



THE FRAMEWORK MODEL OF DIGITAL COOPERATIVE TO EXPLORE ECONOMIC POTENTIAL IN HIGHER EDUCATION

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Abstract

In February 2020, the Indonesian Ministry of Cooperatives and SMEs noted that in the last four years, 81,686 cooperatives were dissolved, leaving 123,048 active cooperatives. This case is a huge challenge for the government to overcome. Indonesian Internet Service Providers Association (APJII) stated that the number of internet users in Indonesia reached 196.7 million in the middle of 2020. Meanwhile, data from Google & Temasek showed purchasing products via e-Commerce in Indonesia reached US\$ 10.9 billion in 2017 and continuously increased in 2020. Most cooperatives in Indonesia run business conventionally with manual transactions, limited time, traditional logistics, and conventional membership administration. Nowadays, the institution with tens of thousands of members no longer effectively runs cooperative conventionally in a disruptive era. A conventional cooperative at a private university in Jakarta was observed in the study. There are tens of thousands of students and staff at the university. Three research questions arise, such as what can not be adequately solved in a traditional cooperative, what tools are used in digital cooperatives, and what shape can be used in the digital cooperative system model to solve issues. This study proposes a framework model in developing a digital cooperative to accommodate a huge amount of membership and enhance business scope. The research identified technology needed to overcome matters that cannot be dealt with in a conventional cooperative. It provided a digital cooperative frameworks model that impacts value creation, value capture, and value delivery, especially in higher education.

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INTRODUCTION

The Government of Indonesia strongly supports cooperative business as the backbone of the economy. Cooperatives have an essential position in the Indonesian economy through support from the Ministry of Cooperatives and SMEs, law, and society. The people and the Government of Indonesia view cooperatives as the Indonesian economy's original character, namely the cooperation economy (*gotong-royong*). Various laws support cooperatives' existence and progress to create cooperatives as the backbone of the Indonesian economy.

Nowadays, in Indonesia, there are 126,048 active cooperatives in 34 provinces with 22,463,738 members and more than 152 billion rupiah assets, the report from the Indonesian Cooperative Ministry in 2020.

The cooperative has a tremendous contribution to the economy, especially in institutions with tens of thousands of members. The cooperatives' main purpose is to manifest all members' welfare by a principle, from members to members [1]. An institution with thousands of members is like a big virtual supermarket where all members can sell or buy anything, so it needs

innovation to anticipate the radical transformation of the online market environment [2].

Universitas Mercu Buana Jakarta has extraordinary economic potential with abundant students, tens of thousands of students, lecturers, employees, colleagues, and alumni to optimize its cooperative business. This university has approximately more than 35,000 students, lecturers, and employees exceeding 1500 people, plus visitors, partners, guests, and the number of alumni generated in the last ten years, not to mention and graduate over the next ten years. Suppose an institution can transform its potential into actual social and economic value. A significant economic opportunity will come in [3]. This abundant human resource is a valuable social capital if assumed as cooperative members or market. It will become a virtual market pool that could be a tremendous economic force, the cooperative business organizations with hundreds of thousands of members unaware of worthy assets. A massive number of members treasures is a potential asset, like a shopping mall with thousands of visitors every day. The cooperative business model in higher education institutions must respond to technological development dynamics and the current disruptive market era.

Nowadays, the dynamics of market characteristics change rapidly. In this Industry 4.0 era, the concept of conducting a cooperative business must align with the opportunities, developments in markets, and technology. The digital cooperative concept can respond to current market conditions, rapid economic activity based on the internet, and social media's massiveness to boost revenue. For example, WhatsApp is the most application used in communication and business [4]. The strategic approach to running a cooperative with the potential for a vast number of members must go through a system and technology approach to respond to market trends in using social media's massiveness and internet.

The existence of an extensive database of individuals or members going vain if not appropriately managed. The role of the internet has been changing the map of the competition. The Markets formed virtually beyond conventional market forces on a scale of money and volume of goods. Around 48% of internet users in Indonesia search for goods or services online, 46% of users visit online stores, 34% make online transactions via computer or laptop, and 33% make online transactions via mobile devices such as smartphones [5]. A giant database of market or cooperative members is crucial in developing an economic strategy in a disruptive era. Cooperative in prominent universities with thousands of community must capture opportunity from

business models like a successful digital online shop, such as Tokopedia, Bukalapak, Shopee, Carousell, and other successful models in smaller, simpler, affordable, suitable, and easily applied models into the shape of cooperative business and its characteristics.

Indonesia's Indonesian Government supports the cooperative business because it adopts togetherness as local wisdom [6]. A Cooperative is a community-centered enterprise owned, controlled, and run by, and members realize their common economic, social, cultural needs, and aspirations (International Cooperative Alliance/ ICA, 2020). ICA describes cooperative can bring people together in a democratic and equal way, by principles to put all of its members are the customers, employees, users, or residents. The cooperative is democratically managed by principally the one member for one vote rule. Members have equal voting rights, not depend on the amount of capital they put into the enterprise. The cooperative is a business value-driven, not just profit-oriented, but acts together to build a better world. Cooperative has the characteristics of collective economic empowerment legally protected and allowed to be established by any institution that does not have purely commercial purposes [7]. A Cooperative puts fairness, equality, and social justice at the enterprise's heart and allows people to work together to develop sustainable cooperative businesses generating long-term prosperity. These cooperative characteristics align with Indonesia's native economic principles. First, Indonesia's vice president Mohammad Hatta as Pancasila Economic of Gotong Royong consisted of fairness, equality, and social justice.

Nowadays, mostly cooperative businesses in Indonesia struggle to survive in the conventional business model. According to a report 2020 from the Institute for Cooperative Development Studies (<http://www.ui.ac.id/berita/perguruan-tinggiperlu-sel-Salvation-koperasi.html>), 206 thousand cooperative businesses in Indonesia showed 70% only have nameplates with no activity, 23% suspended, and the rest survive with various pressures. The cooperative economy as a primary government program is in a serious perish situation if not solved soon. A few research types explored a modern cooperative business concept with a digital-based business process but limited availability.

A conventional cooperative business is generally perceived, such as time constraints, transparency, accountability, physical transactions, inventory, control, and goods logistics [8]. The cooperative must clearly define in detail this constraint; the challenges of the current

state what the cooperative facing. Addressing emerging issues requires innovation & technology to improve the business [9], like cooperative's situation in the current conventional systems. All constraints are the biggest challenges in a conventional cooperative. Transparency is a big issue in the conventional cooperative; limited access for members to get the information needed such as logistics, financial, membership, profit distribution, contribution, transactions, and reports is just for certain privileged members. Lacking accountability in conventional cooperatives emerges because of actions, products, decisions, employment roles, and policies, including the administration in poor record management. Accountability cannot exist without proper accounting practices and reports that less explain and unanswerable for resulting consequences. The traditional transaction no longer runs in the internet era when all outside business partners use e-money or digital transactions. It cannot respond to orders and payment quickly that finally makes slow business growth and revenue. Currently, inventory and logistics handling in traditional cooperatives rely on manual management by controlled physically. Time, logistics flow, selling, receiving, and goods transaction operates in limited quantity, business scope, and physical transaction.

The community in cooperative businesses like farmers, fishers, blue collars workers, and universities in Indonesia faces problematic issues including low product gate prices, poor extension services, limited market channels, poor access to credit, and low organization levels [1]. Addressing emerging issues requires the action of alternative cooperative practices when making improvements in the conventional system. Cooperatives acquire skills and knowledge about good digital practices and implement them and respond to new situations as business environments change in the internet era. These constraints can influence cooperation; learning, cooperation, business unit, and economic environment [1]. Digital innovation by empowering cooperatives in operation, especially on the constraints mentioned above, consists of facility and infrastructure, mechanism monitoring, control and evaluation, trading mechanism, increasing value-added program, and information access.

Digital technologies have changed how business-to-business firms act in business markets in terms of selling and selling [10]. The technology tool and information system can support the business model transforming into digital operation [11]. Digital cooperative means transforming a conventional cooperative into a digital cooperative. Digitization and digitalization

are two-term with similar meanings. Digitization is related to the increasing use of digital technologies for connecting people, systems, companies, products, and services [12]. In the Oxford dictionary, digitization is the action or process of digitizing, converting analog data. Digitalization is the adoption or increase in digital or computer technology by an organization, industry, or country [13]. Digitalization is a source of disruptive era competitiveness that unlocks new value creation and revenue and transforms the transactional product-centric model to simplify relational service-oriented engagement [14]. Cooperative in digital concept reflects how digital technologies and information can enhance an organization's existing assets and capabilities to create new customer value [15]. Digital cooperative means transforming a conventional cooperative into a digital cooperative by adopting digital or computer technology.

Digital Cooperative in this study emphasizes how to handle data in a cooperative business process so that useful becoming important information. Data is an essential enabler to an organization; it will be useless when not transformed into concrete information [16]. Cooperative as an organization in a disruptive era shall have the capability to transform data acquired across the multi-source into positive impact in every aspect [17]. Digitization capability identifies what the organization emphasizes qualifications in transforming conventional cooperative into a digital cooperative. A capability is a qualification to perform a crucial activity in the digitization process to achieve a goal.

The cooperatives are necessary to adopt Digitization capability to transform into the digital cooperative by referring to the conceptualization of a firm's digitization capability. This concept consists of three components: individual, process, and capability of these components are assessed in three dimensions such as data, permission, and analytics [18]. Capability in individual components identifies the role and responsibility required to handle data, categorizing employees get permission to access data, and qualification required to deal with data analytic. Capability in the process identifies processes related to data generation transmission, storage, access, what kinds of processes related to permissions are established, and what kinds of processes related to analytics are established. Capability in structure means the structure that governs data generation, transmission, storage, and access in the organization.

The community in cooperative businesses like farmers, fishers, workers, and universities face problematic issues, including low gate prices,

poor extension services, limited market channels, and poor access. Addressing the emerging issues requires innovation of alternative agricultural practices when making improvements in traditional cooperative systems. For sustainability of business operation, cooperatives require skills and knowledge about good cooperative practices and how to respond to new technology challenges and affordable digital technology. The factors that can influence cooperatives' development to respond to these problems are learning, cooperation, business unit, and economic environment [1]. All factors are important, especially related to the digital application in cooperation factor, which consists of facility and infrastructure, mechanism monitoring, control and evaluation, trading mechanism, increasing value-added program, and information access [1]

A Digital cooperative requires a platform to enable business interactions, identify, create, and leverage value-creating to all members and facilitate the exchange of goods, services, and a social currency that creates value and benefits in cooperative business. Digital business platforms (DBPs) such as eBay, Google, and Uber Technologies have seen enormous growth. The digital business platform is designed expressly to use digital technologies to enable business interactions among authorized users [19]. Rangaswamy describes DBPs by example; Nasdaq, Google, Uber Technologies, PayPal Holdings, and eBay are DBPs with two or more "sides," in which each side consists of one type of entity like suppliers with different offerings on one side, potential customers on the others. Start-up businesses in Indonesia such as Tokopedia, Bukalapak, Shopee, Gojek, Uber, and other prominent businesses use technology and the internet to boost enormous growth. These successful businesses model inspire organizations to adopt technology and the internet in smaller, simpler, affordable, suitable, and easily applied models into the shape of a new model business and its characteristics. Through intelligent integration and orchestration, Forbes described digital business platforms as recombination, of different digitalization technologies in a single solution that enables you to create new digital business assets. The recombinant innovation refers to how old ideas can be reconfigured in new ways to make new ideas (<https://xmpro.com/what-is-a-digital-business-platform-and-why-should-i-care/>).

A cooperative can adopt a technology platform when transforming into a digital Cooperative. Even though Digital cooperative is not a digital business platform, all the DBPs considered the key characteristics, though they

could also apply to some platforms [19]. Here are the key points of characteristics;

- a. Stable Foundational Digital Infrastructure
- b. Create Value for All Parties
- c. Build and Leverage Network Effects
- d. Create Thick Markets on All Sides to Improve Match Quality
- e. Culture of Data-Driven Decisions and Processes
- f. Small Asset Footprint
- g. Heterogenous Customer Preferences and Supplier Offerings
- h. High Levels of Operational Transparency

A conventional cooperative Business with huge members can no longer handle large high-intensity transactions, recording incoming and outgoing money, membership fees, online sales services, and reporting accountability. The conventional approach can not monitor financial flows and transactions in detail. Nowadays, technology provides e-money, barcode scanners, RFID, and other devices. Each member in thousands has a digital ID containing data attributes such as name, date of birth, member number, membership status, deposit, and all kinds of data needed, including status and savings data. Digital cooperatives can control and monitor each member's transactions through e-money and systematically recorded, adding, and subtracting account balance.

This study aims to develop a framework model in developing a digital cooperative to accommodate a huge amount of membership and enhance business scope. The research identified technology needed to overcome matters that cannot be dealt with in a conventional cooperative. It provided a digital cooperative frameworks model that impacts value creation, value capture, and value delivery, especially in higher education.

METHOD

The first method in this study uses case analysis to develop the concept of a digital concept. Case analysis methods can increase understanding of theoretical constructs of phenomena or new systems [20]. This study collects various cases in journal articles, news articles, and the web. Case analysis is carried out based on the literature discussion by classifying research literature.

The second method is action research, which that all research activities consist of gathering data, analyzing, and processing information related to conventional cooperatives' actual conditions today. Using a qualitative approach in this research observed a conventional cooperative in a private university in Jakarta with tens of thousands of students and staff.

This research proposed three research questions (QR1, QR2, QR3).

- a. QR1: What cannot be dealt with adequately in a conventional cooperative?
- b. QR2: What technologies are used in digital cooperatives?
- c. QR3: What shape of the digital cooperative framework model cannot be dealt with by a conventional cooperative to solve matters?.

The research questions above emerged as the specific fundamental issue between conventional and digital business. This research question is developed based on the qualitative approach (observation and interviews) in a private university and confirmed by Forum Discussion Group (FGD) by involving practitioners, academics, and experts (7 people).

RESULTS AND DISCUSSIONS

This section answers all QR1, QR2, and QR3. The research questions as fundamental. Analysis result by comparing both literature review and factual condition of a conventional cooperative in a private university in Jakarta providing answers of QR1.

The first question (QR1); What cannot be dealt with adequately in a conventional cooperative?.

Figure 1 reflects answers to these research questions. From comparing constraints that conventional cooperatives in the literature review, constraints consist of transparency, accountability, physical transactions, inventory, control, and goods logistics [8]. These constraints match actual condition, which is confirmed by observation results, such as administrative issues, limited time, place, and goods, transparency, & accountability. Also, it was confirmed by FGD.

To answers, QR refers to Figure 1. Conventional cooperative issues with a huge number of members in this disruptive era are administration, logistics, limited time, place and goods, and transparency and accountability. These issues were extracted from observation, comparing to the literature review, and confirmed by Focus Group Discussion (FGD).

Administration Issue

Administrative issues are important issues that have not been able to be adequately addressed by conventional cooperative models. Administration issues involve process, individual, and structure [18]. Administration in individual problems related to membership, recording member data, monitoring membership fees,

member participation performance, mechanisms for profit sharing, and recruiting new members. Administration issues in process related to the physical transaction, payment, invoicing, management of hard cash in and out, savings and loan processes, payment of installments, transaction reports, authority mechanisms for the use of money, financial reports, and classification of revenue contributions. The most negative impact from this issue is inefficiency, wasting time, transparency, and accountability.

Observing the conventional cooperative's factual condition in a private university carries out administration matter manually. Membership administration has been using computerization but in limited access. Data is available in certain single individual computers with not to connected other computers. All transactions use cash and, in a certain case, accepting transfers via Bank. Survey to members (student) of cooperative asking whether to buy some stuff from their cooperative sell or the outside seller, 75% chose an outside seller and survey about administration service they answered 60% unsatisfied. Conventional cooperative with tens of thousands of members and high transaction frequency can be no longer run operation manually. If no action for these concerns, the cooperative business will die soon

Issues of Transparency and Accountability

Generally, a Capital source in a cooperative business is collected from the mandatory contributions of members. Suppose a university such as Mercu Buana University has around more than 35,000 students and 1500 staff with a minimum initial savings of Rp 10,000/month or (Rp 120,000/year). In that case, it means collecting Rp 4.38 billion. For ensuring capital money runs smoothly, the Cooperative Concept must ensure that it has a privilege or monopoly in the university community to sell goods, products, or services that are sure to sell, purchased by its members within the organization. For example, the right to sell suits or uniforms on campus, the right to sell photocopying or binding services, the right to sell books, the right to sell printing services, catering or event organizers, or any sales fields that are likely to be of little consequence as a form of university support for the growth of cooperative activities. It is time for digital cooperatives to have their e-money as internal currency in collaboration with ordinary commercial banks.

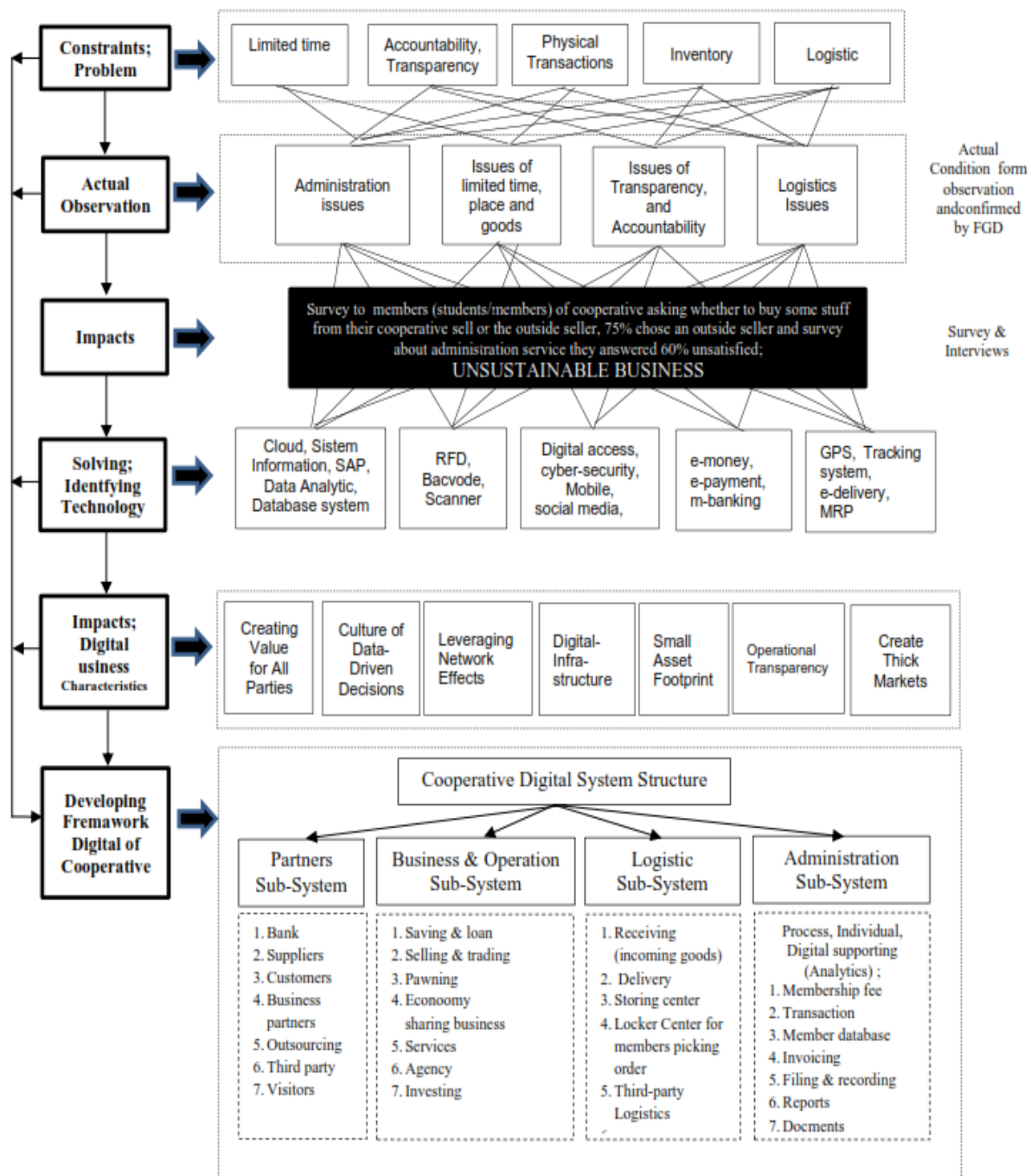


Figure 1. Mapping of Digital Cooperative Transformation

Transactions in digital cooperative business using e-money, securely protected. The organization can adopt the Blockchain concept, which is safe and limited in scale. Each member knows at any time about the actual savings, getting access right to know the whole organization transaction overall for accountability for member trust. Simple Blockchain model provides "digital internal currency" in collaboration with commercial banks where all transactions, remaining balances, and cash inflows and

outflows both individual and cooperative institutions can be accessed and supervised together. This mode can boost accountability to members and other stakeholders.

In a disruptive era, thousand of members in a cooperative organization as main customers want the best service, quick response, and satisfaction. Industry 4.0 affects business models, requiring features and three approaches: service orientation, networked, and orientation. Answering the problem above requires an

information system that transforms data into useful information in real-time [21]. For example, data analytics software collects all data related to member administration, finance, goods, and facilities. Big data analysis includes data collection, data transmission processes, data storage, processing, visualization, and applications [22]. The conventional and manual method cannot run a cooperative business with tens of thousands of members with various data. The organization has to manage the critical database via digital. The growth in data sets' quantity and diversity has led to data sets more significant than is manageable by the conventional, hands-on management tools [23]. The cooperative business with huge members can no longer handle large high-intensity transactions, record incoming and outgoing money, membership fees, online sales services, and reporting accountability. The conventional approach cannot monitor financial flows and transactions in detail. Nowadays, technology provides e-money, barcode scanners, RFID, and other devices. Each member in thousands has a digital ID containing data attributes such as name, date of birth, member number, membership status, deposit, and all kinds of data needed, including status and savings data. Digital Co-operative can control and monitor transactions of each member through e-money and systematically recorded, adding, and subtracting account balance.

Issues of Limited Time, Place, and Goods

Digital cooperative can apply a business model of online store application with displayed on an android- mobile. Ordering goods or services needs can be done anytime and anywhere without being limited by time and place. The potential problem probably arising in this model must be anticipated by fulfilling goods orders in overcoming logistical obstacles. Digital Cooperative can prepare a goods collection Depot Center to become an automatic "locker center" where orders for goods are stored on shelves or lockers with digital ID (identification). Members can collect the goods they ordered.

Business scopes and selling lists do not rely on consumable and stationery goods and all stuff that customers, members, and visitors need. A digital cooperative must capture every business opportunity, not only in trading but also in services. The business-oriented focuses on quality and market, not production, Using third-party, outsourcing, and sub-contractors with an effective contract for goods and services procurements.

Logistics Issues

Logistical control of goods managed by the operations business includes goods supply and delivery according to the type of transaction in activities. The concept of a Digital cooperative must minimize costs, effort, and resources in the procurement and management of goods. The cost of business operation is an essential factor in determining profit, reducing costs, improving quality, timely, and other internal efforts can maximize profit [24]. Nowadays, The business model must focus on the solution to the conventional cooperative's physical constraints; this is how organizations create value using the Internet of Things or IoT [25]. The supply of goods is only available if needed by members. The step in targeting the success of the cooperative is to identify and determine the items needed by members and sold in the member community without having to provide stock or through production (making their own), for example;

- a. Catering
- b. Printing, binding, printing, and copying services
- c. Instant lunch and drinks
- d. Portable automatic machine for drinks, food, and snacks
- e. Stationery and books
- f. Merchandise with the Mercuri Buana brand
- g. Souvenir
- h. All sales items provided based on market research

Digital Co-operative must ensure applying Quality Control for their goods and services. The organization examines, verifies, lists, and evaluates all items, goods, and services according to standard. Outsourcing management, sharing economy, efficient supply chain, and another practical approach for handling stock and cashflow. In the digital cooperative model, the same as the conventional model on the objective basis, all business benefits are dedicated to all members according to contribution respective. The philosophy of cooperative business is not allowed to apply maximum profit from the members. Services and goods shall be affordable for all members. With a huge massive of members, organizations still make big money if the system runs effectively.

The second question (QR2); What technology used in the Digital co-operatives business?

E-money

E-money facilitates retail transactions for both consumers and traders. Microbusiness, small, and medium enterprises can gain performance using e-money [26]. Currency is a

medium of purchase that does not have to be physical, card, or paper. E-money is a modern payment system that uses cards or applications as a means of payment in real-time connected to a bank account [27]. E-money in the form of a barcode ID representing a member description in all unique aspects such as name, address, place, member number, date of birth, address, occupation, position, and required data attributes. Barcode ID reflects e-money and could connect to financial balance data and transaction data. Barcode IDs can only be opened and used through specific access codes by the owner when transacting. Transactions only process the status of the account holder ID automatically; the balance increase when receiving money and reduced if paying something or issuing it through electronic transactions. Universities with tens of thousands of students certainly have their bargaining power to collaborate with Commercial Banks in issuing e-money so that they can also use it outside the university.

Radio Frequency Identification (RFID)

Radio Frequency Identification (RFID) is a technology that can automatically identify, track, and collecting data from any tagged object in a supply chain operation in a wireless connection [28]. RFID or Radio Frequency Identification can read barcodes in the transaction of goods or services. RFID is widely available at payment counters in supermarkets, parking ticketing posts, and other digital transaction sites. RFID could be a management tool in a digital cooperative to overcome problems, particularly on the inefficiencies that arise due to a lack of proper goods management practices [29]. The barcode scanner also functions to read a barcode representing a number or text to identify its function. Barcode scanner application easily accessed in Android Handphone and other communication devices. Money and goods transactions use digital transactions not to be recorded, write forms, or carry money. Transactions are only enough by scanning barcodes from e-money via Android Handphone and scanning barcodes of goods. For example, a Co-operative with tens of thousands of members carrying out administrative activities in recording savings and loan settlements and repaying loan repayments could use this technology.

Data Analytics

Data Analytics is a tool that is the right tool in managing extensive data, has a large capacity in managing vast volumes of data in real-time, and can transform data into valuable information in decision making. Data applications can help digital

cooperatives understand better data supply chain information, goods, and services and deliver information in real-time [30]. Digital cooperatives with tens or hundreds of thousands, with intense transaction frequencies, store hundreds of thousands of data.

Data Analytic tools do not have to be the most sophisticated and expensive software selection but are applicable and affordable. Data analytic can be inserted in current system information by upgrading software or applying or extending its function and operation. Meanwhile, Many grant models from the management data industry provide significant data analytics tool assistance to several universities in Asia, provided the university has a clear concept of use plan. For example, the collaboration between Tibco Software and several universities in Malaysia and Indonesia includes Binus University, Institute of Bandung Technology, and other universities. The cooperation allows the end to a grant of software products such as Data Analytics.

The Organisation must have Information systems with the ability to analyze massive data. Conventional cooperatives can no longer have the ability to analyze and provide real-time information from massive data, members, and transactions. Big Data analytics can explore hidden data patterns, transforming data into useful information. It provides information such as market profiles, member participation, contributions, supporting information for commercial purposes, business prediction patterns, business interests, weaknesses, strengths, and evaluation systems anytime and in real-time.

Data Analytical middle-aged software is available in the market at affordable prices and up to tens or even hundreds of billions of rupiah, depending on the business process organization's complexity. Higher education institutions could get data analytics software free from big corporate if they clearly and comprehensively explain the purpose and business concepts, especially in the cooperative business model. Data Analytics are quite popular, such as Apache, Hadoop, SAP-BIP, Google Analytics, IBM, Analytic, Matlab, Sisense, Looker, IBM Cognos, and other software products.

Data empowers members and management to accomplish business based on data and information from physical and virtual [31]. Data and information in Industry 4.0 is an essential key in decision making and one of the main pillars in Industry 4.0 [32]. This business model data leads to more effective, accurate, and fast decision-making and enhancing business competitiveness. Data can transform a traditional business into a digital cooperative model through the internet and computerization. This approach

makes business operations more flexible and efficient, such as supply chain, business, tracking goods, transaction products, facilitating communication among humans, machines, parts, products, and business processes. The Organisation shall understand the characteristics and principles of industry 4.0 when intending to apply it. The principles of Industry 4.0 are interoperability, virtualization, decentralization, real-time capability, service orientation, and modularity.

Third research question (QR3); How to model a Digital Cooperative Framework Model at big higher education institutions with huge students and employees?

The first step in developing the digital cooperative model framework is identifying constraints and problems in the current conventional cooperative.

Figure 1 shows the steps of developing the

framework. The key points approach referred to a literature review, compared to data and actual condition data, and confirmed by Focus Group Discussion (FGD). Framework digital cooperative model in Figure 1. It results from mapping transformation from constraints or problems, identifying negative impacts, providing technology for the solution, ensuring positive impacts, and developing a framework model. It is a Cooperative digital system structure consisting of four sub-systems; partners, business operation, administrations, and logistics. This digital cooperative framework model is aligned with the cooperative business model's literature, which consisted of suppliers and customers, activities, operation, administration, membership and logistics, and resources [33]. Figure 2 is the Cooperative digital system structure extracted from Figure 1.

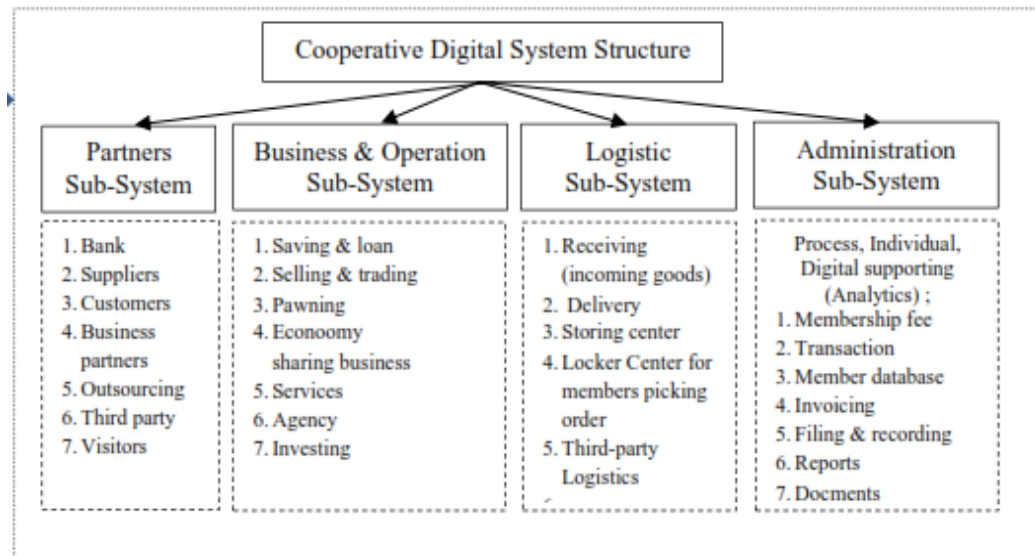


Figure 2. Digital Cooperative System Structure

The Digital Co-operative Framework System consists of five sub-systems. The sub-systems are as follows.

Partner Sub-system

This sub-system contains external factors of digital cooperative organization which involved or participated in cooperative business operation. Partners consist of banks, suppliers, customers, outsourcing, third-party, and visitors. The digital cooperative must provide partners with a sub-system to accommodate external organisations' entities in business interactions.

Administration Sub-system

The administration sub-system includes all aspects of business operation, individual

(membership), and organization structure to oversee and supervise cooperative business operations. It covers fields that include; membership fee, transaction, individual member database, invoicing, filing & recording, reports, and documents from cooperative management. The digital cooperative must provide an administration sub-system to connect data and information from all processes, individual member databases, and organization structure. Data and information must be retrievable quickly and connected when required to support business operations.

Business and Operation Sub-system

This sub-system includes three types of cooperative business scopes; saving and loans,

selling & trading, pawning, economy sharing, services, agency, and investing. The digital cooperative must provide an operation sub-system covering all transactions, interactions, and how cooperation works. A business operation model in the digital cooperative must be user-friendly and feasible for all members and partners.

Logistics Sub-system

This sub-system strived to minimize production activities, movement of goods, and supply of goods. Digital Cooperative must focus on the ease and quality of service. As far as possible, production activities, products, and services should engage third parties, partners, or sub-contractors. It must be identified items that are marketable and are sold and needed by members through a monopoly or privilege of economic rights granted by the institutional institution. A cheap and straightforward logistics system must design a digital support cooperative by providing a Locker Centre accessed by members via a transaction password to collect items ordered through the online application. Members can carry out transactions anywhere and anytime without being limited by time and place. Digital Cooperative must establish lead time standards for each flow of goods and orders.

CONCLUSIONS

Nowadays, the conventional cooperative with tens of thousands of members is no longer effective in runs cooperative conventionally in a disruptive era. Large membership administration, high-intensity transactions, recording incoming and outgoing money, membership fees, online sales services, and reporting accountability can not be managed manually. A conventional cooperative business with huge members can not handle process operation, individual membership, and decisions in a complex organizational structure. Digital technology can change how cooperatives can survive by transforming a conventional cooperative into a digital cooperative.

The constraint that the conventional cooperative faces, such as limited time and goods, administration, logistic, accountability, transparency issue, and other crucial issues, requires technology solutions. Affordable system and technology to overcome constraints and problems are identified in this research and provide a framework model of the digital cooperative in the shape of Digital Cooperative System Structure consisting of four sub-systems; Administration, Business and Operation, Partners Logistics.

The digital cooperative model requires combining several approaches to ensure whether this is feasible and applied realistically. This model contributes academically and practically in providing a framework to transform conventional into a digital business, especially in an institution that owns a cooperative with thousands of members. The implication of this study is emphasizing the conventional cooperative to identify affordable technology needs for overcoming constraints and challenges and preparing a framework as a foundation to transform into a digital cooperative.

Other issues need more explored to complete this research, as well as requiring more exploration. Several issues need to be explored, such as other important variables affecting the success factor of transforming conventional into a digital cooperative, the detailed mechanism of how digital steps transformation, and how a technology tool can solve a problem in a conventional cooperative. This research still has loopholes requiring more exploration from other researchers to complete deficiency, incompleteness, and loophole to make this research better.

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