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# Agricultural market information in developing countries: A literature review

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**Abstract:** In most developing countries, the agricultural industry has the potential to alleviate poverty at a faster rate compared to other sectors. As such, many governments have initiated policies and programme to improve agricultural performance. However, some of these projects have not achieved success because the local agricultural markets are often controlled by a small group of stakeholders who tend to hide information in the market despite having huge market power. This paper aimed to determine the issues and impacts of the lack of market information in developing countries and to provide strategies for solving such problems. Results show that the presence of an oligopsonic market system, current information and communication technology (ICTs), the lack of market infrastructure and gender limitations are the main issues related to a lack of information. In turn, lack of information leads to an inefficient agricultural market, causes negative impacts on market participants, and ultimately leads to harmful socio-economic effects. Thus, to solve these problems, it is necessary to improve capacity building, increase access to ICTs and improve market infrastructure.

**Keywords:** asymmetric information; capacity building; information and communication technologies; market infrastructure; price volatility

The World Bank (2007) has reported that 75% of poor people in developing countries live in rural areas and depend on the agricultural sector. The FAO (2018) stated that the growth of agriculture in developing countries can reduce poverty faster than in other sectors, thus affecting the extremely poor populations living in rural areas. According to Hwa (1988), rapid agricultural growth enhances productivity, raises the efficiency of resource transfers (capital and labour) and facilitates overall economic growth.

Governments in many developing countries have begun to initiate policies and programme to accelerate agricultural growth. These consist of policies related to irrigation, water use and land tenure, the use of improved seeds and modern inputs, farm credit and input subsidies, implementation of minimum guaranteed prices, import tariffs and export incentives, and the reformation of exploitative marketing systems (Mollett 1988; Jones 1995; Campenhout 2017). Although many policies have been issued, agricultural performance in developing countries remains sub-optimal (Jenicek and Grofova 2014). Thus far, major programmes in developing countries, such as the Green Revolution, have failed to produce the desired goal of improving agricultural markets. As a result, farmers' incomes have fallen due to the oversupply of products and farmers' reluctance to use new agricultural technologies, amongst other reasons (Otsuka 2019).

Meanwhile, macroeconomic indicators reveal that agriculture gross domestic product (GDP) per capita in developing countries is still one-tenth that of developed countries. This condition can be attributed

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to the inefficient markets and technologies being used, along with some obsolete labour skills (George 2020). Hence, it is important to focus on improving the efficiency of the local agricultural market because they have far-reaching impacts on production, technology and labour (Mollett 1988).

When local agricultural markets perform well, farmers' products can be sold in large quantities at high prices, farmers can be better linked with consumer demand, and a national minimum price scheme can be created, thus changing the price discovery process and driving logistical efficiency by reducing transaction costs (Meulenberg 1989; Heezen and Baets 1996; Tourte and Gaskell 2004). However, it seems rare to find local agricultural markets in developing countries that can function optimally and, in fact, many have failed to implement the necessary changes to achieve this. This is because various participants often control local agricultural markets, especially traders who wield significant market power. These stakeholders tend to hide information from others, resulting in a lack of market information (Deichmann et al. 2016).

This is an interesting phenomenon because farmers with lower education and less access to other sources of information tend to be greatly affected by this problem (Ullah et al. 2020). Indeed, most of the farmers in developing countries bear many of these characteristics. For this reason, the current paper aims to identify the issues related to the lack of market information, their impacts and strategies for addressing such problems. Doing so is an essential step towards reaching the Sustainable Development Goals (SDGs) and eradicating poverty.

This paper has two advantages. First, it presents the whole situation of agricultural market information in developing countries (Africa, Asia, Caribbean and Latin America), whilst other papers only examined a few countries or regions. Second, this paper only uses references from reputable publications in the Scopus database and reports from respectable international organisations.

## ISSUES

The first issue related to the prevailing agricultural market systems in developing countries is oligopsony (Kumse et al. 2020). In an oligopsonic market, traders vertically control farmers with their strong market power. According to Pindyck and Rubinfeld (2013), traders have the market power to purchase products at lower prices, even below their marginal values. This occurs when traders collude to set prices and hide market information. Farmers' sources of information are severely limited under an oligopsony, and in fact, some farmers do not receive market information at all. Moreover, due to the presence of an oligopsonic market system, farmers are exposed to high transaction costs with low bargaining positions – a situation that forces them to sell their products soon after harvesting (Soe et al. 2015).

The second issue is related to the development of information and communication technologies (ICTs). The spread of market information is expected to accelerate along with the rapid adoption of ICTs. Prior to such advancement and expansion, farmers were often unaware of product prices and only relied on information provided by traders to determine whether, when, where, or for how much to sell their crops (Deichmann et al. 2016).

ICTs have been shown to increase the performance of smallholder farmers' agri-food chains in Africa, Asia and Latin America (Owusu et al. 2017; Singh and Goyal 2019). The use of ICTs has several benefits, such as obtaining higher prices and managing sales, finding buyers and creating product compatibility with consumer needs (quality, healthy, and safety standards). At the same time, the use of ICTs also decreases the possibility of asymmetric information in the agricultural market, improves price transparency and increases farmers' participation and bargaining power in the markets (Deichmann et al. 2016; Campenhout 2017; Okello et al. 2020; Uduji et al. 2020; Ullah et al. 2020). Subejo et al. (2019) reported that the market information provided by ICTs is useful not only for farmers but also for other market participants and the government.

The stabilisation of agricultural markets in developing countries will also ensure stable supply and prices for developed countries. For example, Brazil has become one of the world's leading exporters of maize, soybeans, frozen meats, and sugar cane (Nistor 2015). Argentina and Malaysia have risen to become major soybean and palm oil-based biodiesel suppliers for developed countries, especially the members of the European Union (EU) (Panichelli et al. 2009). There is also Indonesia, which is the EU's largest spice supplier, with a market share that is predicted to increase further in the future (Nugroho and Prasada 2020). From the abovementioned information, we can state that agricultural products from developing countries are the EU's primary sources of food and industrial raw materials.

However, due to illiteracy and/or a lack of knowledge and skills, not all farmers in developing countries use ICTs (Saurabh et al. 2019; Singha and Maezawa 2019). Usually, farmers who are young and well-educated are

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the only ones who use ICTs to access agricultural production and marketing information; thus, they have greater profits and have stronger infrastructure and telecommunication networks than other farmers who do not use technology. Although others have begun to use cell phones, the majority of farmers with poor education and income levels still rely on traditional media, such as television, as their source of information. This is largely due to their inability to use or afford modern technology access (Subejo et al. 2019). An area of concern related to this is the fact that extension staff also have insufficient/inadequate knowledge of ICTs, specifically the user-friendliness of the technologies. Some extension staff either have limited ICT skills and knowledge or lack adequate time to learn how to use such technologies. This is attributed to a lack of training on using most modern ICTs (Enwelu et al. 2017). Hence, based on such information, it is clear, that the quality of human resources in developing countries must also be improved to help farmers gain access to agricultural market information.

The third issue is a shortage of infrastructure that limits farmers' access to market information. There are two cases related to this issue; the first case is the limited access to ICTs. In fact, Internet access in developing countries is still limited due to a lack of infrastructure. One example is the disparity in Internet connectivity in Africa. Due to its complete infrastructure, South Africa has the highest Internet penetration rate (34%) throughout the continent. In comparison, in Ethiopia, only 3% of the population has access to the Internet due to inadequate infrastructure (Deichmann et al. 2016). Farmers have not been informed about the market in a timely manner due to inadequate network coverage. Farmers use mobile phones to send such questions, but the answer can take days or never arrive at all (Owusu et al. 2017).

The second case is related to physical constraints. In particular, farmers may not be able to receive adequate market information due to the physical inaccessibility of alternative markets and the complex interlinked relationships between buyers and sellers (Deichmann et al. 2016). For example, in the Caribbean, lack of transportation and marketing services can lead to market supply fluctuations because market participants could not access accurate information about product prices and availability (Gumbs 1981). Exacerbating this situation is the fact that the recent COVID-19 outbreak has further weakened farmers' access to local markets. Farmers cannot sell their products, search market information, or look for food due to the limitations and lockdown policies (Adhikari et al. 2021). All of these lead to difficulties in creating efficient marketing systems in many developing countries.

The last issue, limitations based on gender, is a case that does not make sense but is still prevalent. In developing countries, this is related to the socio-cultural conditions that restrict women's involvement in agricultural marketing systems and farmer associations. Gender inequities in terms of access to market information and all related activities are widespread in developing countries (Dillon and Barrett 2017). In such countries, women will only be asked to help with on-farm activities ranging from field cleaning to harvesting, whilst men will be in charge of marketing. Indeed, gender differences related to culturally defined labour specialisations amongst men and women, in which 'men do heavier jobs and women do lighter jobs' could have varying consequences on decision-making power (Kolli and Bantilan 1997). Within such a system, when men own agricultural assets, they are more likely to reap the majority of the benefits, whilst women are more likely to follow the rules set by men (Quisumbing et al. 2015; Singh and Goyal 2019).

## IMPACTS OF THE LACK OF INFORMATION

Farmers often receive information from family, friends, or traders in various markets (Owusu et al. 2017). Unfortunately, given that such information is often inaccurate, it negatively impacts farmers, especially in the case of asymmetric information resulting in price fluctuations or price volatility. In general, price volatility has negative impacts on reducing producers' income, disrupts agricultural markets and investments and increases the share of food expenditure over total consumption or food insecurity (Magrini et al. 2017).

Price volatility also has an impact on the use of labour. When agricultural product prices are low, children and adolescents are employed to replace adults on the farm (Beck et al. 2018). Conversely, when prices increase, this leads to increased infant and child mortality, the prevalence of undernourishment and food importation (Lee et al. 2013). Asymmetric information also has an impact on economic and social life related to the agricultural sectors in many developing countries. So far, various policy instruments implemented by policymakers and economists have been unable to limit this phenomenon. Furthermore, macroeconomic approaches to price stabilisation in national economies are not that promising (Dethier and Effenberger 2012).

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In the end, such issues would not have happened if all market participants had received market information, either between time or conditions.

Another noteworthy consequence is farmers' overreaction when facing a strongly asymmetric information system. Sometimes, farmers will receive information suggesting a high demand for the next year, prompting them to raise their production. In the following year, when the prediction does not come true, the market will have an oversupply, which of course, will lead to prices decreasing dramatically (Liao and Chen 2017). Then, farmers' marketing decisions may be sub-optimal at another time due to risk aversion or minimised interests (Jones 1995; Getnet 2008). Similarly, dramatically different prices for the same products will emerge in markets located close to the farmers' homes. Given that they have no access to information from other markets, farmers are likely to prefer the former market, even though their products' sale prices are low, and they would lose income (Tadesse and Bahiigwa 2015).

Next, farmers who do not obtain market information tend to refuse or decrease their market participation. This is because they are worried that the market uncertainty will cause them to lose profit. As a result, farmers will lose motivation to plan their production based on market demand and cannot effectively use their funds (Giziew and Admas 2020).

Farmers are not the only ones who suffer from a lack of information; in fact, other market players may also experience the same thing. As previously mentioned, the lack of information causes price volatility. When the fluctuation is slight, it will not interfere with the welfare of traders and consumers. However, when price fluctuation is high, the negative impact spreads from the producers up to the retail market, causing traders and consumers to sustain the negative effects of such a phenomenon (Sassi and Mamo 2019). As a result, consumers do not get the best quantity and quality products as expected. Likewise, product prices also become costly because consumers are unaware of current market conditions.

Finally, markets remain inefficient due to a lack of information. Suppose two markets are selling the same agricultural product, the prices of products in these two markets vary and farmers cannot obtain pricing information in each market. In such a scenario, farmers who earn from low prices are usually unaware that consumers are willing to pay better prices for their products in other markets. As a result, the price disparity between the two markets will persist, perhaps even widen, and Pareto efficiency will never be realised (Shimamoto et al. 2015).

## PROPOSED STRATEGIES TO COMBAT THE LACK OF THE INFORMATION

**Increasing capacity building.** As individuals, farmers must improve their capabilities through training or obtaining a higher level of education. Farmers need training in effectively using mobile phones or other modern ICTs to help them obtain useful agricultural and market information (Tables 1–2) (Owusu et al. 2017; Singh and Goyal 2019). Doing so can help smallholder farmers enhance their ability to interact with the market and ensure that they become active market participants (Table 3) (Magesa et al. 2020). Likewise, extension staff need this kind of training not only because of their limited ability to use ICTs but also because they are the ones who have the primary responsibility of teaching farmers about these technologies.

Farmers also require training in how to negotiate and properly establish beneficial partnerships. Thus far, farmers have received more cultivation training but no marketing training. As a result, they are unable to find partners who are willing to buy their products at reasonable prices. In fact, when farmers meet potential business partners, they are more than likely to earn low prices due to their lack of negotiating skills. An example of the success of farmers' progress in partnering and negotiating is demonstrated by the practice known as 'contract farming'. This practice ensures that small-scale producers in developing countries continue to participate in markets whilst simultaneously overcoming asymmetric information problems. Furthermore, contract farming supports smallholders in developing countries by increasing production, income, and wealth (Kirsten and Sartorius 2002; Ton et al. 2018; Rumi and Qaim 2020). Therefore, farmers must receive support from extension staff or other parties to help them improve their partnership and negotiation skills.

Agricultural sectors in developing countries also need farmers with the ability to organise and lead group activities to succeed on the market and connect with other market participants. Thus, the next step involves leadership training, which will prepare farmers to lead other farmers as well as help them become influential persons and be well recognised by other main stakeholders (Saha 2020). They are also expected to lead significant changes in farmer behaviours, interaction patterns and culture when new marketing innovations emerge. However, it must be noted that such an improvement takes time and proper opportunities for learning by doing, so the much-needed changes cannot be expected to happen quickly.

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Table 1. Agriculture and related uses of mobile phones by farmers (%)

| Agricultural uses of mobile phones | Overall | Male | Female |
|---|---|---|---|
| Contacting market women and other sellers for market prices | 95.6 | 53.6 | 77.6 |
| Contacting input dealers | 46.4 | 94.8 | 14.4 |
| Contacting extension agents and other specialised agricultural service providers | 12.8 | 24.0 | 14.4 |
| Contacting transporters | 25.6 | 46.8 | 28.8 |
| Contacting financial institution | 17.6 | 48.0 | 6.0 |

Source: Owusu et al. (2017)

Table 2. Impacts of mobile-based information (%)

| Agricultural uses of mobile phones | Overall |
|---|---|
| Better price realisation | 67.5 |
| Increased trading quantities | 75.6 |
| Reduced searching and transaction cost | 82.3 |
| Increased income | 89.0 |
| Easy access to support institutions | 38.6 |

Source: Owusu et al. (2017)

Meanwhile, farmers also need to achieve a high level of education. Educated farmers have been proven to have better access to timely and accurate agricultural market information (Ullah et al. 2020). Farmers who are educated and adaptable to technologies have a better chance of avoiding quality and price asymmetry compared to those who do not adopt technologies.

There is also a need to highlight the fact that improving capacity building is a critical aspect of achieving gender equality and promoting a market-oriented agricultural sector. Women farmers can help improve market penetration and provide concomitant benefits to smallholder farmers (Quisumbing et al. 2015; Owusu et al. 2017). Related to this, Quisumbing et al. (2015) suggested that women should be given access to physical and financial assets so that they too can benefit from increasing the profitability of agricultural markets, finding market information, expanding agribusiness networks, and joining the value chain. According to Horton et al. (2010), many agricultural groups have evolved under the able leadership of women, as they are willing to learn new skills, work hard, be professional and dedicate (sufficient) time to the group's progress.

Increasing capacity building is achieved both by individual farmers and the agricultural community as a whole. Farmers, as market participants, can have a better market position if they organise themselves and/or practice marketing via agricultural collectives. A good farmers' market organisation (FMO) can help them obtain market information. In turn, this can protect their economic interests by cutting down the role of middlemen and fostering better competition (avoid oligopsony market system). FMO also has functions in branding, advertising, and certifying agricultural products (Getnet 2008; Mgale and Yunxian 2020; Saha 2020). However, given that FMO competes with traders, it must have clear targets, good member selection, strong commitment, and an entrepreneurial mindset. If all of these conditions are fulfilled, FMOs can eas-

Table 3. Respondents' ownership, use and knowledge on ICTs after training

| | Respondents' answers (%) | | |
|---|---|---|---|
| **Ownership and use of ICT** | yes | | no |
| Own mobile phone? | 99.15 | | 0.85 |
| Is mobile phone Internet-enabled? | 99.15 | | 0.85 |
| Attended computer training? | 78.31 | | 21.69 |
| Can read and send emails? | 94.37 | | 5.23 |
| **Knowledge on ICTs** | knowledgeable | poor | do not know |
| Knowledge of computer use | 89.01 | 8.45 | 2.54 |
| Use of Google to search information | 98.30 | 0.85 | 0.85 |
| Use Internet to disseminate information | 98.30 | 0.85 | 0.85 |
| Use of social networks (e.g. Facebook) for communication | 82.81 | 16.34 | 0.85 |

ICT – information and communication technology
Source: Magesa et al. (2020)

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ily succeed and spread the benefits to all stakeholders (Lutz and Tadesse 2017). Moreover, a good FMO entails the participation of every farmer in each phase of the work, starting from planning, implementation, and evaluation (Horton et al. 2010).

**Increasing information access.** Farmers need to use market information systems and ICTs, such as mobile phones, for trading purposes (Mgale and Yunxian 2020). At the same time, they need timely and accurate market information that can help improve their marketing decisions (Getnet 2008). The typical sources of marketing information are radio, television, mobile phones, computers with Internet, VCDs or DVDs and various forms of printed media, such as bulletins, newspapers, books, magazines, corporate reports and statistical office reports (Darena 2007; Subejo et al. 2019).

In modern times, farmers are supposed to use digital media. Many countries have tried to develop their respective ICTs, especially with the emergence of the Industrial Revolution 4.0. For the foreseeable future, mobile phones are likely to play a more critical role in agricultural marketing within developing countries. This statement is supported by the fact that mobile phone subscribers are growing rapidly in such countries. In fact, between 2003 and 2008, the number of mobile phone subscribers in Africa has increased seven-fold, from 53 million users to 364 million users. Subscriptions also rose by 3.6 times in Latin America, from 127 million to 460 million and by 3.7 times in Asia (excluding Japan), from 482 million to 1.8 billion. Related to this explosive growth, governments must ensure the availability of broad and affordable Internet access, robust network infrastructure, sufficient bandwidth, and support for targeted applications (Jensen 2010; Oreku et al. 2013).

Therefore, according to the FAO (2017), government and market participants must develop the agricultural market information system (AMIS) (Table 4). Such

Table 4. Process of agricultural market information system in developing countries

| Process | Purposes | Steps | Actors | Challenges |
|---|---|---|---|---|
| Data collection | to ensure that the data are reliable and accurate | – identifying the type of commodities<br>– determining information on the required variety, quality and packaging of selected commodities and other information<br>– determining the proper sampling design and number of observations<br>– timing of data collection | – government<br>– extension staff<br>– private company<br>– telecommunications agencies<br>– consumers, traders and supermarkets<br>– commodity exchange<br>– farmers' group | – change of collecting data process from paper-based methods to digital methods |
| Data transmission and processing | to ensure that the data will be rapidly transmitted | – checking data<br>– processing data | – government<br>– private company | – lack of funds to pay for the enumerator need<br>– availability of software |
| Data analysis and packaging | to ensure the data are easy to use | – analysing data<br>– packaging data | – government<br>– private company | – ability to interpret the data |
| Data dissemination | to ensure users receive the data | – disseminating data | – government<br>– private company | – choosing the most appropriate medium for dissemination |
| Help users to understand data interpretation | to help users (especially farmers) in understanding and interpreting the data | – interpreting data | – extension staff | – lack of extension staff |

Source: FAO (2017), modified by the author

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an initiative would improve data reliability, timeliness, and frequency. However, several considerations must be considered to ensure the efficiency of this system:

– A user guide about structured information and guidelines on the system must be created, along with a set of monitoring and evaluating methods (Horton et al. 2010).
– It must contain the product, price, weather, news, trade, input, demand, production, financial and warehouse data (Darena 2007).
– It must be able to coordinate farm supplies, harvesting and production, logistics, transportation, commodity processing, finance, and consumer preferences (Darena 2007; Vaidya et al. 2013).
– It must be user-friendly (based on demographic, socio-economic, geographic, situational, and institutional characteristics of farmers), easily editable, interactive, credible, reliable, efficient, easy to access, protected and allow for user feedback (Pospíšilová et al. 2011; Shimamoto et al. 2015; Magesa et al. 2020; Saurabh et al. 2019; Hoang 2020).
– It must be based on trustworthiness, honesty, and sincerity amongst all stakeholders and it must be able to connect all parties in a beneficial manner (Vaidya et al. 2013).

Providers must also collect data, which should be shared with all farmers involved. These data could be helpful to farmers, especially if there is a fast, efficient, and reliable means of communicating the information to farmers (Owusu et al. 2017). At the same time, governments must collaborate with telecommunications agencies or organisations to boost rural access to mobile-based services and smallholder market information. Likewise, there is an urgent need to expand network coverage in rural parts of developing countries (Owusu et al. 2017). Finally, extension staff and application providers must guide farmers by providing information and the required tools to increase their knowledge and skills that, in turn, can help them to better market their products (Wasudha et al. 2018).

However, it should also be noted that even though agricultural marketing information has been developed with sophisticated technology (e.g. mobile phones), many farmers in developing countries continue to use simple tools. For example, one study found that only 10% of the farmers used a mobile phone-based information system in Malawi, whilst 58% still relied on radio programmes for market information (Chikuni and Kilima 2019). All parties need to understand farmers' level of complexities so that their needs can be accommodated.

**Improving market infrastructure.** Infrastructure procurement is a persistent problem in developing countries because their governments are unable to provide it. Owing to this problem, the people's ability to meet their needs is being disrupted, including farmers' access to market information (Freeman and Karen 1982). Infrastructure is essential in facilitating farmers' access to literacy related to the most profitable crops and the proper steps in storing and transporting them to the market; it also has an impact on reducing transportation costs and marketing margins as well as avoiding price volatility (Stifel and Randrianarisoa 2006; Okello et al. 2020; Uduji et al. 2020).

The first type of infrastructure needed by farmers consists of communications networks (Subejo et al. 2019). As demonstrated during extreme conditions, such as the COVID-19 pandemic, the use of good communication has contributed to maintaining price stability and limiting the negative impacts of decreased production volume (Ceballos et al. 2020). Accessibility in rural areas, however, depends on electricity and network connectivity (Magesa et al. 2020), both of which ensure that farmers can access various information and communication tools. Ultimately, these tools do not need to be modern, what matters is that farmers have access to accurate and timely information.

Nevertheless, it would be better if farmers used mobile phones because, in the previous discussion, we have seen how these tools can help farmers and other parties in distant areas connect more easily. Jaiswal et al. (2019) stated that other infrastructures required for the provision of eligible ICTs include hardware [Internet of things (IoT) devices, cables, sensors and actuators, base stations, PC and power supply system] and software.

Farmers can also use other infrastructures, such as roads, rails and ports, to obtain information and physical access to agricultural markets (Usman and Callo-Concha 2021). For example, the construction of bridges in Nicaragua has been shown to increase farmers' access to information and the ability to physically access urban markets from rural areas (Brooks and Donovan 2020). Meanwhile, in remote areas, such as the Andes mountains in Peru, road construction has been proven to accelerate farmers' access to urban markets and ability to obtain accurate information on consumer needs (Aguirre et al. 2018).

However, a lack of funding hampers infrastructure provision in developing countries. Therefore, governments need to open up opportunities for the public and private sectors to invest in infrastructure construction (Glover and Jones 2019). Moreover, donors, non-gov-

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ernment organisations and civil society organisations also play important roles in establishing and strengthening market infrastructures in developing countries (Dethier and Effenberger 2012). Given that agriculture is a vulnerable sector and that there is a need to support many poor people's livelihood in developing countries, governments must continue to guide, regulate and monitor other parties to prevent exploitation of farmers or conflict with national goals.

## CONCLUSION

Many studies have indicated that agricultural sectors in many developing countries, including Africa, Asia, the Caribbean and Latin America, suffer from a lack of market information. The first cause of the lack of information is the oligopsonic market system, which gives certain participants the power to manipulate the market and conspire to hide information. The second cause is the insufficient use of ICTs. Although the use of ICTs has been proven to provide many benefits, it turns out that many farmers and extension staff lack the skills to use them. As a result, ICTs are only used by a few farmers who have specific characteristics; they are still not optimally used in providing information to market participants. The third issue is the lack of infrastructure, which poses challenges to farmers seeking to access market information via ICTs and physically reach markets from their respective rural areas. Finally, there are gender differences wherein women in developing countries are often marginalised, making it difficult for them to participate in the market and access market information.

The real impact of this problem is price volatility, which makes market participants lose considerable profits. As commodity prices fall, this can also exacerbate social issues, such as when child labour is often used on farms to save on labour costs. Furthermore, farmers are often worried about market uncertainty, so they decide to either refuse or decrease their participation in the market. Finally, price volatility results in market inefficiency, which in turn negatively impacts market participants, especially in terms of decreased profits and benefits.

The strategies proposed by the author to overcome the lack of information is to improve capacity building for both farmers and FMOs, to provide better access to information to farmers, especially the use of the agricultural market information systems, and to develop infrastructures, including those on telecommunications and transportation.

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