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The Role E-Commerce in Agriculture Supply Chain with Blockchain Approach: Literature Review and Pointers for Future research

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***Abstract*— Agriculture is one of the main occupations of the Indonesian people, which has an economic impact. The problem in Indonesia is that the supply chain is still long, resulting in less than the maximum profit obtained by farmers. The development of information technology can provide solutions to supply chain problems, the complexity of the distribution of agricultural products, and the length of the supply chain for the various products and services offered. The research aims to analyze how information technology is used in shortening the supply chain for agricultural products, and how blockchain technology is able to contribute to traceability which is one of the advantages of blockchain. This study reviewed and synthesized 98 scientific articles published from 2000 to 2021. These articles were reviewed and categorized as Electronic Commerce (EC), Supply Chain Management (SCM), Smartphone applications for agriculture, and Blockchain. Previously, the author has applied the use of smartphones for education and agricultural information. E-commerce and supply chain management are the dominant topics, and there is still minimal use of smartphone applications in buying and selling agricultural products. The contribution of this paper is to map the e-commerce method and supply chain, the development of a new frame of mind, and get an agricultural supply chain e-commerce model with a blockchain approach. For future research plans, we focus on developing agricultural supply chain e-commerce using a blockchain approach.**

***Keywords*— e-commerce, Supply chain, Agriculture, Blockchain**

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I. INTRODUCTION

Indonesia agriculture plays a significant role in employment, food supply, a contributor to foreign exchange, and is a driving force for national development [1]. Providing for nearly 35% of the total workforce and increasing side income for those not the primary profession as farmers [2]. The significant role of the agricultural sector for economic development is the government's concern continuously be developed [3].

The problem in this agricultural sector is the supply chain, where the main problem is the perishable nature of agricultural products. The nature of perishable and bulky agriculture products, most of the agriculture products are seasonal, the continuity of production is not guaranteed, the quality of the product is still low, it is difficult to compete in the agricultural market, which is generally low international [4]. It is necessary to carry out proper supply chain management to avoid loss for producers. Supply chain management is a resource approach for effectiveness and efficiency among stakeholders, producers, suppliers, and warehouses so that consumers obtain products at the right time [5].

Implementation of supply chain management from upstream to downstream is implemented into business strategies [6]. Understanding customer's needs or consumers is an obligation for producers so that the products they offer are by customer needs and can survive as a business actor [7]. E-commerce has been able to assist supply chain management in logistical uncertainties [8]. The speed of demand and competition and sharing of information between stakeholders in the supply chain must meet for business sustainability to run well [9]. Information technology has bridged the problems faced by farmers, whereby utilizing cell phone technology, they can consult on an agricultural issue they face [10]. Internet of Things can also reduce the role of humans in carrying out their activities, especially in all agriculture [11]. China recommends using information technology and e-commerce in agricultural product transactions to support business performance to

customers [12]. In this agricultural sector, Taiwan and Fujian improve market systems and integration for their supply chains, take advantage of e-commerce for their trade [13].

E-commerce provides liaison facilities between partners or companies to increase the quality and quantity of information flow [14]. E-commerce has minimized complexity in the supply chain with a direct performance from upstream to downstream [15]. E-commerce has a significant impact on companies with supply chain management in the form of a flow of goods, information, and finance [16]. The use of e-commerce has penetrated national and international markets easily. Improving the quality of agricultural products is of particular concern because of the direct relationship between producers and consumers [17]. Information and communication technology used in the digital economy specifically for agricultural communities will increase agricultural production [18].

The potential use of blockchain can be used to track agricultural and marketing products[19]. AgriDigital is blockchain technology in the grain supply chain [20]. The use of blockchain in agriculture, from producers, supply chain management, food suppliers, retailers, facilitates financing and providing product information to customers [19]. The advantages of blockchain include; profit efficiency, brand enhancement, revenue growth, risk reduction, cost-saving, and innovation [21]. The application of blockchain in consumer-to-consumer transactions in e-commerce can be more efficient and targeted because of verifying the products offered first [22].

Digitalization reduces human error, especially in banks that can improve performance to provide security to customers and simple transaction access [17]. Smartphones provide convenience in finding information, quality, and low price for the public [23]. Online sales have served as a key driver in many aspects of the Chinese country. Alibaba's role in integrating the upstream region into the digital economy contributes significantly to poverty reduction [24]. The reach of upstream areas as producers with consumers in urban areas has a long chain that is passed. Information technology and e-commerce being able to increase effectiveness and efficiency from upstream to downstream [25]. Thailand has taken advantage of the development of social media technology to gain financial benefits in e-commerce[26].

Agricultural products with e-commerce platforms usually carry service functions that provide information exchange, online payments, transportation activities, sales, financial analysis, market research, and business plans [27]. The android platform can make it easy for farmers to see the estimated price. They have the decision to harvest their agricultural products according to the desired price [28].

This paper aims to analyze agricultural supply chain E-commerce methods, build a system or implement agricultural supply chain E-commerce and compile a framework. This article analyzes the role of e-commerce in trade and supply chains of agricultural products and then the fundamentalist theory of e-commerce and supply chains finally, the conceptual definition and framework of supply chain E-commerce will be mapped and will discuss the possibility of further improvements.

II. METHOD

A. Scientific Articles Sources And The Year Of Publication

This paper is based on a systematic review of 98 articles identified in previous relevant journals across the internet in the related field of e-commerce, agricultural supply chains, and blockchain the scientific articles are 55 Journals, 11 Proceedings, 15 Reports, and Working Papers, 8 Books, 7 Thesis and which were published between 2000 and 2021.

B. Critical Review Framework

We categorize this critical review into 4 main topics; Information technology for agriculture, e-commerce for agriculture, supply chain management in e-commerce, Blockchain and smartphone applications. Agricultural supply chain e-commerce describes the models and methods discussed in the literature. This literature focuses on the approaches and methods applied by the authors to the agricultural supply chain, which describes a model largely discussed in the literature. For the e-commerce agricultural supply chain and we define a framework. Agricultural e-commerce is a framework for how far e-commerce is used in trade in agricultural products. Literature-based on the main topics represented in. Table 1.

TABLE I.
NUMBER OF SCIENCIFIC ARTICLES ON EACH MAIN TOPIC

Main Topic	**Quantities**
The role of the internet in the economic	19
E-commerce	28
Supply chain management palm oil	23
Blockchain	28
Total	98

Supply chain e-commerce in Agriculture has become a common topic in the last 19 years, whereas the use of blockchain in Agriculture has been discussed in the previous two years; this topic is available mainly in scientific articles and increases significantly every year, which means this topic provides opportunities to explore and develop new approaches and frameworks can see in the following figure 1.

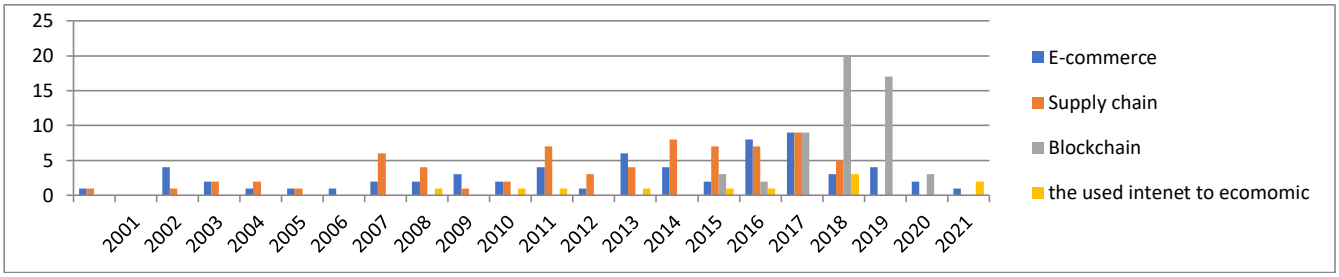

Fig. 1 Year of publication articles

The purpose of this article is to analyze existing methods and develop agricultural supply chain e-commerce utilizing blockchain. Meanwhile, the review framework can see in figure 2.

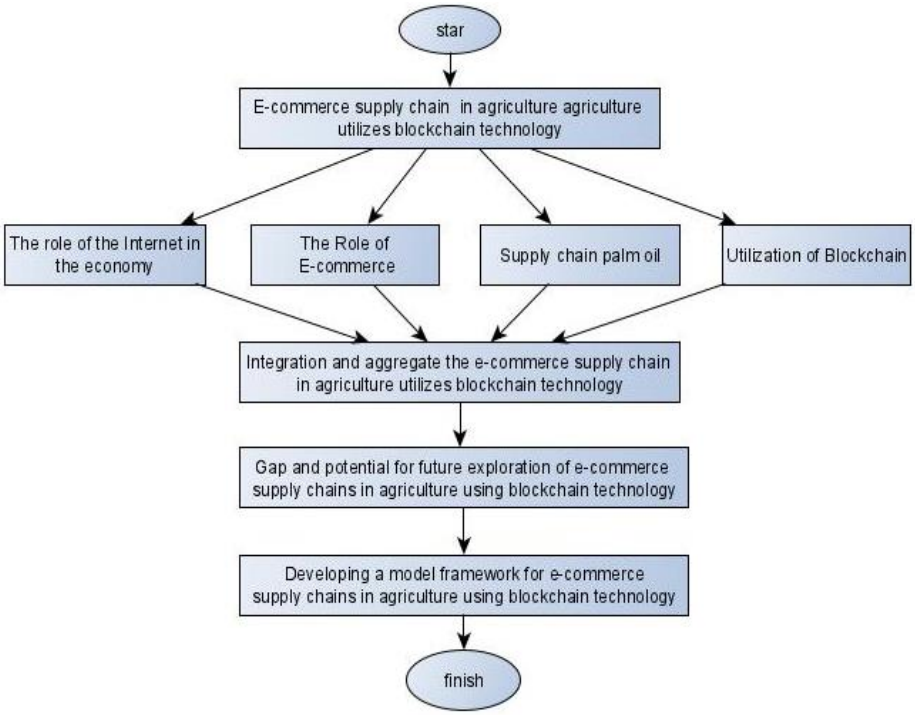

Fig. 1 The review framework

C. The role of The Internet in The Economic

The development of information technology has an impact on opportunities and challenges [29];[30]. Internet brings influence on the addition of customers, sales, increase in profits create relationships quickly, make it easier to open new markets, one of the platforms in Malaysia is Red Tick.com in 2010 [31]. Information technology, especially the internet, has contributed to rural Germany by offering fertilizer and crop protection products through the internet network at more competitive prices, where farmers prefer this transaction method [32]. Indonesia's rapid digital development opens up significant business opportunities, opening up types of work, especially for the younger generation, and reaching a wide range throughout the world [33]. Smartphones have a very big role for online companies to market their products, especially supported by the availability of networks and the increasing use of smartphones for business [34].

The new economy itself can be characterized as unlimited access to information, a growing global market, business is conducted faster than before and full time throughout the year [35]. The digital economy creates new opportunities to connect businesses to consumers or customers and drive new business model services [36]. Names such as Kaskus, OLX Indonesia, Jualo, Lamudi, Lazada, MatahariMall, Bhineka, Bukalapak and a number of other digital business players are familiar to some Indonesians, they are following in the footsteps of players such as Amazon, Alibaba, and eBay who are already established in the market global online [36].

Currently, 132 million internet usage in Indonesia is equivalent to half the population and is at the top in the development of internet usage; as many as 106 million (40 %) are active on social media, and smartphones are the preferred media to access social media, namely amounting to 92 million. The high growth of internet users is also offset by the high number of cell phone owners, 91 % of Indonesia's population [37]. The development of global social networking sites is very significant, which has helped connect individual communication with other individuals globally [38].

Several applications for buying and selling agricultural products already running in Indonesia can be downloaded by Google PlayStore 2019, including TaniHub, Agromaret, Farmers, Monitor Price, LimaKilo, Simbah, Eragano, Sipindo, Agripidia and Tanilink, which is already running on the

Android platform, making it easier for players to carry out trading activities. The various Android-based platforms that are run in Indonesia are still few compared to the number of users. To start developing e-commerce platforms in 2012, it already has 250 thousand e-commerce applications specifically for agriculture, with China currently being the leader in e-commerce in their people's economy [39]. E-commerce competition in Indonesia is solid, so developers try to retain customers by providing quality information [40]. Of course, for our country, we must continue to support the growth of e-commerce to help the nation's economy and facilitate transactions from upstream to downstream or from farmers directly to consumers.

D. The Role of E-Commerce

The use of e-commerce has increased the selling power of all types of goods, reducing the amount of capital, demand among wider countries that uses e-commerce platforms and many small companies have become multinational companies because of using this technology [41]. E-commerce has increased profits for agricultural stakeholders along with the increasing use of e-commerce and reducing product search costs, and e-commerce creates a market that is transparent, competitive and accessible to more people or potential customers [42]. E-commerce provides new markets for small farmers and reduces the role of thinners, intermediaries [43]. Shopping online can increase a salesperson's income and reduce customer travel costs [44].

E-commerce concept in rural Beijing, out of 152 residents 71.71% know this, 61.84% have ever shopped online, 32.89% have sold products, they are young, have high annual income and 24.34% do not know about e-commerce and it is recommended that training opportunities be provided [45]. Malaysia has implemented a non-cash payment policy from 2010 to 2020, proclaimed as a developed country by making their economy without cash. Their infrastructure has met, but the pattern of their society has not been able to accept non-cash payments as a whole [46]. At the level of use, it is was found that the majority of Malaysian SMEs have adopted e-business applications in parallel. In contrast, very few small and medium enterprises have replaced e-commerce applications with traditional business methods [47].

Before lazada became popular today and became popular in Southeast Asia, the Taobao platform was started as a buying and selling application in the Chinese version due to the need to ship Taobao products released in English in 2003 [48]. In 2000 US breeders have adopted e-commerce as a service to buy and sell their livestock and agricultural produce offered before harvest [49]. Most of the farming families in Beijing have computers to sell their agricultural products and this study states that computer ownership is not the main thing in doing e-commerce. Still, there are more important things, namely, free e-commerce provided by the platform, lots of training [50].

E-commerce companies that pay attention to the quality selection process, logistics, satisfactory service will increase demand and retain customers [51]. Price is one of the most influential factors in determining decisions by consumers whether they will buy or not because they cannot physically feel the products they buy, so the price is a benchmark for satisfaction in determining purchases [31]. Alibaba collaborates with universities in fostering information technology talents who can develop their business continuously [48]. India's e-commerce growth is driven by tech-savvy youth and high internet growth, with 2012 e-commerce revenues of $ 30 billion [52].

Improved post-harvest management, introducing products to a broader market, managing customer data, orders and product variations, as well as government control of agricultural products, will be facilitated by the presence of e-commerce [53]. E-commerce provides new markets for small farmers and reduces the role of thinners, intermediaries [43].

The use of e-commerce in various sectors to meet needs can be presented in the picture below, where e-commerce is the most widely used with a value of 33%, toys and hobbies 26%, furniture 17, electronics 16% and food 8%. In the various sectors depicted in Figure 3, the agricultural sector can include in the food sector. This percentage is still relatively small compared to our country, which dominates farmers' livelihoods with a value of 30.45%. The percentage of Indonesia's e-commerce user sector can see in Figure 3. [54].

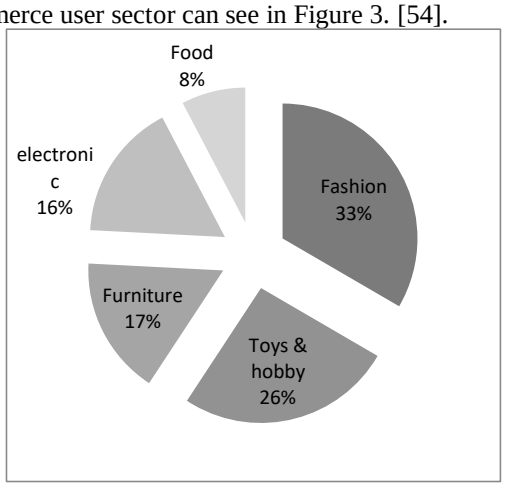

Fig. 3 Percentage of Indonesia e-commerce user sector

While the source from BPS 2018, differentiates the e-commerce user sector into seven parts, where clothing is the top with a value of 46%, electronic equipment needs 21%, health and sports equipment 10%, furniture 7%, crafts and toys 7%, industrial equipment 6 % property and building materials 3%. It has not been seen the involvement of agricultural products or food products in Indonesian e-commerce [55]. The percentage of the Indonesian e-commerce user sector can see in figure 4.

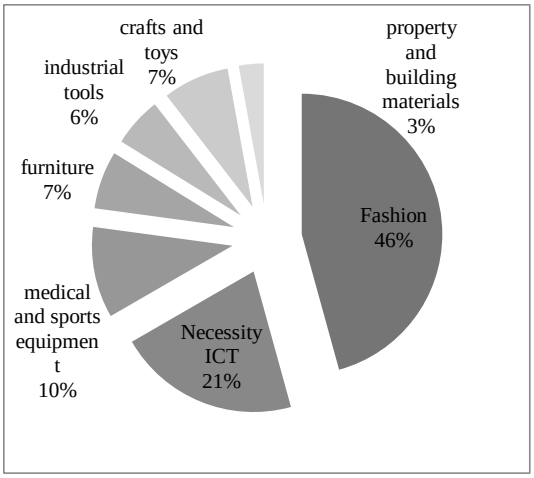

Fig . 4 Percentage of Indonesian e-commerce user sector

E. Supply Chain Management Palm Oil

The main purpose of implementing supply chain management is to serve consumers with good quality and the right price; efficiency of logistics travel from raw materials to products so that production costs can be minimized [36]. Supply chain linkage from beginning to end

Producer actors. Product flow should be the company's primary concern, materials and information, business performance and sustainability to achieve supply chain objectives. In this regard, it is important to consider a collaborative supply chain approach [56]. Supply chain design selection of supply chain partners, looking at consumer segments, locations in production and distribution facilities transportation facilities and capacities [57]. Supply chain management is an integrated pattern regarding product flow from suppliers, manufacturers, retailers to the end consumer, where each part is interconnected to achieve the same goal, namely organizing the distribution of goods [58].

Form of the supply chain for oil palm agro-industry, farmers sell fresh oil palm fruit bunches to mills through traders or cooperatives. The mill converts FFB into crude palm oil (CPO) then the CPO is sold to refineries (cooking oil), which converts CPO into cooking oil, and sells it through distributors for sale to consumer users [59]. The supply chain management of the palm oil agro-industry needs to consider cost and quality as an integral part of the decision-making process, and factors are essential to analyse because supply chain operations on quality assurance measures, transportation of fresh fruit bunches harvest [60].

Farmers, traders, cooperatives, palm oil mills, distributors, and consumers are the main actors in the supply chain [56]. It needs good management in the management of oil palm plantations that impact maximum yields and proper sales, with the development of information technology and high community adoption to support oil palm plantation management [61].

Meranti Paham Village has two marketing channels for oil palm FFB, where the cost of the Fresh Fruit Bunches (FFB) track I am higher than the channel II Fresh Fruit Bunches (FFB) track, which is because the I trading channel is longer than the 2nd channel and the efficiency value for a way I channel is more significant that is equal to 14.85%. In contrast, the efficiency value for channel II is smaller or equal to 7.63%. This means that the smaller the value of the trading efficiency, the more efficient the system is. Thus, the channel II fresh fruit bunches (FFB) trading system is more efficient in addition to that, channel II trading costs are lower and the flow rate is shorter [62].

TABLE III.
NUMBER OF SCIENTIFICS ARTICLES ON EACH MAIN TOPIC

Author	Approaches/ methods	Supply chain commodity
[63]	Technique Structural equation Modeling	Crude Palm Oil
[59]	Software Netlogo	Palm Oil
[64]	triangulation data	Palm Oil
[65]	Descriptive	Palm Oil
[61]	bject Oriented Analysis and Design	Palm Oil
[62]	method stratified random sampling method solving	Palm Oil
[66]	survey and interview	Palm Oil
[67]	Swot. Fuzzy GDM dan ISM	Palm Oil
[68]	Modeling dynamic	Palm Oil
[69]	Descriptive	Palm Oil
[60]	Performance of Activity	Palm Oil
[70]	Fuzzy AHP	Palm Oil
[71]	model Dynamic	Palm Oil

F. Untilization of Blockchain

Block-chain technology combines cryptography, networking, mining, and ledgers as storage for all transactions that occur [72]. Block-chain has the main characteristics, safe, verified, trustworthy, real-time, easy to access [73]. Blockchain as a new technology that can be utilized by agricultural producers, traders, diluents in coordinating supply [19]. Supply chain management for agricultural production, farmers can be store in a ledger that supports each user. That will provide transparency of the origin of agricultural commodities [74]. Traceability of a food source is currently important, blockchain technology can provide solutions to these problems starting from production age, raw material processing, cultivation, transportation and sales [75].

The increased use of the internet of things in the blockchain-based food traceability supply chain can solve this problem [76]. Blockchain technology can improve traceability prevent, prevent fraud in the food supply chain [77]; [78]. Twenty-four companies have used blockchain as the supply chain for their products, including 54% in America, 33% in Europe and 13% in Asia [78].

Block-chain can increase international trade with long paperwork and paperwork problems, and this problem can develop blockchain with one hand [79]. Blockchain technology in logistics is marked by an immutable time where all data is

decentralized and can avoid fraud against fellow business members who join [80].

Block-chain can solve financial problems, but challenges in logistics, ordering, damage to goods, and entry errors can also be solved by blockchain [81]. Blockchain has become a solution in the supply chain, where its primary ability is to provide targeted information to make decisions [81]. Part of blockchain technology is the value of business trust between actors, regulators and blockchain users [82].

Several pilot cases in 8 companies two that adopted blockchain have produced results with no complaints about their services [83]. Supply chain traceability is the most studied among supply chains [84]. Providing transparency, traceability, increases the market's respect for producers who fish legally, and those who don't follow the rules will lose the market by themselves [85].

The potential of blockchain in the elimination of illegal products because of its ability to be able to store product history [85]. Sea Quest company, a tuna supplier from Fiji that is trying to implement blockchain in their product supply chain, product traceability is able to reach the end consumer by requiring their participation in the blockchain [85]. The limit of transactions that can be completed in the blockchain system, for example, ethereum, 10 transactions per second, will be much faster with a centralized system capable of completing 50 000 transactions per second [85].

Blockchain implementation areas in logistics and supply chain, tracking products origin, tracking product flow, forecasting demand, open access to information [73]. The challenge for companies in implementing blockchain is how all stakeholders can use this technology in their business, otherwise it will only result in losses [86]. Maersk is a shipping company that collaborates with IBM in implementing Blockchain to improve the trade supply chain [87]. Fundamental issues in the supply chain are high costs, fraud, errors on paper or information technology systems, questionable digital record integrity, and multiple certificates [88]. The issues of the level of collaboration between partners, the level of connectivity and the level of digital maturity of various actors, expensive data reconciliation processes, required regulatory frameworks, limiting energy consumption and scalability of data [87]. Important issues in the supply chain are high costs, fraud, errors on paper or information technology systems, dubious digital record integrity and multiple certificates [88]. The obstacles to implementing blockchain for farmers are internet access, digital skills and data privacy. To embrace farmer organizations is a solution in explaining the application of this technology [88].

Transactions between farmers use blockchain that uses virtual coins whose value is the same as real money, while still using banks as relations for exchange [20]. Price agreements, payments, creation of certificates, disbursement of subsidies to blockchain farmers are reliable [77]. In contrast, hyperlerger performs transactions with smart contracts so that not all blocks know the core contents of the transaction [88]. Trade relies on 80% of sea transportation, the costs incurred for administration reach 20% of the total cost, by utilizing blockchain can optimize costs and time in terms of administration [87].

Traceability, accountability and transparency will reduce fraud, if this happens it will quickly find the source, this is the advantage of blockchain technology [87]. Compared to blockchain, the drawback of traditional supply chains is the lack of traceability, a risk involved with multiple stakeholders, lack of responsiveness, mostly manual processing, compliance with regulations expense of reconciliation on [89]. Maintaining product history makes it easier for regulators to determine whether a product is feasible and has been processed according to standards [89]. A strong proof of product ownership in the blockchain guarantees customers the original product [89]. Adopting of blockchain in large companies is very profitable because the financing sector will be more efficient because transactions are calculated based on the data sent [90].

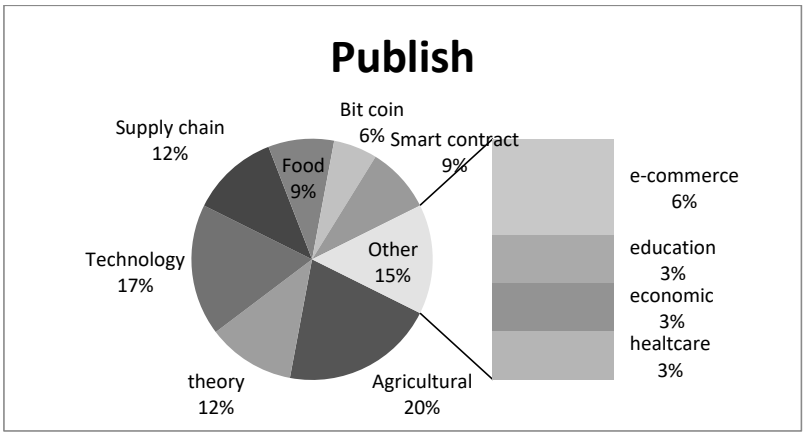

Fig. 5 Percentage of research topics in the blockchain field

Table 3. Approaches Methods blockchain

TABLE IIIII.
APPROACHES METHODS BLOCKCHAIN

Author	Approaches/ methods	Product	Advantage
[91]	iterature review	Framework	general
[92]	iterature review	conceptual	food
[93]	Descriptive	conceptual	food
[76]	Descriptive	application	food
[74]	Descriptive	conceptual	finance

[19]	Descriptive	low	adjustment
[77]	Descriptive	conceptual	traceability
[93]	iterature review	conceptual	Smart contract
[94]	Descriptive	Protocol	Smart contract
[95]	Descriptive	conceptual	usiness process
[96]	Descriptive	conceptual	approaches e-commerce
[97]	descriptive	conceptual	Smart city
[86]	iterature review	conceptual	supply chain
[83]	descriptive	conceptual	supply chain

III. RESULT AND DISCUSSSION

A. Gap and Potential Exploration in palm Oil Supply Chain management

Supply chain management connects actors from upstream to downstream by making actors more efficient, resulting in lower expenditures [98]. Therefore, supply chain management will minimize transportation costs, distribution of raw materials, materials in process, and finished goods so that the entire system becomes efficient and effective [61]. A gap study in the supply chain can see in figure 6.

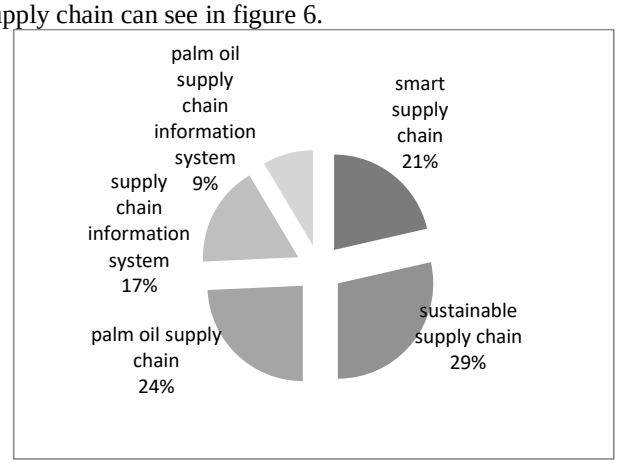

Fig. 6 Picture of Supply Chain Research Gap

From 144 articles in table 3, there are 22 articles related to the role of the internet in the economy, 28 articles on Supply Chain, 46 articles related to my research gap on e-commerce and 53 articles focus on block-chain. It can give the researchers an idea about the gaps for future research, namely e-commerce of supply chain palm oil based on smartphone by using blockchain approach.

B. Model Derived from The E-Commerce of The Palm Oil Supply Chain Using a Blockchain

The citation order literature in this paper has been sorted according to the appropriate reference standard. Based on criticism of agricultural e-commerce and agricultural supply chains, especially those related to equitable profits between farmers and traders and end consumers. Researchers propose this model as an intermediary medium to connect oil palm farmers with palm oil mills and traders. With this application, farmers can advertise or sell their oil palm fruit. Palm oil mills will get accurate information about the traceability of palm oil sold by farmers because farmers will fill in data about their oil palm plantations before advertising their crops. The use of geographic information systems to facilitate the recommendation of the closest distance between farmers and palm oil mills and traders is one of the supply chain efficiency solutions between stakeholders and users of the smartphone-based e-commerce application model can provide direct access and neatly stored transaction records that can become evidence trust between stakeholders.

C. Prospects for Future Research

The interaction of e-commerce and agro-industrial supply chain with a blockchain approach has one important thing, this combination increases efficiency, has a supply chain and transparency of agricultural products. For the development of agro-industrial supply chain e-commerce, the researcher will analyse several aspects such as:

- The development of an Android-based agro-industry supply chain e-commerce application that is easy to use, such as social media and other communications, can also be a means to develop and market agricultural products.
- Farmers can utilize the development of the agro-industrial platform. It is hoped that this application will provide maximum benefits to farmers because it is directly connected to the party in need at the price that has been informed and minimized the role of mediators. After all, farmers are connected with traders and consumers directly.
- The development of a transparent transaction system and traceability using blockchain is the demand of many market players today to strengthen their business relationships. Efforts to open up buying and selling transactions in an agro-industrial commodity group are an effort that is being improved so that consumers can find out the source of agricultural products and ensure that there is no suspicion of fraud being committed. If the copy is saved by one of the members, he has started destroying himself automatically because the fraud committed will be known by the business chain entered. Honesty is a priority in promoting products on the Blockchain, because every member of the business chain will disseminate every transaction event.

Based on the literature review and the analysis for future research, we develop a framework for e-commerce.

The framework starts from identifying the supply chain, applying for e-commerce and creating blockchain technology in the supply chain. The developing is based on the short

traditional supply chain of oil palm fresh fruit bunches in Indonesia, in figure 7 [62]. A new model can be developed based on figure 7, an e-commerce model in the palm oil supply chain using a blockchain approach will be involved in the following figure 8.

Fig. 7 Short traditional oil palm fresh fruit bunch supply chain [62]

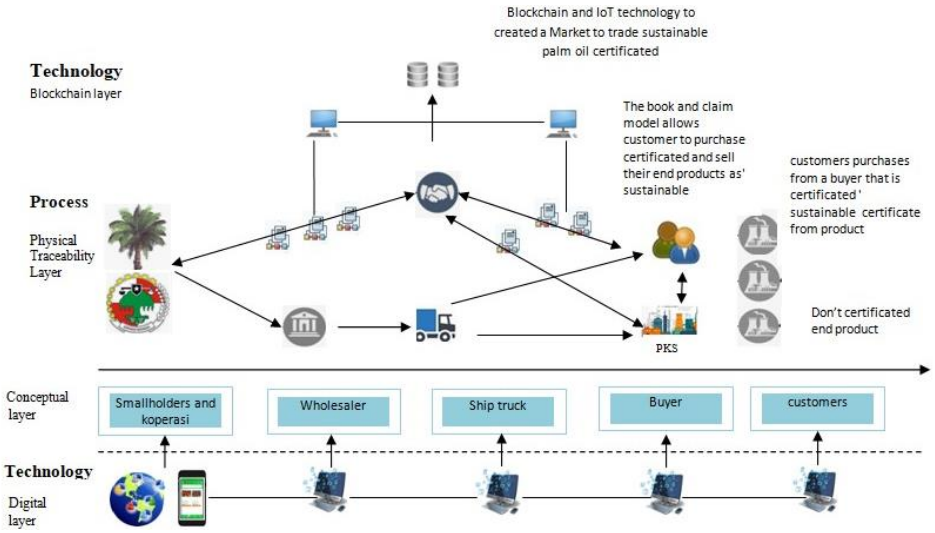

Fig. 8 a new Model of framework layer for palm oil supply chain e-commerce prototype blockchain approach

IV. Conclusion and Recommendations

A. *Conclusions*

This literature review can conclude that the supply chain needs of the oil palm agro-industry must be supported by technology quickly adopted by the community to create efficiency and effectiveness. Farmers can directly promote crop yields and then buyers will respond with price transparency and product traceability that has been inputted by Farmers in the system. The biggest obstacle is how particular community farmers can be given the training to use information technology in marketing their products. This problem can be solved by designing a simple system or by using a short process which has been used as the common ways of transaction has been applied in the traditional market which is related with farmers in selling their crops. The availability of equitable information technology is one thing that ensures that the information conveyed can be accessed by many people. In Indonesia, the availability of internet network is adequate, but mostly used only for social media and buying personal needs. Meanwhile to business use for farmers, the available application platforms are very limited. Especially for the fresh fruit bunches harvest of palm oil, it is not currently available in Indonesia. The development of easy to adopt applications by farmers and consumers is a challenge for writers to be able to design applications that will make it easier for farmers to make transactions with consumers. More significant challenges for the future and market players' demands for product traceability are widely researched at present. Blockchain technology is able to provide an answer this problem by its characteristics which are transparent, secure and free from fraud that is requires verification from members. These can be an advantage and competitiveness for actors who adopt blockchain technology in business.

This literature review can provide an overview to researchers that with the application of agricultural supply chain e-commerce using blockchain technology, it will be able to provide a new way of buying and selling safe transactions both from product sources and maximum profits for farmers, because directly to producers with transparent prices and eliminate fraudsters because every transaction requires member verification in the supply chain.

B. *Recommendation*

The source of the product is satisfaction for the consumer. Block chain as new technology can answer how the guaranteed traceability of a product cannot be manipulated by market players who enter the blockchain. Due to the ability of the blockchain system to be immune, it is difficult to change existing data, transparent transactions that must be verified and recorded in a distributed ledger to all members. The advantages of blockchain technology will eliminate the risk of distrust of all members and break many administrative document chains, which are the biggest producers in the supply chain.

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