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MODERNIZATION OF AGRICULTURAL COOPERATIVES TO STRENGTHEN COMPETITION AND MARKET EXPANSION: CASE STUDY OF THE KONSUMEN TANI SUKSES BERSAMA BATAM COOPERATIVE

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***Abstract*—Modernization of organization and governance with information technology is significant in strengthening a cooperative's competitiveness and market expansion. This research analyzes the cooperative modernization process at the Batam Joint Farmers Consumer Cooperative (KTSBB), which operates in the agricultural sector. The research method used was qualitative, using a survey approach through questionnaires, in-depth discussions, and document reviews carried out in January – March 2022. The results of the research show that the KTSBB Cooperative, as the only agricultural cooperative in Batam City, has modernized by carrying out transformation in the institutional aspect, where the cooperative acts as an aggregator in the production and market chain, as well as business modernization through 3 (three) business units to help facilitate access to facilities, materials and capital for sustainable production consisting of Gerai Tani, Dana Tani, Gerai Vegetables. KTSBB Cooperative has also carried out digital innovation both on the upstream side (digital farming) and the downstream side (digital marketing). Digital farming innovation on the upstream side is carried out in collaboration with the ANSA Smart Eco farming platform.**

In contrast, on the downstream side, it takes the form of digital sales innovation using the Intelligent Point of Sale (iPOS) platform. It is connected to the online vegetable commodity sales platform Bakulan."With the cooperative's modernization, the KTSBB Cooperative has become an essential player in the supply of vegetable commodities, especially red chilies, in Batam City.

Keywords—***Aggregator; Agricultural Cooperatives; Cooperative Modernization***

I. INTRODUCTION

Currently, the world is entering the industrial era 4.0. Alternatively, 5.0., where information technology grows increasingly rapidly and influences all aspects of human life. The existence of information technology can have positive and negative impacts on supporting the smooth running of human activities and playing a role in determining the sustainability of human life, specifically in the economic sector. Business actors who transform by modernizing and adapting to developments in information technology and digitalization will be able to compete and can become advanced and modern cooperatives. Moore E W defines modernization as an overall change that means transformation from traditional or pre-modern life in terms of technology and social organization toward economic patterns [1]

One business actor that has a vital role in the Indonesian economy is cooperatives. In the industrial era 4.0 or 5.0, cooperatives must be able to modernize, transform, and adapt to developments in information technology so that cooperatives continue to develop and compete to improve the welfare of members and contribute to building a national economic order. Cooperatives in this modern era must transform following technological developments to remain competitive in contemporary business [2]. Furthermore, cooperatives in the era of Industrial Revolution 4.0. must adapt and transform in facing an ever-dynamic environment [3].

Based on data from the Ministry of Cooperatives and SMEs for 2022, in terms of quantity, the performance of national cooperatives can be described as the number of active cooperatives reaching 130,354 units, an increase of 1.96% compared to the previous year. The number of members in 2022 will be 10.69% of the population; this figure is still low compared to the global average of 16.31% (World Bank, 2019). The total assets owned by the cooperative are IDR 281.57 trillion, with a service turnover of IDR 197.88 trillion and

remaining operating results of IDR 7.88 trillion or with a profit margin of 3.98% or ROA of 2.80%. Meanwhile, in terms of cooperative capital sources in 2022, 44.29% came from own capital, and the remaining cooperative capital sources came from loan capital, 55.71%[4].

The contribution of cooperatives to the national economy (GDP) in 2019 only reached 5.10% and is targeted to increase in 2024 to reach 5.50%. This is a challenge that must be taken into account. However, cooperatives have provided employment opportunities, investment, and links in various business fields (KSP/KSPPS as intermediation institutions). Business aspects that are owned are assets, human resources, markets, and business sectors. Several cooperatives are starting to master Information Technology (IT) in running institutions and businesses. Cooperatives can build/have cooperation networks and take advantage of business opportunities to procure government goods/services.

Cooperatives in Indonesia, which are expected to become the pillars of the national economy, in practice are still lagging behind other business actors in various aspects, including first, cooperative institutions that have not been managed professionally, second, the business models that are run mainly in the conventional sector such as savings and loan businesses, shops, other businesses that have been running, it is difficult to diversify the business and the business does not change quickly due to the limited availability of investment funds, and thirdly, member participation as owners and users is not yet optimal. Member participation in terms of following the cooperative principles developed by the United States Department of Agricultural (USDA): User-Owner, User-Controller, and User-Benefit Receiver[5], then one of the critical factors for the success of cooperatives, apart from having professional managers, is that they also need to be supported by experienced management. This shows that cooperative members have a central role in cooperative organizations, which function as economic institutions and, at the same time, social institutions. According to[6], it is a democratic organization intended to serve not only the needs of its members but also society's needs. As an economic institution, cooperatives must carry out their business functions with performance measures of business efficiency and simultaneously must be able to encourage members' business efficiency (member efficiency). As a social institution, cooperatives play a role in environmental economic development.

To restore the role of cooperatives as pillars of the national economy, cooperatives need to transform into modern cooperatives through a modernization process in all aspects, starting from institutions, business, and membership, including the need to plan a modernized cooperative model based on the essential principles of social economics [6]. Modern cooperatives carry out their business activities using new methods and good cooperative governance, have superior competitiveness, and are adaptive to change, especially using intelligent information technology systems. According to [7], in this digital era, the digitalization of cooperatives is increasingly essential. However, people still need to become more familiar with using digital platforms. Cooperative members and other parties can introduce and counsel modern digital-based cooperatives to overcome this. According to [6], in the modernization approach, the targets are providing education to members, financial support, good governance to listen to members' needs, encouraging voluntary membership, maintaining democracy, and understanding the strengths and weaknesses of organizational management.

Modern cooperatives' characteristics are that they carry out their activities based on information technology, their business orientation is based on a business model with an upstream-downstream approach, and they open partnerships with the parties (inclusive closed loop). According to [8], the indicators of Modern Cooperative cooperatives are firstly, an increase in cooperative members who are promoted to class, secondly an increase in tangible (tangible) and intangible (intangible) assets, thirdly an increase in the amount of own capital (equity), loan capital, participation capital, and fourthly transparency. Accountable with transparent and responsible reporting and Online Financial Reports. Cooperatives that are modern, robust, dynamic, efficient, and effective in running business will be able to improve the economic welfare of their members [9]

Cooperatives are business entities that are oriented toward providing services to members [9], and cooperatives must be able to try to win competition with other business entities. One way to win business competition is through digital transformation. According to the Minister of Cooperatives and SMEs, Teten Masduki [10], the digital transformation of cooperatives and SMEs is an effort to survive, rise, and win the competition. The Ministry of Cooperatives and SMEs always supports the development of modern cooperatives through policies and regulations that make running a business easier for cooperatives.

The Tani Sejahtera Bersama Batam Consumer Cooperative (KTSBB) is the only consumer cooperative whose members are farmers in Batam City with the type of agricultural materials and vegetable products business. KTSBB was founded in 2020 by several farmer groups in Batam with the aim of (1) collecting funds from members as joint business capital, (2) building and developing members' economic potential, and (3) assisting members in providing appropriate resources. Required: (4) educating and training members to have abilities and skills of economic value, and (5) increasing welfare through sharing remaining business profits.

The establishment of the KTSBB cooperative was initially based on the high dependence on the supply of vegetables, especially red chilies, from outside Batam, which caused inflation in several vegetable commodities, especially red chilies. In 2021, the average daily demand for red chilies in Batam City is relatively high at 10 tons, while the supply capacity of farmers in Batam is only 2% to 5%. This causes vegetable prices in Batam to be relatively high. Seeing this, the

farmers are committed to forming a joint business forum in the form of a cooperative to increase the supply of vegetable commodities in Batam and improve the welfare of farmers.

Since its establishment and development began, Batam City was designed as an industrial and trade area. The policy to encourage the growth of the city of Batam can be seen from the construction of various modern infrastructures with international standards and other facilities, so it is hoped that it will be able to compete with similar areas in the Asia Pacific. Based on Presidential Decree Number 41 of 1973, the development of Batam was entrusted to a government agency called the Batam Island Industrial Regional Development Authority, now known as the Batam Concession Agency (BP Batam). The development of Batam City, which is focused on industrial and trade areas, impacts the development of the agricultural sector, which is different from the economic base sector (sector) for Batam City [11].

The development of the agricultural sector in Batam City has several challenges. First, agricultural land in Batam is generally scattered, and farmer groups typically have small land areas. Most farmers use industrial areas that still need to be used. This makes agricultural land processing less efficient. Apart from that, the sustainability of agricultural businesses in industrial areas is not guaranteed because landowners can use their land at any time. Second, there still needs to be more resources and technology in cultivation in the agricultural sector, especially red chilies. This cannot be separated from the first problem. The agricultural industry in Batam is considered unattractive for young people's business activities. Third, most farmers in Batam still depend on intermediaries regarding capital and sales. Fourth, trade systems must be arranged between farmer groups at the base level and champion companies that can organize trade systems for marketing planting patterns, prices, and distribution.

The KTSBB cooperative, formed by farmer groups and a combination of farmer groups, is expected to play an important role in facing the challenges of developing the agricultural sector in Batam City from the upstream and downstream sides. The KTSBB cooperative must be able to contribute to improving the welfare of its members (farmers) and improving the regional economy through participation in maintaining the availability of vegetables and food ingredients and their affordability to reduce inflation. To see how cooperatives can transform into more modern ones, it is necessary to study the influence of modernization to increase competitiveness and market expansion in the KTSBB Cooperative.

Based on the background as explained above, the formulation of the study problem includes: 1) What is the role of modernization in strengthening the competition of KTSBB Agricultural cooperatives? 2) How can modernization support market expansion for KTSBB agricultural cooperatives, and 3) What are the impacts of modernization of the KTSBB cooperative as a case study?

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The research objectives are as follows: 1) Analyzing the role of modernization in the KTSBB cooperativeness in strengthening agricultural cooperative competition;2) Assessing the contribution of modernization to the expansion of the agricultural cooperative market. 3) Identify the impact of modernization on KTSBB.

II. METHOD

The research approach used is a qualitative method, as an approach/search to explore and understand the central symptoms, which takes the case of the Batam Joint Farmers Consumer Cooperative (KTSBB). The data was obtained using literature study, observation, in-depth interviews with 15 members, four managers, and two cooperative supervisors, and analysis of KTSBB activity documents. The analysis results are in descriptions or depictions or can also be themed. The data analysis method reduces data and processes business profile data, production data, and financial reports. In addition, a comparative analysis of performance data will be carried out before and after modernization. Next, the researcher will make interpretations and conclusions to capture a more profound meaning and provide policy recommendations that can be implemented.

III. RESULT AND DISCUSSION

In carrying out its business, the KTSBB Cooperative has a vision "To make the main cooperative capable of building economic potential for the welfare of its members." The initial idea for establishing the KTSBB Cooperative was initiated by the Association of Farmer Groups (Gapoktan) Agri Karya Mandiri, where initially from 2015 to 2019, Gapoktan Agri Karya Mandiri ran its own red chili cultivation business. Gapoktan Agri Karya Mandiri faces many challenges in supplying red chili needs in Batam City using personal and group farming methods in the form of tight production competition with farmer groups (poktan) and other Gapoktans, and the large number of large investors who are staking out the continuity of the chili cultivation business. In March 2020, Gapoktan Agri Karya Mandiri made a strategic change to its approach to strengthening institutions and production (corporate area farming) by establishing the KTSBB Cooperative. With this cooperative spirit, a sense of togetherness between Poktan and Gapoktan can be fostered in organizing production and commodities, building business units as added value, and being able to become vegetable distributors in Batam.

In general, the development of the KTSBB Cooperative is focused on 4 (four) areas, namely: first, increasing productivity through increasing land area and innovation in chili cultivation, increasing the number of members (business actors/farmers), providing production facilities and infrastructure, and diversifying commodity production not only focus on red chilies. Increasing chili production and productivity is achieved by innovating prologue cultivation technology (double production), which emphasizes using superior seeds, healthy seeding, increasing plant populations, fulfilling nutrition, and controlling integrated plant pest organisms (OPT). Apart from that, the use of digital agricultural technology (digital farming) has resulted in standardization and accuracy of land conditions; cultivation is based on the results of condition analysis, there is the standardization of production, and there is an increase in the quality of cultivation in actual conditions & real-time.

Second, commodity arrangements and planting schedules. The KTSBB Cooperative has increased the types of commodities it cultivates while remaining focused on the main commodity, red chilies, and supporting commodities such as green chilies, cayenne peppers, and vegetables. Apart from that, with the increase in land area and farmers becoming members of the cooperative, planting schedules for each region have been arranged for the continuity of superior and supporting products every day, as well as setting an ideal target for red chili production of 2 - 3 tons per day.

Third, price regulation and agreements are implemented by determining purchasing prices at the farmer level, setting selling prices at the traditional and retail market levels, and setting prices at the consumer level. Fourth, marketing integration is carried out through structuring distribution channels, acting as a marketing aggregator (marketing and looking for potential market partner resources), and utilizing digital technology in marketing products.

Cooperatives in this modern era must transform following technological developments to remain competitive in the business world [2]. They must also adapt and transform to face an ever-dynamic environment [3]. According to [12], Modernization is a whole change, which means transformation from traditional or pre-modern life in terms of technology and social organization towards economic patterns. Modernization is a transformation, a shift in society in all aspects.

The KTSBB Cooperative has modernized its institutional elements, where the cooperative acts as an aggregator in the production and market chains. In strengthening institutions, the parties have their respective roles. Cooperative members consist of farmers who have joined farmer groups, supported and coordinated with regional champions and focused on carrying out agricultural production or cultivation processes. Cooperative management is tasked with mobilizing and managing agricultural cultivation potential, institutions, and trading systems to control production, prices, and produce supply daily. In this case, the cooperative carries out the aggregator business function well. According to [13], the aggregator business emerged by utilizing the internet in the form of applications or websites. The following is the institutional model of the KTSBB Cooperative.

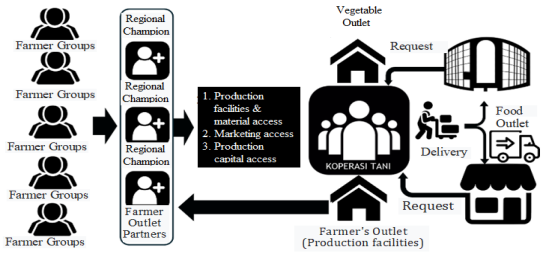

Figure 1. KTSBB Cooperative Institutional Model.

The KTSBB Cooperative has 3 (three) business units to help facilitate access to facilities, materials, and capital for sustainable production, consisting of Gerai Tani, Dana Tani, and Gerai Vegetables. Gerai Tani helps farmers access facilities and infrastructure (agricultural production materials: fertilizer, mulch, pesticides, etc.). Dana Tani helps farmers access production capital with a non-burdensome scheme, collaborating with Gerai Tani to procure production facilities and materials. Vegetable outlets assist farmers in managing production and products, ensure production is distributed to consumers, assist in mutually beneficial price control, pick up production from farmers to consumers, and build relationships with new consumers.

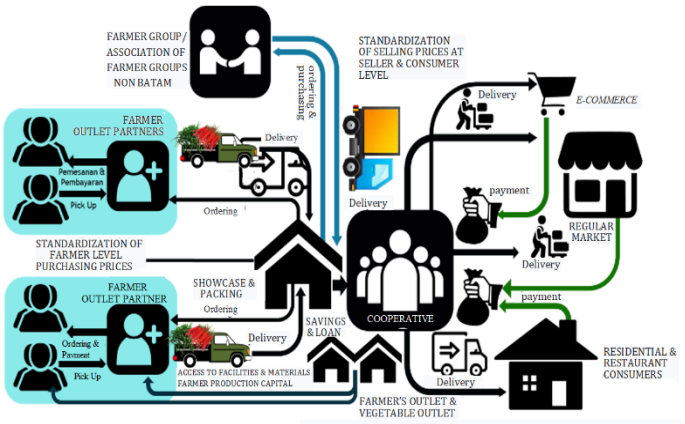

Figure 2. KTSBB Cooperative Business Model

In the industrial era 4.0. Alternatively, in 5.0, the KTSBB Cooperative has carried out digital innovation both from the upstream and downstream sides. Cooperative member farmers carry out digitalization from the upstream side (digital farming) to ensure increased productivity, efficiency, and sustainability of production. The study results from [14] show that the benefits of digital farming can increase efficiency, productivity, and food security. Technically, digital farming combines precision farming and Agriculture 4.0 and can perform monitoring, control, prediction, and logistics functions [15]. Digital innovation on the upstream side is carried out in

collaboration with the ANSA Smart Ecofarming platform. With this application, farmers will get benefits: helping control extreme air temperature changes in topsoil/root zone soil in real-time, visualizing increases and decreases in soil parameters info graphically and numerically, and recording increases and decreases in soil parameters in individual table numbers. Units of time (seconds, minutes, hours, days, and months) assist with statistical data based on soil parameters for monitoring systems and planting patterns and accelerate soil actions for monitoring systems and planting patterns. The impact of using this application primarily increases productivity and production cost efficiency.

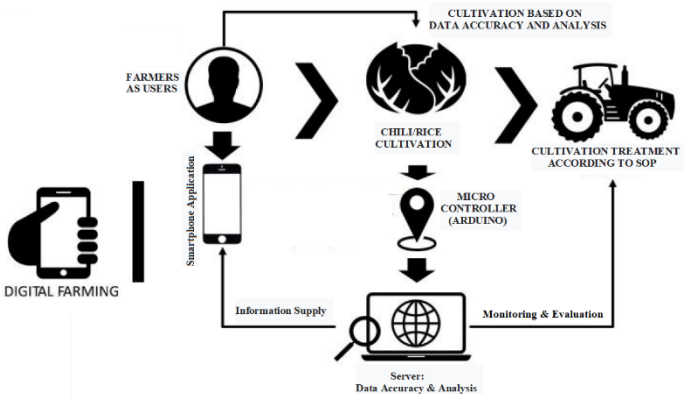

Figure 3. Digital Innovation on The Upstream Side

Digital innovation on the downstream side is done through digital farming sales commerce using the Intelligent Point of Sale (IPOS) platform connected to the BAKULAN online sales platform. The IPOS platform will facilitate producer-hub-consumer connectivity from "Supply and delivery" with real-time tracking. Aggregator applications can shorten the distribution chain from farmers to consumers [13]. According to [13], the impact of business through aggregators is receiving higher prices, price transparency, and knowing consumer preferences for the products offered.

The BAKULAN application is a digital marketing tool to expand farmers' market access. Digital marketing is a popular product that produces digital media [16]. According to Chaffey, digital marketing is the application of digital technology that forms online channels for the market [17].

There are at least four benefits of digital marketing for running a business, including saving promotional costs, reaching a wider market, increasing sales, and connecting with consumers [18]. According to [19], digital media platforms can provide real-time interaction and high dynamism and have a major impact on the procedures implemented by the company in maintaining relationships with customers [20].
Besides that, digital marketing applications make it easier for consumers to get products quickly.

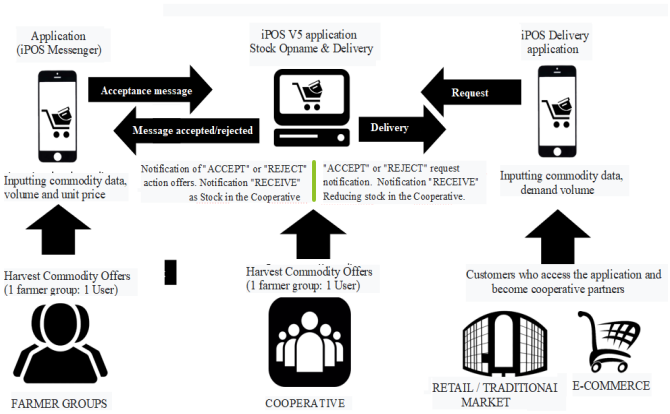

Figure 4. Digital Innovation On The Downstream Side

The KTSBB cooperative began digitizing in 2019-2020, starting from the upstream side (agricultural production) and moving downstream to marketing. Below is presented primary data on the cooperative's performance that has been processed.

TABLE I. RODUCTION PERFORMANCE AND PRODUCTIVITY OF KTSBB COOPERATIVE CHILI

INFORMATION	YEAR		
	2019	2020	2021
Number of farmer groups	20	31	35
Number of Members	100	157	175
Land area (Ha)	3.18	6.25	13.24
Chili Production (Tons)	36.00	40.00	150.00
Productivity (Tons/Ha)	12	14	19
Sales value (Rp Billion)	1.440	1.720	6.100
Number of buyers at IPos	2	9	24
Number of social media	0	1	3
Number of marketplaces	0	0	1

With various innovations and the digitalization of sales and marketing systems, the performance of the KTSBB Cooperative has increased. The number of farmer groups joining the KTSBB Cooperative in 2021 is 35, an increase from 20 groups in 2019. Meanwhile, the number of farmers in 2021 is 175 people, an increase compared to 2019, when there were 100 farmers. The total land area for red chili cultivation in 2021 will be 13.24 Ha, an increase compared to 2019, which was 3.18 Ha. Red chili production in 2021 will be 150.00 tonnes, an increase compared to 2019 36 tonnes. The sales value of red chili production in 2021 was IDR 6.1 billion, an increase compared to 2019, which reached IDR 1.44 billion.

Based on these data, an analysis of the development of chili production performance and productivity was carried out as follows:

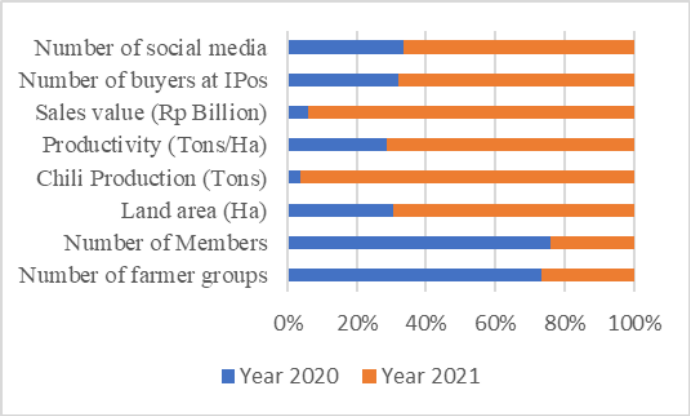

Figure 5. Increasing Production And Productivity Of KTSBB Cooperative Chilies.

The most significant increase occurred in chili production, averaging 143%, and the highest increase occurred in 2021, reaching 275%, due to an average land expansion of 104% and an average increase in productivity of 26%. The increase in productivity is due to using Proliga technology and intelligent farming in collaboration with the Ansasmart platform. Increased production and productivity have resulted in a surge in sales of up to 255% in 2021. Meanwhile, the average increase in farmer groups reached 34%, the highest in 2020 at 55%. The increase in sales was driven by an increase in the number of buyers registered on iPOS, up to 167% in 2021.

IV. CONCLUSIONS

Based on the qualitative description above, modernizing institutions, businesses, and cooperative membership can be dynamically and innovatively by utilizing the business ecosystem to strengthen member participation as owners and users. Cooperative members are a central issue for the development of cooperatives now, tomorrow, and in the future as contemporary, futuristic cooperatives. Core business, extended enterprise as a unit in the cooperative business ecosystem, is the result of scanning carried out at any time to formulate future cooperative strategies.

With digitalization, KTSBB is increasingly trusted by members and stakeholders, able to compete with similar business players, and can improve cooperative performance even more. The digital marketing strategy for cooperative products is now robust and reliable. This is related to Indonesia's large number of internet and smartphone users. Cooperatives are business entities that require a unique and personal approach to consumers when marketing their products. Digitalization can help cooperatives spread their wings by introducing and acquiring consumers. Apart from that, some challenges or obstacles can be managed in digital cooperative marketing.

Modernization of cooperatives by implementing digitalization from upstream, institutional management, business management, and downstream or marketing is necessary for agricultural cooperatives that want to strengthen their competitiveness and expand markets. The modernization of agricultural cooperatives needs to be followed up as a broader program involving cooperative stakeholders, especially the central government (Ministry of Agriculture and the Ministry of Cooperatives & Small and Medium Enterprises), regional governments, private institutions, farmer associations, and others.

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