International Journal of Sustainable Development and Planning
Vol. 18, No. 2, February, 2023, pp. 411-418
Journal homepage: http://iieta.org/journals/ijsdp

The Future of Coffee, Digital Technology and Farmer's Income

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https://doi.org/10.18280/ijsdp.180209

Received: 19 November 2022
Accepted: 7 February 2023

Keywords:
digital technology, Arabica coffee, digital agriculture, SEM-PLS

ABSTRACT

With the technology of sharing digital information systems, farmers can easily access various data that are very important to increase the production and income of their agricultural commodities. Trade, which has been very beneficial to society in recent years, especially through the use of digital technology, can be used to increase the market for agricultural products, increase marketing budgets, and reduce the number of middlemen in the supply chain. This study uses the Structure Equation Model (SEM) analysis method. The results showed that the use of digital technology has significantly improved the economy of farmers. Increasing the role of the government to be serious in developing and also providing digital technology education and information to farmers will realize prosperous farmers for the North Toraja area. This implies that the future of the coffee business through digital technology improvement can be expected to enhance farmers' income in the region.

1. INTRODUCTION

In an era that already has technological advances, especially in the internet sector, it has the potential for the development of industrial progress in the future, and the role of digital technology today is also able to support traditional industries such as agriculture. The digital revolution for agribusiness helps small farmers to generate more income compared to using conventional methods, current technology also helps in improving food safety and nutrition standards and can help prepare for the impacts of climate change, the role of digital is also not only advancing the economy but can also assist the agricultural sector in promoting the involvement of women and youth in agribusiness by integrating technological advances throughout the agricultural value chain [1]. With the existence of digital technology, it can accelerate information to small farmers or other actors involved in the agricultural value chain, such as agricultural extension services, agricultural institutions, the business sector in agribusiness, financial service providers, and policymakers, with the use of technology and digital service channels, the digital revolution for agribusiness can contribute to strengthening the agricultural sector in the food sector [1, 2]. Available software and applications that can be used on mobile devices can quickly provide information to their users in transparently obtaining information to increase accessibility to information on current market prices, the financial sector, weather predictions, pest outbreaks and other information, this solution includes devices [3]. Digital technology is also widely used in agriculture, ranging from simple applications such as voice and message advisories sent via smartphones to more complex ones such as satellite communications, sensors and big data analytics [4].

The latest technology not only provides the information needed by its users but can also provide trade information. If seen from internet users in Indonesia in Table 1, people have made internet technology a daily necessity in obtaining information as well as connecting digital technology in the field of e-commerce can also be used to expand market channels in the field of agricultural products to realize the development of small and medium enterprise ecosystems in each organization in distributing agricultural products [5]. It can also reduce distribution intermediaries in the supply chain, and reduce transaction costs, especially in Arabica coffee farming [6]. Some research also shows that digital-based technology can also help companies improve various kinds of information, both from agricultural products, and can also filter searches for certain agricultural products, and can also facilitate the sharing of information about agricultural-based products and services efficiently and transparently for each agricultural product chain [7].

Table 1. Trends of information and technology in Indonesia

Year	2017	2018	2019	2020	2021
Households with Internet in Indonesia	57.33	66.22	73.75	78.18	82.07
Individuals who used the internet in Indonesia	32.34	40	47.69	53.73	63.1

Source: Telecomunication statistic in Indonesia 2022 [5].

In the past, communication tools like radios and televisions allowed farmers to get information. They were unable to consult agricultural departments and specialists to identify solutions due to the one-way communication flow, however [8]. The majority of needs may now be satisfied and mutual communications between farmers and service providers are made possible by cell phones with chat and video capabilities. For farmers, smartphones serve as their primary means of communication and information exchange. Smartphones assist farmers in obtaining inputs (seeds, fertilizer, and insecticides), market information, and other factors that boost production and lower poverty in rural regions [9].

Trade using an electronic digitalization system is a broad term that refers to a transaction for an item, the existence of bidding activities, and the exchange of information through computer networks via online platforms, digital services, and web services [10]. Numerous technologies and projects have been established in the framework of B2B EC. Technologies like automatic bar codes (barcode scanners, RFID tags), electronic funds transfers, and electronic data interchange (EDI) are a few examples [11, 12].

Due to its huge potential, many countries in the world have adapted very quickly to adopting EC [13], leading to significant EC expansion over the past few years in industrialized countries, as well as recent EC acceptance in underdeveloped countries. A digital advertising system that hasn't been extensively employed in sales tactics is known as an e-Commerce system [14]. When e-commerce applications are used and put to use, information can be accessed more quickly, effectively, and affordably than when traditional management principles are used (door-to-door, one-to-one relationships) between businesses and other stakeholders (suppliers, distributors, partners, and customers) [15].

Much of the growth in online shopping app usage occurred in the first half during the initial wave of the COVID-19 pandemic. During this period, the government started implementing Large-Scale Social Restrictions. so that the opportunity to travel to offline stores was very limited and shoppers had little choice but to fulfil their shopping needs online. After two years have passed since the COVID-19 virus spread in Indonesia, instead of returning to the initial conditions when social restrictions have not been imposed, e-commerce website traffic is still high, here it can be seen that the use of these applications makes it easier for people to meet their needs even though the social restriction status for COVID-19 has been alleviated. Table 2 shows the usage of e-commerce applications during the pandemic in Indonesia during 2020, which shows their important role in the online shopping process in Indonesia. During this period, Shopee and Tokopedia managed to maintain their position as the e-commerce platforms with the highest website traffic in Indonesia. These Singaporean and Indonesian e-commerce platforms have had monthly website visitors above 100 million since the 4th quarter of 2020. This value creates a considerable gap, considering that other e-commerce platforms have not been able to approach the achievements of these two e-commerce platforms. Other e-commerce platforms only have monthly website visitors below 30 million. However, this did not hinder their rapid growth during the period. Despite their smaller scale, platforms like Orami and Ralali managed to outperform Shopee and Tokopedia's website traffic growth rates.

Table 2. Comparative data on the number of e-commerce visits

E-commerce	Q3 2019	Q2 2022	Growth %
Shopee	56	131.3	+134%
Tokopedia	66	158.4	+140%
Orami	3.9	16.2	+314%
Ralali	3.6	10.8	+202%
Zalora	2.8	3	+7%

Source: Similar web 2022.

The resources and market potential of developing countries are large enough to be part of the country's economic improvement, as well as their large market potential and low labour costs, and as a concrete form of this development, developing countries have begun to play a significant function in the trade sector both in the domestic market and international trade [16, 17]. The advancement of internet technology that makes it easier for people to obtain the information that they need, many companies are focusing more attention on developing their business models on several continents to take advantage of opportunities to reduce costs and increase the reach of their market needs [18]. Through the adoption of ICT, developed countries are starting to be able to experience the benefits of trading with other developing countries more easily and also much more efficiently, and this can also benefit the countries they impact so that they can help each other achieve more sustainable economic growth [19].

Therefore, there is a need for a new strategy in the form of efforts to increase the value of beverages not only among retailers and industries engaged in this sector but also for the farmers themselves [19]. Identifies the countries where coffee has increased over the last 17 years. It demonstrates that during the study's time frame, the source of the global supply of coffee beans has not changed [20]. The sole distinction is that when India and Guatemala saw national market shares decline, those of Honduras, Peru, and Uganda climbed. However, the top four still consist of the big players (Brazil, Vietnam, Colombia, and Indonesia). The four largest exporters are also the top four producers, hence the structure of the largest exporter has not changed over this time [21].

According to historical records, many changes and conditions have led to the emergence of digital natives. An example that can be seen is the development and revolution in digital technology in China is a change that has a direct positive impact on the people there for its purpose in meeting the needs of today's world [22]. By facilitating access to information in real-time and providing convenience in accessing information, digitization will significantly have a significant impact and also make digital commerce an implementation of recommendations that benefit all groups [23]. In addition to that, digital technology will provide highly productive slogans and be able to react to changes like those related to climate change. As a result, one can ensure increased quality, profitability, and progress [24].

Agricultural producers especially Arabica Coffee products can employ a rising number of gadgets, including smartphones, tablets, computers, and numerous applications, as communication technology spreads ("apps"). The introduction of new technology has increased the variety of information acquisition channels. Farmers' management and decision-making, also with smartphones and other communication methods, won't considerably improve if they don't have access to sources of agricultural information [25].

Therefore, the expansion of sources for information and data volume that the national internet development has brought about is equally crucial. Due to their location and traffic issues, small-scale agricultural producers have trouble selling their crops in many developing nations. Small farmers now have a new way to get over obstacles to entering the market thanks to the emergence and rapid growth of rural e-commerce in emerging nations [26]. Rural communities are increasingly using electronic gadgets and internet communication technology (smartphones, laptops, etc.). The rate of e-commerce penetration in rural areas has increased during the past several years. Rural e-commerce satisfies the need for modernizing and transforming rural industries, is an easy method to use the internet and ICT to increase revenues, and gives the rural economy a fresh boost [27]. That it is hoped that Digital Roles such as e-commerce and digital trading methods that can be accessed freely will be the first goal that will enable farmers or stakeholders in the community to begin to make various adaptations and transform creatively in trading goods produced online so that it can cut out the intermediaries that are quite long and minimize transaction costs. If you see directly what happens, farmers face various problems, all of which start from the very high transaction costs of small-scale agricultural producers [21].

The objective of this research is to maximize the role of digital to assist farmers in significantly lowering transaction costs by prohibiting direct trading of products through intermediary traders. The role of digital marketplaces can also help reduce the lack of information on both prices and knowledge regarding coffee commodities [27]. Farmers can increase the price of agricultural goods, especially Arabica coffee appropriately with more accurate market information, which will also increase market efficiency [8]. Digital e-commerce can help farmers to sell goods and communicate with customers across the country by bridging geographic barriers [28]. According to the research of Yu and Cui [29], after embracing e-commerce, companies can communicate with a large number of clients. As a result, the development of digital e-commerce encourages the economy of farmers and can also make it easier for farmers to carry out marketing and promotions freely that consumers can choose online.

2. METHOD

This research was conducted in North Toraja Regency. The results of data collection and processing using the SEM analysis method from survey results and interviews were described using qualitative descriptive techniques [30].

According to the research of Umar et al. [31], this scale relates to questions about one's opinion on the objectives of the research. In this study, the answer scale provided disagrees, disagree, agree/neutral, agree, and strongly agree. In this study, the questionnaire used a Likert scale to measure the variable importance of Agricultural Institutions, Government Institutions, and Private Institutions to the role of digital technology and also the price transparency received by farmers. The score weighting is as follows:

a. Strongly Agree (SS) with a score weight of 5
b. Agree (S) with a score weight of 4
c. Neutral (N) with a score weight of 3
d. Disagree (TS) with a score weight of 2
e. Strongly Disagree (STS) with a score weight of 1

Validity and Reliability Test

Test the research instrument using a validity test and reliability test.

a. Validity test

The level of validity can be measured using the Product Moment Correlation formula, namely:

Description:
rxy = Correlation coefficient
n = Number of subjects studied
∑X = Total X (item score)
∑Y = Total Y (total score)
X2 = Sum of squares of X
Y2 = Sum of squares of Y
∑XY = Sum of squares between X and Y

The correlation value obtained from the formula is then compared with the value in the correlation coefficient table r. The item is called valid if the correlation value is greater than the value in the table or (rcount> r table) at the 5% significance level.

b. Reliability test

Reliability testing on questionnaires that have two or more answer choices (scores 1-5) is to use the Cronbach's Alpha formula, namely:

r11 = Reliability coefficient
k = Number of items and tests
= Test score variance
= Total variance

3. RESULTS

The SEM analysis processing method was conducted using an interview method with the help of a questionnaire for actors and institutions that play a role in the coffee subsystem in North Toraja. Then all answers from experts and actors were analyzed using SEM analysis tools. The first result of the SEM analysis method is to see the frequency of answers from each expert or actor and then obtain the first result starting from the Causality Relationship Diagram.

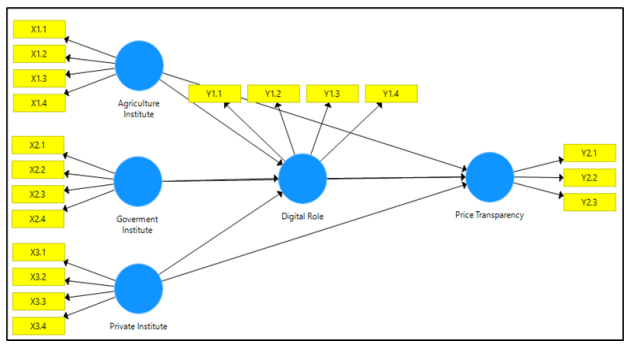

Figure 1. Causality relationship diagram

Description:
X1: Agriculture Institute
X2: Government Institute
X3: Private Institute
Y1: Digital Role
Y2: Price Transparency

In Figure 1 it can be seen that the blue round shape in the figure above shows the variables that are the expected objectives in collecting data. For example, Digital Role is formed from 4 question indicators, namely Y1.1 to Y1.4.

Likewise, other constructs are formed from each indicator. In the Amos application, the causality relationship is simply depicted in a flowchart.

Validity Test

The valid test is performed to demonstrate the degree to which the measurement tool can expose a factor that the survey will measure. If the standardised loading factor is 0.70, a parameter is considered to have good validity on the concept or latent variable.

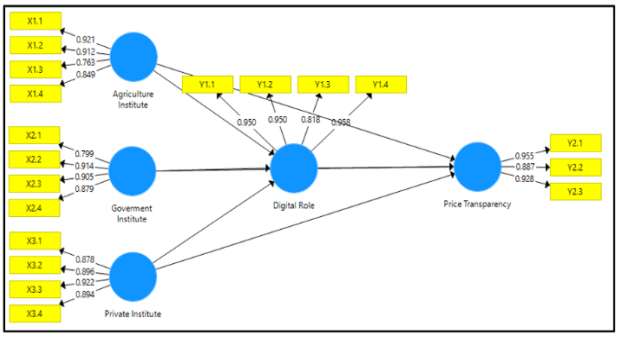

Figure 2. Standardized loading fact diagram

Description:
X1: Agriculture Institute
X2: Government Institute
X3: Private Institute
Y1: Digital Role
Y2: Price Transparency

From the processing results of the research data shown in Figure 2 above, it can be seen that all statement indicators are valid starting from X1.1 to Y2.3 because the value of the standardized loading factor is 0.70. So that the role of digital technology influence is faced by supply chain actors such as farmers who are members of agricultural institutions such as cooperatives and farmer groups, government agencies which include agricultural extension workers, as well as institutions from the private sector such as private companies and also MSMEs around the area. North Toraja so that these results have an impact on the acquisition of information and also price transparency at the level of the North Toraja Arabica coffee supply chain involved.

Reliability Test

A reliability test is an indicator that demonstrates how dependable or trustworthy a survey system (questionnaire) is. Each measuring tool must occasionally be able to deliver largely reliable measurements. The Cronbach Alpha coefficient was used to conduct the reliability test. If the instrument indicator has a Cronbach Alpha coefficient of 0.70, it is considered dependable.

Table 3. Reliability test

Questions Item	Cronbach Alpha	AVE
Agriculture Institute	0.885	0.746
Digital Role	0.939	0.848
Government Institute	0.897	0.766
Price Transparency	0.914	0.853
Private Institute	0.919	0.806

Table 3 explains that the value of the alpha coefficient (Cronbach alpha) has a value above 0.70 and an AVE value> 0.6 so it can be explained that the research variables (constructs) in the form of Agricultural Institution's variables have a coefficient value of 0.885 and have an AVE value of 0.746, Digital Role has a coefficient value of 0.939 and has an AVE value of 0.848, Government Institutions has a coefficient value of 0.897 and has an AVE value of 0.766, Price Transparency has a coefficient value of 0.897 and has an AVE value of 0.853, and Private Institutions has a coefficient value of 0.897 and has an AVE value of 0.853. 897 and has an AVE value of 0.766, Price Transparency has a coefficient value of 0.914 and an AVE value of 0.853, and the Private Institute has a coefficient value of 0.919 and has an AVE value of 0.806 so from the results obtained several important points in this study have high reliability, so they have high accuracy to be used as variables in research.

Evaluation of Model Accuracy Criteria

The purpose of this test is to assess the suitability of the model from the diagram shown in figure model diagram 1. The calculation results of the PLS-SEM model result in the calculation of the goodness of fit index as shown in Table 4 below:

Table 4. The goodness of fit index calculation results

SIZE	SCORE	CRITERIA	RESULTS
SRMR	0.051	< 0.1	Fit
NFI	0.797	Closer to 1 the better	Fit

From the results of the value data after processing the data, it can be seen in Table 4. shows that the NFI measure shows that the score obtained is 0.797 which means 79.7% have a fit model, while the SRMR value shows a score of 0.051 which indicates that the score is already below 0.1. Based on the two criteria for model accuracy that have been analyzed, it is concluded that the model is declared a fit model. The results shown have an adjusted R-square value for the Price Transparency variable of 0.955, which means that the adjusted R-square is in the high category, while the Digital Role variable is 0.931, which means that the adjusted R-square has a high category.

Hypothesis test

Hypothesis testing is indicated by one arrow on the model diagram and is following the given hypothesis. The direct influence on this research model is as follows:

Table 5. Evaluation of model accuracy criteria

	Coef.	T Stat.	P Values
Agriculture Institute -> Digital Role	0.237	3.104	0.002
Agriculture Institute -> Price Transparency	0.263	2.487	0.013
Digital Role -> Price Transparency	0.285	2.548	0.011
Government Institute -> Digital Role	0.304	2.238	0.026
Government Institute -> Price Transparency	0.216	2.275	0.023
Private Institute -> Digital Role	0.459	3.786	0.000
Private Institute -> Price Transparency	0.248	2.001	0.046

Based on Table 5, the results of a direct relationship are obtained with the following results:

1. Agriculture Institute has a significant effect on Digital Role as seen from the p-value <0.05. The direct influence of the Agriculture Institute on Digital Role is 0.237, which means

that if the Agriculture Institute increases by one unit, the Digital Role can increase by 23.7%. This influence is positive.

2. Agriculture Institute has a significant effect on Price Transparency as seen from the p-value <0.05. The direct influence of the Agriculture Institute on Price Transparency is 0.263, which means that if the Agriculture Institute increases by one unit, Price Transparency can increase by 26.3%. This influence is positive.

3. Digital Role has a significant effect on Price Transparency as seen from the p-value <0.05. The direct effect of Digital Role on Price Transparency is 0.285, which means that if Digital Role increases by one unit, Price Transparency can increase by 28.5%. This influence is positive.

4. The Government Institute has a significant effect on Digital Role as seen from the p-value <0.05. The direct influence of the Government Institute on the Digital Role is 0.304, which means that if the Government Institute increases by one unit, the Digital Role can increase by 30.4%. This influence is positive.

5. The Government Institute significantly affects Price Transparency as seen from the p-value <0.05. The direct effect of the Government Institute on Price Transparency is 0.216, which means that if the Government Institute increases by one unit, Price Transparency can increase by 21.6%. This influence is positive.

6. Private Institute significantly affects Digital Role as seen from the p-value <0.05. The direct influence of the Private Institute on the Digital Role is 0.459, which means that if the Private Institute increases by one unit, the Digital Role can increase by 45.9%. This influence is positive.

7. Private Institute significantly affects Price Transparency as seen from the p-value <0.05. The direct effect of the Private Institute on Price Transparency is 0.248, which means that if the Private Institute increases by one unit, Price Transparency can increase by 24.8%. This influence is positive.

SEM has the advantage of being able to pinpoint endogenous constructs' indirect effects on exogenous constructs that aren't directly addressed by arrows. The size of the indirect impact on the research model is as follows.

Based on Table 6, the results of an indirect relationship are obtained with the following results:

1. Agriculture Institute significantly affects Price Transparency through its Digital Role as seen from the p-value <0.05. The indirect effect of the Agriculture Institute on Price Transparency is 0.068, which means that if the Agriculture Institute increases by one unit, Price Transparency can increase indirectly by 6.8%. This indirect effect is positive.

2. The Government Institute has no significant effect on Price Transparency through Digital Roles as seen from the p-value > 0.05. The indirect impact of the Government Institute on Price Transparency is 0.087, which means that if the Government Institute increases by one unit, Price Transparency can increase indirectly by 8.7%. This indirect effect is positive.

3. Private Institute significantly affects Price Transparency through Digital Roles as seen from the p-value <0.05. The indirect effect of the Private Institute on Price Transparency is 0.131, which means that if the Private Institute increases by one unit, Price Transparency can increase indirectly by 13.1%. The effect is not directly positive.

In general, Social commerce has a quite different use from traditional e-commerce and digital social networking sites in that it allows its users to form virtual connections with other users (through "following" or "friending") as well as commercial entities such as goods, brands or businesses. encourage the promotion, development, and use of earlier types of relationships [32]. In contrast, digital e-commerce is different from social commerce in that it is not only part of communication between users but also provides opportunities for users to create business opportunities creatively. However, with the existence of digital social and digital commerce that can provide even better benefits, social commerce allows forming of new activities in trade (such as searching for products and providing product recommendations that friends like) which we can see that the conventional method is quite inefficient in carrying out transactions. thing like now. Moreover, social commerce is different though it resembles online communities where customers join because of a common interest in goods.

Table 6. Testing indirect effects

	Coefficient	T Statistics	P Values
Agriculture Institute -> Digital Role -> Price Transparency	0.068	2.339	0.020
Government Institute -> Digital Role -> Price Transparency	0.087	1.624	0.105
Private Institute -> Digital Role -> Price Transparency	0.131	2.007	0.045

E-commerce-based digital technology is becoming increasingly needed and has a fairly influential role today in promoting conventional sectors such as agriculture. The foundation of digital technology, especially those based on e-commerce, allows the expansion of marketing channels for agricultural products, and provides an understanding of the breadth and organizational structure of the circulation of agricultural products, so as to reduce the length of intermediaries in the distribution process, and can save on costs on transactions [33]. Several research studies and development studies in recent years also show that e-commerce helps companies and small and medium enterprises by increasing the flow of information about agricultural products, reducing ignorance of information about agricultural products, and encouraging the development of information management monitoring for agricultural product chains [34]. A vital strategy for increasing rural income and agricultural output is e-commerce. For instance, in China, during the first half of 2019, farmers executed 113.30 billion US dollars' worth of rural retail transactions using the nation's online digital technology media; of that total, online sales of agricultural products accounted for 27.32 billion US dollars [35]. Although several advantages have been shown, in reality digital e-commerce is still having difficulty entering the agricultural industry. For the company's capacity, which can be a reflection of technological changes in the agricultural marketing sector, it still needs to be transparent about marketing and also take a role in educating farmers who work with companies to take part in the development and progress of agriculture, especially in the Arabica coffee secto [36, 37].

Defense and strength in a business can refer to the capacity and ability of an organization to recognize and act quickly in response to ongoing market developments, which enables the business to grow and succeed in a cutthroat environment [38].

Because agricultural companies, especially in the Arabica coffee sector, are still not intensive in educating farmers about rapid market changes, and the application of digital commerce to Toraja agribusiness can still be categorized as new and still entering its early stages. Because in general an agricultural product also has very sensitive issues, especially the use of time and consumer concern for the welfare of farmers in the health sector, the requirements for timeliness and reactions of agricultural companies are also becoming more stringent. Therefore, understanding how to improve business development is very important so that agricultural companies can survive and continue to exist [39, 40].

It is possible to determine whether complexity (dynamism and environmental complexity) can strengthen the mediating role in this equation and how capability affects business agility in agricultural enterprises by using the organization's "capability-based concept and organizational capability perspective that supports IT" [41]. The results of this study can be seen in Table 7 which shows the benefits for those who use digital technology such as e-commerce can have a positive effect on the same agricultural commodity sector, namely making the market more flexible (strategic focus) and more agile and adaptable (operational focus), with the dynamics of the environment and the complexity of the existing environment, potentially being a positive mediator in this equation [42].

Table 7. Differences in marketing methods in the use of internet-based digital technology

	Online stores	**Social media platforms**	**Internet forums**
Variations from social commerce	They don't track, show, or make it possible to move between social networks.	They don't leverage a network that connects people, businesses, and products, and they don't concentrate on the product.	They may not always be product-focused and don't demand user connection.
Comparative advantages of social commerce	Frequently, they permit user-generated content. Users could have similar tastes in products.	They make it possible for users to create an account, communicate with friends, and travel.	They make it possible for its users to get together around a shared interest.

Cooperatives are one of the many players in the coffee production chain, particularly in North Toraja. In Indonesia, just 0.78% of coffee farmers trade their crops to cooperatives, while the remaining 88% sell their crops to big businesses and traders. In terms of quantity, around 2.6% of the total farmers' supply of coffee cherry fruits or peeled cherries is sold to cooperatives. In contrast, the remaining 88% of farmers sell to corporations or dealers. While cooperatives do not have a significant impact or role, their participation offers various advantages [43]:

1. Cooperatives in the farmer sector are members of non-governmental organizations, which means that this organization has a responsibility to bring around each other farmers who are implicated and also who have a role in activities in the same part of the economy, and have a good goal together to form a company that can collectively be owned for the common good. The community benefits its members.

2. Cooperatives are beneficial because all of their members, no matter their size or status, enjoy the same rights. Additionally, cooperatives are democratically controlled by all of their members, who have equal access to voting.

3. The bringing together of persons who engage in similar economic business activity includes cooperatives. Therefore, corporate players must aid in their members' economic endeavours. Cooperatives are required to offer the goods and services that their members, especially cooperative owners and consumers, most need.

4. CONCLUSION

X1 as Agricultural Institutions, X2 as Government Institutions, X3 as Private Institutions, Y1 has the role of digitalization influence, and Y2 has an effect on price transparency. Agricultural Institutions, have an indirect influence through the influence of digitalization influence on Price Transparency, while Government Institutions have no direct role in price transparency at the coffee chain level in North Toraja directly through the role of digital institutions have an influence on the price of digital influence on price transparency.

The impact of the COVID-19 pandemic has caused a shift in consumer habits towards the use of e-commerce. In Indonesia, the implementation of work-from-home (WFH) meant that people who missed the opportunity to travel to offline stores had little choice but to fulfil their shopping needs online. Now that two years have passed since the COVID-19 virus spread in Indonesia, despite the removal of social distancing measures, the number of people getting used to using digital commerce websites remains high. This shows that digitalization plays an important role in the online shopping process in Indonesia. Agriculture Institute has a significant effect on Digital Role. This can prove the role of digital in increasing the economic income of farmer families. With the role of digitalization, farmers can improve the quality of their agricultural products according to the needs desired by consumers/buyers both domestically and abroad. For Agricultural Institutions, the significant effect on Price Transparency can be seen from the start of many farmers in Toraja who work with other private parties who have competitive prices so that farmers can choose freely, and the products they produce will be sold anywhere.

Government Institutions have a significant effect on Digital Roles this is due to, the governments began to implement digital communication with farmers so that it can facilitate the government in data collection, fulfilment of farmers' needs, and distribution of agricultural assistance to farmers quickly. Private Institutions have a significant influence on Digital Roles because there is a lot of free and transparent price competition so that producers can choose who will buy the products they produce. With this research, it is hoped that more and more farmers will realize the important role of digital in increasing income and also a free competition which creates user creativity in marketing their products expressively in farming, especially export commodities that are very important for Indonesia such as Arabica coffee.

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