70%) are individual ownership patterns or often called “Central Cooperatives” whose operations are set up autonomously through limited contract licensing. For

example, the majority of individual ownership is supported by government licenses, but not unionized with non-governmental organizations (NGOs) or other associations outside the government

The interview results showed that 1,553 units (56.51 %) of agricultural cooperative capital were obtained from grants provided by BUMD and 581 units (21.14 %) were channeled by government grants. These two grants are initiatives or subsidy programs, an example of which is Corporate Social Responsibility (CSR). Agricultural cooperative capital collected from bank credit loans amounted to 452 units (16.45 %) with a debt scheme for a certain period. Other facts from Table 3 show that 1,706 units (62.08 %) of agricultural cooperatives are profit-oriented. Universally, cooperative profits are obtained from the interest charged to borrowers. Besides, profit receipts also include administrative costs for every transaction and investment outside the cooperative's routine. Apart from profit, agricultural cooperatives are also non-profit oriented with an emphasis on social functions. In East Kalimantan, this type of agricultural cooperative reached 1,042 units (37.92 %).

Table 3

Characteristics of the sample

Label	Indicators	n	Percentage
Category	Marketing cooperative	674	24.53
	Saving and loan cooperative	315	11.46
	Producers cooperative	809	29.44
	Consumer cooperative	950	34.57
Ownership structure	Individual	294	10.70
	All members	1,269	46.18
	Franchise	447	16.27
	Partnership	738	26.86
Capital	Regional Owned Enterprises (BUMD)	1,553	56.51
	Empowerment	162	5.90
	Government	581	21.14
	Credit loan	452	16.45
Orientation	Profit	1,706	62.08
	Non-profit	1,042	37.92
Establishment	1985–1993	799	29.08
	1996–2004	1,115	40.57
	2005–2013	346	12.59
	2014–2022	488	17.76
Asset	Under IDR 500 million	569	20.71
	IDR 500 million – IDR 1 billion	1,599	58.19
	Above IDR 1 billion	580	21.22
Membership	Under 20	272	9.90
	20–50	643	23.40
	51–80	192	6.99
	81–110	1,374	50.00
	Above 110	267	9.72

Source: compilation of interview results.

Like most other business entities, the duration or “golden age” reflects the independence of the business. Of the 2,748 agricultural cooperative offices located in ten East Kalimantan branches, including 1,115 units (40.57 %) of cooperatives aged around 18–26 years or established since 1996–2004, 799 units (29.08 %) of agricultural cooperatives were established since 1985–1993 or at least 29–37 years old, 488 units (17.76 %) of agricultural cooperatives established since 2014–2022 or a maximum of 8 years old, and 346 units (12.59 %) of agricultural cooperatives established since 2005–2013 or aged at intervals of 9–17 years. In terms of quantity, the average nominal assets of 1,599 units (58.19 %) of agricultural cooperatives in East Kalimantan range between IDR 500 million–IDR 1 billion, 580 units (21.22 %) of agricultural cooperatives with average assets >IDR 1 billion, and 569 units (20.71 %) of agricultural cooperatives have an average asset of <IDR 500 million. On scope of personnel, half of agricultural cooperatives in East Kalimantan or 1,374 units have an average of 81–110 members. Then, 643 units (23.40 %) of agricultural cooperatives were attended by 20–50 members, 272 units (9.90 %) of cooperatives were filled by <20 members, 267 units (9.72 %) of agricultural cooperatives were represented by >110 members, and 51–80 participating members for 192 units (6.99 %) of agricultural cooperatives.

Table 4 calculates the relationship between the four variables to predict the success of agricultural cooperatives using conventional tactics. Using probabilities of 0.1 %, 1 %, and 5 %, organizational governance, network utilization, product service quality, and member staff productivity are predicted to influence the success of agricultural cooperatives. Each causality is recapitulated below: organizational management ($\rho = 0.020 < 0.05$), network utilization ($\rho = 0.013 < 0.05$), quality of services and products ($\rho = 0.000 < 0.001$), and HR productivity of members ($\rho = 0.004 < 0.01$). Nonetheless, quality of services and products act as the most conspicuous instruments in enhancing agricultural success. Table 4 also calculates the mean and SD of each item per variable. The order from the highest score to the lowest is as follows:

- The average score and mean SD for organizational management are 3.71 and 0.962. In the classification of the mean, the largest: dimension no. 5 ($\bar{X} = 3.85$) and smallest: dimension no. 1 ($\bar{X} = 3.54$). Especially for SD, the biggest: dimension no. 6 ($\sigma = 1.055$) and smallest: dimension no. 2 ($\sigma = 0.821$).

- The average score and mean SD for network usage are 3.69 and 0.910. In the classification of the mean, the largest: dimension no. 2 ($\bar{X} = 3.72$) and smallest: dimension no. 3 ($\bar{X} = 3.67$). Especially for SD, the biggest: dimension no. 4 ($\sigma = 0.954$) and smallest: dimension no. 2 ($\sigma = 0.881$).

- The average score and mean SD for quality of services and products are 3.7 and 0.900. In the classification of the mean, the largest: dimension no. 3 ($\bar{X} = 3.74$) and smallest: dimension no. 2 ($\bar{X} = 3.66$). Especially for SD, the biggest: dimension no. 2 ($\sigma = 0.935$) and smallest: dimension no. 4 ($\sigma = 0.862$).

- The average score and mean SD for the HR productivity of members are 3.67 and 0.906. In the classification of the mean, the largest: dimension no. 1 ($\bar{X} = 3.76$)

and smallest: dimension no. 2 ($\bar{X} = 3.58$). Especially for SD, the biggest: dimension no. 5 ($\sigma = 0.973$) and smallest: dimension no. 3 ($\sigma = 0.854$).

Table 4

Cooperatives using conventional instruments

Dimen- sions	Variables / items	Mean (\bar{X})	SD (σ)	Chi-square (χ^2)
	<i>Organizational management</i>	3.71	0.962	18.107* (0.020)
1	Information about the organization can only be tracked by internal administrators	3.54	0.821	-
2	Exposing internal communications is contrary to the direction of the organization	3.73	0.935	-
3	Work execution is more logical than wasting time seeking clarification	3.77	0.965	-
4	Organizational reputation is determined by independence	3.67	1.023	-
5	System reform (including digitization) can trigger arguments that are too wild	3.85	0.974	-
6	The public can find out the profile of the organization if they visit the cooperative directly	3.72	1.055	-
	<i>Network usage</i>	3.69	0.910	12.693* (0.013)
1	Manual data collection	3.7	0.904	-
2	Data leaks are expected through closed authorities	3.72	0.881	-
3	Complementary infrastructure such as the internet, computers and other devices can make cooperative spending more wasteful	3.67	0.900	-
4	Network openness will only reveal organizational secrecy	3.68	0.954	-
	<i>Quality of services and products</i>	3.7	0.900	25.909*** (0.000)
1	Advertising products by word of mouth	3.69	0.864	-
2	Not involving the wider community	3.66	0.935	-
3	Market penetration is not determined by consumer intervention	3.74	0.934	-
4	Limited modification	3.73	0.862	-
5	Prioritizing popular products and services	3.68	0.906	-
	<i>HR productivity of members</i>	3.67	0.906	20.029** (0.004)
1	Selection of members is the authority of the leadership	3.76	0.928	-
2	Substitution of heads of cooperatives based on seniority	3.58	0.888	-
3	Certain positions within the organization are negotiable	3.65	0.854	-
4	In addition to certain leaders and divisions, experienced members have priority rights as instructors to conduct training and guide new members	3.69	0.888	-
5	Counseling, mentoring, and coaching facilities use the classical method	3.66	0.973	-

Note: * $p < 5\%$; ** $p < 1\%$; *** $p < 0.1\%$.

Source: authors' research.

Through three probability estimates (0.1 %, 1 % and 5 %), it can be concluded that the success of agricultural cooperatives using the current approach is that the use of the network, the quality of services and products, and the productivity of the members' personnel influence the success of the organization. Meanwhile, it was concluded that one variable, namely organizational management, hinders the success of agricultural cooperatives. Statistical interpretation shows organizational management ($p = 0.171$), network use ($p = 0.000 < 0.001$), service and product quality ($p = 0.034 < 0.05$) and personnel productivity of members ($p = 0.006 < 0.01$).

Therefore, the use of the network as the smartest step to grow agricultural cooperatives than others. Table 5 summarizes the mean and SD of the four variables and each item based on the largest value to the following smallest value:

- The average value and mean SD for organizational management are 2.41 and 0.989. In the mean class, the highest: dimension no. 6 ($\bar{X} = 2.98$) and lowest: dimension no. 4 ($\bar{X} = 2.07$). Specifically for SD, the highest: dimension no. 1 ($\sigma = 1.145$) and lowest: dimension no. 3 ($\sigma = 0.918$).

- The average value and mean SD for network utilization are 3.69 and 0.904. In the mean class, the highest: dimension no. 2 and no. 3 ($\bar{X} = 3.7$) and lowest: dimension no. 4 ($\bar{X} = 3.6$). Specifically for SD, the highest: dimension no. 2 ($\sigma = 0.942$) and lowest: dimension no. 4 ($\sigma = 0.872$).

- The average value and mean SD for quality of services and products are 3.46 and 0.601. In the mean class, the highest: dimension no. 4 ($\bar{X} = 3.55$) and lowest: dimension no. 1 ($\bar{X} = 3.01$). Specifically for SD, the highest: dimension no. 1 ($\sigma = 0.725$) and lowest: dimension no. 2 ($\sigma = 0.516$).

- The average value and mean SD for the HR productivity of members are 3.86 and 0.825. In the mean class, the highest: dimension no. 2 ($\bar{X} = 3.97$) and lowest: dimension no. 4 ($\bar{X} = 3.79$). Specifically for SD, the highest: dimension no. 2 ($\sigma = 0.868$) and lowest: dimension no. 2 ($\sigma = 0.754$).

Given the important organizational management, agricultural cooperatives should plan in as much detail as possible. If this is not done, mistakes in governance often lead to multiple interpretations, including administrative management. Imperfections in market fragmentation provide practical lessons for family farms in Madagascar, Kenya, Tanzania, Gabon, Scotland, Vietnam, Cambodia, and Ghana about the "incentive trap" (Bell et al., 2023; Heyl et al., 2022; Ragasa et al., 2018). For comparison, a survey in Greece examined the differences in profitability performance between two cooperative identities, namely capital-seeking cooperatives in the food sector and traditional agricultural cooperatives (Kontogeorgos et al., 2018). In summary, management inefficiencies are a limiting factor in traditional agricultural cooperatives. The bottleneck in the management of agricultural cooperatives in Brazil is relatively caused by a relatively conservative work environment. To restore the system, a new protocol is scheduled to compile a list of feasible solutions (de Oliveira & Wander, 2022). Although initially gender issues were doubted in driving entrepreneurial enthusiasm in agricultural women's cooperatives in some cases, expectations were unexpectedly surprising (Balconi et

al., 2023). The head of a cooperative chaired by a woman actually shows an anti-discriminatory role, where the close ties between cooperative members are multiplied.

Table 5

Cooperatives using modern instruments

Dimen- sions	Variables/items	Mean (\bar{X})	SD (σ)	Chi-square (χ^2)
	<i>Organizational management</i>	2.41	0.989	6.406 (0.171)
1	Website building capabilities	2.66	1.145	-
2	Data-driven decision making	2.36	1.009	-
3	Processing and inputting organizational data on a regular basis	2.15	0.918	-
4	Prioritizing the principles of transparency, accountability, and documented work professionalism	2.07	0.938	-
5	Organizational evaluation based on data center	2.26	0.999	-
6	Organizational planning that adopts the platform	2.98	0.929	-
	<i>Network usage</i>	3.69	0.904	68.799*** (0.000)
1	High internet speed	3.62	0.876	-
2	Accessibility of work via tools	3.70	0.942	-
3	Computer programming reliability	3.70	0.929	-
4	Complex network development	3.60	0.872	-
	<i>Quality of services and products</i>	3.46	0.601	41.429* (0.034)
1	Upgrading information literacy	3.01	0.725	-
2	Communication in responding to complaints that are connected by electronics	3.54	0.516	-
3	Problem solving accuracy	4.15	0.525	-
4	Access promotions and sales via social media	3.55	0.548	-
5	Follow market trends/tastes	3.07	0.689	-
	<i>HR productivity of members</i>	3.86	0.825	30.155** (0.006)
1	Coordinated participation	3.82	0.868	-
2	Inclusive training facilities	3.97	0.754	-
3	Certified expertise competency in the technology department	3.89	0.818	-
4	Flexible work mobility	3.79	0.885	-
5	E-recruitment in finding, selecting and processing new members	3.85	0.802	-

Note: * $p < 5\%$; ** $p < 1\%$; *** $p < 0.1\%$.

Source: authors' research.

Currently, network strength does not only rely on individual humans or machines, but also combines the two to expand services and products at the same time. Technology-mediated work pattern repair can save costs and a lot of things to avoid uncertainty in the availability of raw materials in the market. Most of the agro-industrial cooperatives in Bangladesh changed marketing management. The intensity

begins with inviting and involving farmers in producer organizations, thereby improving food stocks in warehouses, reducing intermediary fraud in the supply chain, and ensuring fair prices for consumers (Widadie et al., 2021). Since the emergence of a new economic paradigm in the Western Europe in 1800s, the atmosphere surrounding Portuguese agricultural cooperatives about the stigma of transactional marketing can be overcome through the placement of agro-food chains (Luo et al., 2020). Friedel & Dufays (2023) observes that in all fields of food agribusiness in Flanders–Belgium, early prevention of the “social capital crisis” is carried out by instilling three typologies, i.e: rules and ethics, networks, and trust.

For small farmers in Kampong Speu and Pursat Province (Cambodia), apart to channeling livelihoods, agricultural cooperatives also contribute to reducing the impact of drought (Chhinh et al., 2023). From Cibodas Village (Bandung–Jakarta), apart from property matters, the intangible benefits of agricultural cooperatives have not fully contributed to the internal market, so referral marketing did not last long (Melati & Sadeli, 2017). In fact, in developed and developing countries, the mindset, rewards, and heterogeneity of members imply the track record of agricultural cooperatives (Candemir et al., 2021). As a leading entity in the agri-food distribution network, cooperatives in Wakayama Prefecture–Japan provide two-way consultations to farmers to solve commercial problems, facilitate sales channels with low operational costs, and give great control in strengthening relationships (Hati et al., 2021).

Soetrisno et al. (2019) analyzed three positive values contained in agribusiness cooperative clusters, such as: healthy business performance, efficient financial budgetary resources, and increased service provision to support the sovereignty of agribusiness chains in East Java–Indonesia. The contrast occurred in Shandong Province–China. The prospects for cooperatives are shrinking due to loss of member loyalty, so they do not have a significant impact on profitability (Zhang et al., 2023). Accordingly, there is a weak correlation between farmers’ opportunities to channel services and the supply of cooperative services in China (Wu & Ding, 2018).

Over the past decade, productivity growth for agricultural cooperatives in the United States has slowed slightly. Pokharel & Featherstone (2021) examine technical changes based on the size of agricultural cooperatives that neglect investment in technology and managerial efficiency. The big leap actually happened in Sichuan–West China and coffee farmers in Mexico. As an agribusiness company, cooperatives in the agricultural sector with mismanaged governance qualities are able to be mediated by legitimacy that respects individual turnover (Trejo-Pech et al., 2023; Zhang et al., 2023). Collectively, functional management has a positive effect on member entrepreneurship. Within the discipline of personnel management, labor remaining on the farm in proportion to wages is discussed by Hailu (2023). Explicitly, thinking of labor factors as a subject of HR practice is a useful inspiration for Canadian agricultural production and complements the “Grand Theory syllabus”. In Ethiopia, cooperatives are seen as a means of connecting small farmers to markets, but member commitment is reduced due to moral concerns i.e: participation,

satisfaction, and loyalty (Awoke, 2021). Even more striking, the push for substantial resolution in agricultural cooperatives is helping the economic development of Thai Binh–Vietnam Province in the coming years (Tiep et al., 2020). Finally, in the “stochastic boundary” modeling, Qu et al. (2021) diagnosed that the technical efficiency of apple farmers who are members of agricultural cooperatives from four provinces in China (Gansu, Shandong, Shaanxi and Shanxi) have higher marketing opportunities than those who are not members.

Conclusions. Quantitative analysis has shown that the more network usage, service and product quality, and member HR productivity are improved, the more significant the impact will be on the success of agricultural cooperatives of all types. The findings detect a significant effect between organizational management and the success of conventional agricultural cooperatives. A serious problem is seen in modern agricultural cooperatives, where it is detected that the organizational management does not affect the success of the cooperative. Exclusively, although the seven branches of agricultural cooperatives are located in Mahakam Ulu, Penajam North Paser, Berau, East Kutai, Kutai Kartanegara, West Kutai, and Paser, their instincts in developing cooperatives are not inferior to the competitiveness of the three branches of agricultural cooperatives in Bontang, Samarinda, and Balikpapan.

Looking back, it can be said that the valuable efforts of agricultural cooperatives for economic development, especially for the absorption of labor force, was a history that was laid since the independence of Indonesia. In order to save the position of agricultural cooperatives in the midst of industrialization projects that are accelerating further, multi-stakeholders must pay attention to manufacturing in agricultural cooperatives which are supported by logistics. Also, the consequences of poor organizational management in modern agricultural cooperatives can be overcome through independent leadership in preparing strategic planning. The reason is, not all the basic principles of the organization can be freely actualized. In turn, the simple management of agricultural cooperatives will make it easier for members to work as a team.

This scientific work highlights the success of agricultural cooperatives which are influenced by four factors: organizational management, network usage, quality of services and products, and HR productivity of members. Field experiment techniques via interviews were transferred to the agricultural cooperative supervisory commission which is still active in East Kalimantan. The analysis mapping out two types of agricultural cooperatives: (1) cooperatives with conventional status and (2) cooperatives with modern status. All informants were asked to answer a list of questionnaires based on their respective perceptions into five scales. It is recommended to consider a more reliable methodology for further investigation. Given the existing limitations, further experimental research will highlight more exclusive insights, such as perspectives beyond organizational management, network usage, service and product quality, and member staff productivity. Thus, further research may develop aspects that influence the success of agricultural cooperatives.

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Citation:

Стиль – ДСТУ:

Utomo R. P., Kuleh Y., Darma D. C. Conventional vs modern: which approach is better for the success of agricultural cooperatives? *Agricultural and Resource Economics*. 2023. Vol. 9. No. 4. Pp. 26–49. <https://doi.org/10.51599/are.2023.09.04.02>.

Style – APA:

Utomo, R. P., Kuleh, Y., & Darma, D. C. (2023). Conventional vs modern: which approach is better for the success of agricultural cooperatives? *Agricultural and Resource Economics*, 9(4), 26–49. <https://doi.org/10.51599/are.2023.09.04.02>.