

# Value co-creation through digital technology and business relations: A case study in an agribusiness cooperative company Islamic' education-based

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**Abstract.** Maintaining good relations and achieving mutual benefits among agribusiness actors is essential in an agricultural business network. This study explores the concept of shared value co-creation (VCC), where group members collaboratively develop new business models for horticulture product marketing promoted by digital technology and business networks. Research on an agribusiness cooperative managed as an Islamic educational institution demonstrates that shared VCC is an effective strategy for developing agribusiness cooperatives. Key factors include collaboration, digital technology utilisation, human resource competency development in agribusiness, and leveraging cooperative networks. The ability to seek opportunities and build stakeholder relationships facilitates shared VCC, leading to mutual benefits. The study findings suggest that a collaborative approach, respect for good relationships, and a focus on intangible resources can enhance supply chain networks and marketing of local agribusiness products. Value networking, business collaboration, digital agribusiness, and e-commerce are crucial.

## 1 Introduction

Food retail has experienced evolution due to the various emerging alternative food networks. The changes in the current agribusiness landscape are characterised by the increasing complexity of its systems [1]. This complexity is reflected in the evolution of more intricate business environments and significant changes in the value chain structure. Shifts in consumer demand further contribute to the dynamic nature of the agribusiness sector, necessitating a transformation in agricultural business practices. Information communication technology (ICT) development and application are the most significant factors driving this transformation. The digitalisation of agricultural businesses has become a central focus, enabling more efficient and effective operations.

This shift towards digital solutions aligns with broader changes in business orientation, with an increasing emphasis on service-dominant logic (S-D logic). As businesses pivot towards a service-oriented approach, the integration of ICT and the focus on digitalisation become crucial for maintaining competitiveness and meeting evolving consumer demands.

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Adopting digital technology in agribusiness is evidence of the development of alternative food retail that changes buyer-seller transactions and interactions [2, 3]. In addition to digital transformation, ensuring good relationships and achieving mutual benefits among agribusiness actors is essential for an effective agricultural business network. The ideal condition is where the network maintains solid and positive relationships between business people and markets.

VCC also plays a vital role in modern agribusiness. The concept of VCC proposes a potential tool for marketing strategy driven by innovation [4], which in agribusiness can be used as a strategic idea for introducing food businesses beyond a cost-based approach [5]. VCC involves business actors and markets' collaborative participation in B2C and B2B contexts [6]. The collaboration fosters innovation and mutual growth during the service process. Chandler & Vargo (2011) and Vargo & Lusch (2011) emphasise that network actors' integrating physical and non-physical resources generates mutually beneficial value. This approach leverages collective resources and capabilities, enhancing service delivery and achieving shared business objectives. In the agribusiness context, the critical elements of VCC include collaboration, participation, innovation and a customer-supplier-based business approach [7–9]. These elements highlight the importance of collective efforts and customer engagement in driving innovation and sustainable growth.

The Asia Pacific region plays a significant role in the global vegetable market, contributing 75% of the worldwide vegetable production volume and holding a 42% market share in the global vegetable market. Moreover, urban consumers in this region consume fresh products at twice the rate of staple foods, reflecting a shift in dietary preferences [10]. In Indonesia, the horticulture business holds substantial potential and significantly contributes to the agricultural sector and the national economy. The volume of horticultural consumption continues to increase, driven by domestic and international demand. Indonesia is among the top ten manufacturers of horticultural products, including vegetables and fruits, in the global market [11]. This growth underlines the importance of the horticulture industry in supporting economic development and enhancing food security.

Statistics from BPS-Statistics Indonesia indicate that by 2024, the country's horticultural sector will generate about 7,000 tons of products. Within 2021 – 2023, the horticulture production, specifically in Indonesia, fluctuated. However, there was a significant increase in several high-value commodities, such as onion, spring onion, cabbage, chilli, and cayenne pepper (see Fig.1.). The potential of Indonesia's horticulture industry has promoted the development of the horticulture business managed by various business scales and entities. The business entity of cooperatives (co-ops) plays an essential role in the agri-food industry in managing agri-food product marketing for retail and wholesale [13]. The agribusiness cooperative company focuses on the horticulture industry and is a business entity comprising a farmers' producer-oriented community [12], sometimes including other agribusiness actors. Co-opetition and servitisation, as well as business networks and relationships, have become essential in VCC's domains and are reinforced by digitalisation [14]. In this regard, collective actions, such as those gathered in a business group or community, might tackle the obstacles experienced by the group members and enable them to accommodate the problem-solving strategies [15].



**Fig. 1.** Indonesia Horticulture - Vegetable Production (2021 – 2023) [12]

However, there were limited studies about the role of co-ops focusing on horticultural businesses benefiting from digital technology, such as agri-food commerce run by small-scale farmers, reflecting VCC execution by adopting the socio-cultural situation. Digital technology has become compulsory for agribusiness entities to move toward digitalisation. Building upon this observation, it is evident that integrating digital technology within agribusiness is a trend and a necessity for future growth and sustainability.

Agribusiness is undergoing a significant transformation driven by digitalisation, VCC, and changing consumer preferences. These trends highlight the need for agribusinesses to adapt to a rapidly changing environment, leveraging technological advancements and collaborative approaches to optimise operations and create value within the value chain. The horticulture sector in Indonesia exemplifies this potential, showcasing its vital role in the agricultural economy and its capacity for continued growth and contribution to the global market. Thus, this study aims to explore the concept of VCC carried out collectively by small-scale agribusiness actors who are group members and utilise the development of digital technology and business networks to develop new business models in running agribusiness and marketing agribusiness products.

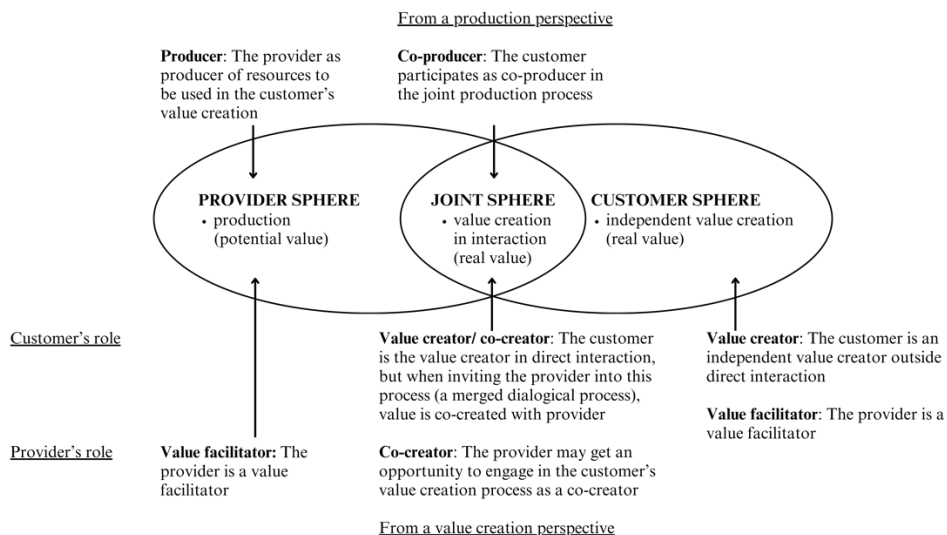
## 2 Methodology

This study followed the qualitative research method by collecting data using semi-structured interviews to explore understanding the concept of VCC promoted by digital technology for agribusiness commerce. The case selection focused on agribusiness cooperatives due to their pivotal role in facilitating collaboration among various stakeholders in the agricultural sector. Face-to-face, in-depth interviews were conducted with the manager, administrators, and members of selected agribusiness cooperatives. A case study research design was employed to develop an in-depth analysis of the chosen topic [16] by choosing a cooperative company based on its active engagement in representing VCC practices and prominence in agribusiness and regarding the use of digital technology in the business. The

interviews provided a detailed examination of the participants' perspectives and insights on how VCC is implemented and perceived within their business interactions.

A case study illustration attempts to describe the role of a cooperative managing and facilitating its members with an innovative and creative business model and how the cooperative is being affected by digital technology. This approach ensured a rich, nuanced understanding of the dynamics of VCC in the specific context of agribusiness cooperatives. The careful case selection and in-depth exploration of these cooperatives provided a robust foundation for understanding VCC's practical applications and implications in agribusiness.

The VCC analysis through the VCC sphere describes the linkage and relationship between co-creation actors in VCC activities (Figure 2), indicating different roles of actors in the co-creation process [17] and VCC analysis as a process by which mutual value is expanded together [18]. The co-ops are responsible for the production process (used as a global term for design, development, manufacturing, delivery, back-office, and front-office processes). In the provider sphere, they produce resources and processes for customers' use. In this way, the co-ops facilitate the creation of customers' value. The co-ops can be characterised as a value facilitator by providing potential value-in-use. In the joint sphere, the role of the customer is twofold: co-producer of resources and processes with the co-ops and value creator jointly with the firm. In direct interactions with the customer, the co-ops may have an opportunity to engage with the customer's value-creation process and take on the role of value co-creator. In the rest of the customer sphere, which is close to the provider, the customer creates value as value-in-use independently of the provider [19, 20].



**Fig. 2.** Value Co-Creation Sphere [17]

The uniqueness of the chosen case study was the integration between the agribusiness co-op and an Islamic Boarding School with an agribusiness curriculum for the students. They teach the students about agribusiness to provide them with agribusiness knowledge and practices. The co-op is located in the Bandung Regency, one of the horticultural commodities production areas. This agribusiness cooperative represents business transformation, promotes inclusive business and empowerment, and manages high-value horticulture commodities.

Primary data is obtained through textual data from interviews and secondary data from various sources. The respondents interviewed for this research were the founder of the

Islamic Boarding School, the head of co-ops, the financial manager, and the co-ops members. They were chosen based on the appropriate experiences they obtained as the management involved in the strategic and operational decisions of the co-op, which attend to the research objectives. Then, a descriptive-qualitative with an iterative approach [21] was applied for the data analysis by integrating the textual interview data and literature reviews. The stages for the analysis comprise (1) organising the data, (2) reading and re-reading the data, (3) summarising the data content, (4) creating codes, (5) constant comparative method for coding schemes, and (6) reporting the results. The analysis process allows for a comprehensive analysis of the collaborative processes and the integration of resources, contributing to mutual benefits among the actors involved with the agribusiness co-op.

## **3 Result and Discussion**

### **3.1 Results**

#### *3.1.1 The Case Study Profile*

The agribusiness co-op is managed professionally in the situation of an Islamic educational institution. It has nine farmer groups appointed as business partners and suppliers, and most group members are graduates of this Islamic boarding school. The interested school graduates became entrepreneurs and started businesses in horticulture commodities. These alumni are spread in several West Java Province areas, specifically Bandung and Cianjur. The co-op also involves the existing students, local farmers, and the local community around the area. This co-op's business units include agriculture production facilities, agribusiness (i.e., agriculture, animal husbandry, fisheries), agricultural marketing and logistics, savings and loans, and agrotourism. The co-op tries to initiate and develop an integrated farming system by linking each agribusiness activity conducted by the co-op to reduce agricultural loss and waste and optimise resource utilisation. This scheme resonates with previous research about the application of integrated farming systems to support production and assets possessed by the farmer [22]. The co-op also pursues professional agribusiness management and continuous business development to expand the market by serving various market access opportunities for business networks, such as supplying to supermarkets, restaurants, diet communities, food supply companies, and end-consumers (i.e., online retailing). The result supports previous studies about the role of business networks in succeeding the VCC process through a multiple episode of collaboration with various potential partners [23]. The analysis shows that the co-op succeeds in collaborating and cooperating with various stakeholders, such as governments, financial institutions, and NGOs, which is advantageous for expanding the business network and enabling for combining resources amongst the actors involved in VCC as the process-like collaboration.

#### *3.1.2 The Role of Digital Technology and Resource Activation Promoting VCC*

The analysis shows that digital technology has started to influence the business processes and activities in the co-op. However, the application can be considered moderate Internet usage by benefiting social media (i.e., WhatsApp, Instagram) and websites. The two digital applications of social media are used for different purposes. The WhatsApp application is used for information sharing about various co-op business activities and coordination with the farmer partners who are also the co-op members, including new knowledge sharing regarding agricultural methods, production and distribution schedules. Social media is one

of the enablers that support advocacy for co-op members and empower potential business partners to increase their business competencies, improving service and product quality. Instagram, another social media platform for co-op businesses, benefits from promotion and digital content creation. The features (story, reels, live streaming, collaboration posting, picture posts) provided in this social media platform are creatively used by the co-op to promote and encourage prospective targeted markets to introduce and exhibit virtually various of the co-op products and agribusiness activities, accessing new markets to business and end-consumer, including presenting the achievements. The analysis also shows that the co-op is developing a new retail market by establishing e-commerce for trading, branding, and developing a business portfolio. E-commerce uses a web-based application and is managed to develop new markets both for the business market and end-user market orientation. For small- and medium-scale businesses, such as this agribusiness co-op, e-commerce is feasible for companies to engage with digital technology, enabling them to access wider market opportunities that are more strategic than conventional offline strategies.

The result also showed that resource utilisation and activation were tangible and intangible. The co-op provides facilities for agribusiness activities as a privilege for the co-op members and business partners. The co-op also supports knowledge sharing and various business development activities to improve the farmer members' and suppliers' knowledge and expertise, which is enabled by digital technology. Based on a culture of learning, trust, motivation to share, openness to new knowledge, and teamwork should be established. Training, mentoring, coaching, and creating communities of practice are also vital. Additionally, overcoming technological barriers is crucial, necessitating appropriate technological infrastructure and tools, such as mobile services, applications, repositories, internet services, and social media platforms, to support knowledge-sharing functionalities [31].

### 3.1.3 Enabling Network Functions and Business Relationships

Within the co-op members, intensive communication, coordination, and collaboration are encouraged and emerged to reach a mutual understanding of the business vision and mission and to receive fair and reciprocal benefits from the business. The co-op collaborated with multiple farmer partners from the local area and former Islamic boarding school students who are joining the agribusiness field. The analysis reveals that the network consisting of the graduates from the boarding school can be considered critical networking for the co-op due to the strong ties and sense of belonging of these farmers with the Islamic boarding school. The school (*pesantren*) usually holds regular meetings for Islamic recitation and invites the school graduates, and the co-op uses this meeting to discuss agribusiness activities. This network function can be acknowledged to minimise conflicts amongst farmer partners or between the co-op and the farmer partners. They benefit from regular meetings to solve various issues and resolve problems through intensive communication, openness, and transparency.

The analysis reveals that relationship management is the critical marketing strategy to develop business relationships. Business engagement as the realisation of B2B relationship management is indicated by developing stakeholder engagement with rural communities and other prospectus stakeholders to support business partnerships. Various collaborations with NGOs, governments, business partners, and customers are identified through close partnerships, encouraging a dynamic communication system to adapt to the market conditions.

## **3.2 Discussion**

### *3.2.1 The use of social media and websites*

Based on the findings, it is argued that digital technology enables a business entity to improve the intangible resources of small-scale agribusinesses. A previous study argues that social media can facilitate knowledge exchange among farmers and researchers [24]. Farm innovators frequently exchange information and experiences via WhatsApp messenger on their mobile phones. Most of the content was knowledge-based, combining personal agricultural experiences. The argument also argued about using social media for innovation, following the social constructivist learning theory, which tries to improve social interactions to develop and exchange knowledge. WhatsApp has proven to be a potential tool for doing so [25]. The co-op uses social media for interactive communication to support business relationship development, both business-to-business (B2B) and business-to-customer (B2C). The result resonates with previous studies about business marketers' intentions to use social media for its usefulness and utility [26], including benefiting social media to increase awareness and enhance relationships with customers, explicitly co-promoting and enhancing the image of local small-scale businesses in the region [27].

However, there are constraints related to adopting digital technology, which changes companies' mindsets and planning horizons [28]. The business-related activities facilitated by digital technologies are expected to increase business networks and market access by motivating co-op members and farmer partners to develop their capacities, knowledge, and capabilities. The argument aligns with previous studies that argue that the more knowledge developed, the more skilful the actors are in creating and applying new ideas and innovation [29], which improves their capabilities and resources to be used in value-creating networks [30].

### *3.2.2 Resource Activation*

The finding indicates that the co-op, managed by the Islamic educational institution management, is acknowledged to build its reputation and goodwill based on good quality horticultural products, community engagement, sustainable practices, innovation, and partnership. Managing goodwill becomes essential for realising VCC, as shown by the stakeholder feedback involved with the co-op and the number of collaboration arrangements. The collaborative innovation may result in a new business model, creating a strategic network [32]. Islamic-based entrepreneurship's shared vision and mission support the engagement between the co-op members' strategic farmer partners. The utilisation and activation of these resources can promote the success of the VCC process and practices. The more accessible and obtainable resources integrated into the VCC process are essential to execute collaboration with the co-creator partner [33].

### *3.2.3 Network Function*

Functioning the network within the co-op members (i.e., farmer producers, suppliers, wholesalers) has activated the advantageous role of the network obtained by the co-op. This argument is supported by previous studies about the interaction pattern among actors involved, including the role of actors and their resource contribution to be combined in the co-creation process, which can unfold the creation of a new solution in the structure of the involved network to co-create value with markets-as-networks [23, 34]. The result indicates a B2B relationship management and activating network function that also realises the

collaborative and shared co-creation process. One demonstration of VCC for utilising the co-op business networks for business development may become the business strength to support business development goals. Activating the school graduate network can be demonstrated as developing alliances [35] that can drive the strategic value of the co-op.

### **3.2.4 B2B Relationship Management**

The co-op resource utilisation is managed and integrated with business partners; participation to gain higher business competitiveness. This collaborative network in VCC is aligned with continuing VCC in the B2B context [36, 37]. In the VCC process mechanism, mutual interaction and relational relationships are promoted rather than transactional relationships that support opportunity-seeking and collaboration with various stakeholders, facilitating the VCC process for mutual benefits. The result aligns with a previous study about B2B relationships related to co-creation for innovation networks and managing relationship dynamics [14] and the value of co-creator involvement in the VCC process [9].

### **3.2.5 VCC Impacts**

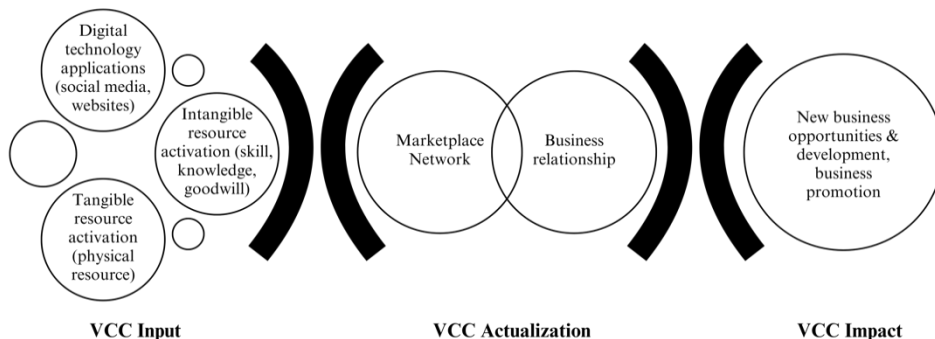
The realisation of VCC within the evolved digital technology and business relation development in the co-op case shows that it could impact the future business development related to new horticultural product ideation, innovation, and market development. New business ideas are also recognised as the result of VCC practices through the collaboration between the co-op, the farmer members, and other involved stakeholders, which has unlocked various opportunities. Business network development is identified through various business collaborations and agreements with the interested stakeholders. The co-op promotes the company through branding, promotions (i.e., products, business processes, company activities), publicity (i.e., national, international), and exhibitions. This result aligns with the previous study about VCC improving business performance, opportunities, and a strategic approach to innovation [38]. Digital technologies, such as social media, enable activities that promote co-op within the industry. The finding agrees with a study about mobile technology attributes influencing the effectiveness of mobile technology's business relations and co-creation process [39]. Based on the findings, it is argued that digital technology and business relations can significantly impact VCC and provide practical VCC success.

## **4. Implications**

### **4.1 Theoretical Implications**

This study proposes theoretical implications for understanding the concept of VCC in an inclusive and innovative collaboration in rural agribusiness communities. The process of VCC (see Fig.3) is enabled through mobile technologies and resource activation to realise the marketplace network and business relationship. Modern mobile technologies are advancing and proliferating rapidly, transforming phones into exceptional tools for farmers to cultivate robust relationships with various stakeholders in agribusiness through online communication channels. Hereafter, the impact of VCC could promote new business opportunities and development and business promotion. These anticipated impacts indicate the mutual learning and reciprocity process in agribusiness that emerges within rural community contexts and cooperative practice. Opportunities for direction and continued research on VCC and competitive solutions based on the use of digital technology and the

development of business innovation models in agribusiness. Also, extending the concept of creative thinking and adapting to changing market conditions to create sustainable competitive advantage and drive long-term growth in agribusiness.



**Fig. 3.** The VCC Process Within Agribusiness Rural Community

## 4.2 Managerial Implications

The managerial implications suggested by this study are related to the application of collaborative, participatory concepts in agribusiness networks, specifically for the horticultural agribusiness actors, with a collective-based community that is considered relevant to the Indonesian culture as a collectivist society, such as gathering in a farmer group and cooperatives that are managed professionally following the social and cultural situation of Indonesia, namely collective, togetherness and mutual cooperation. The government should also actively support digital infrastructure by providing better digital connectivity and accessibility for rural communities. The interested stakeholders, such as the government, NGOs, private parties, and other relevant stakeholders, are also required to support, mentor, and empower the agribusiness actors' rural community to develop and empower cooperatives and agribusiness entrepreneurship. Agribusiness curricula can also be implemented and adopted by Islamic educational institutions and vocational schools, which are numerous and have potential in Indonesia.

## 4.3 Policy Implications

Policymakers must adapt to the current market situation and business transformation regarding the development of the digital landscape in Indonesia, which can empower the agribusiness sector as one of the economic generators in the rural areas that are still primarily appointed as agriculture production areas. The increased investment in digital infrastructure networks is also required for all populated areas to fairly receive digital access and connectivity to support the upstream agribusiness actors in embracing digital transformation.

## 5 Conclusion

This study focused on the role of co-ops in horticultural businesses benefiting from digital technology, such as agri-food commerce run by small-scale farmers, reflecting VCC execution by adopting the socio-cultural situation. A collaboration-oriented approach through the VCC concept is an example of implementing a successful inclusive-based agribusiness model. Through a collaborative approach centred around VCC, stakeholders within the agribusiness ecosystem can collectively work towards mutual success. This approach not only fosters inclusivity but also encourages innovation and the sharing of resources, ultimately leading to sustainable growth.

Digital technology is an active medium for managing relationships, networking, communication, and interaction with various parties in the business - strengthening supply chain networks and marketing local agribusiness products. By leveraging digital platforms, agribusinesses can enhance their reach, streamline operations, and effectively market their products to a broader audience. Furthermore, digital solutions enable real-time data exchange and analysis, empowering stakeholders to make informed decisions and swiftly adapt to changing market dynamics.

Respecting and maintaining good relationships with various parties is essential in the complexity of today's agribusiness networks. Businesses can cultivate long-lasting partnerships that drive value creation and mitigate risks by fostering trust, transparency, and open communication. Whether engaging with suppliers, distributors, or consumers, prioritising relationship-building efforts fosters collaboration and shared purpose throughout the ecosystem. In addition, intangible resources (expertise, knowledge, networks) must be added to explore new ideas and opportunities, network, and build collaborations.

A collaboration-oriented approach through the VCC concept is an example of implementing a successful inclusive-based agribusiness model. Through a collaborative approach centred around VCC, stakeholders within the agribusiness ecosystem can collectively work towards mutual success. This approach not only fosters inclusivity but also encourages innovation and the sharing of resources, ultimately leading to sustainable growth.

The study was limited to specific regions or countries and context-specific. The result may be more applicable to small-scale agribusiness actors. Future research could emphasise examining the results from this study about the role of actors and its impacts on VCC in different agribusiness entities for the generalisability of the findings. Varying levels of digital literacy among stakeholders can impact the effectiveness of digital solutions differently. This study focused on business growth; other impacts of increased digitalisation within the agribusiness scope and collaboration may be underexplored. By addressing these limitations, future research can provide a more comprehensive understanding of the viability and effectiveness of collaboration-oriented approaches and digital technologies in the agribusiness sector.

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