

The Potential Benefits of Global Value Chain Inclusion on Indonesian Cassava Farmers

Rachmaniar Rachmat

Faculty of Social and Political Science, Universitas Airlangga

Keywords: cassava, Global Value Chain (GVC), ICT (information and communication technology), Indonesia cassava farmers, internet adoption

Abstract: Indonesia is a tropical country that is very rich in biodiversity (flora and fauna). Judging from the potentials (the land, climate, natural resources, and human resources), Indonesia should be able to thrive to become an advanced agricultural country. But reality speaks differently. For instance, in Southeast Asia region, Indonesia is still losing the competition in the agricultural industry. One of Indonesia's agricultural products that are being neglected by the government is cassava. So Thailand, taking advantage of cassava's global market, transformed into the biggest cassava exporter in the world. Vietnam is also starting to smash in the global cassava market seriously. While cassava is abundant in Indonesia, most farmers do not know where to sell their crops. This situation is then taken advantage by *cukong* (food mafia) to play with the crops' price by connecting farmers to the market/buyers and eventually put these farmers in the *cukong's* mercy. Farmers are put at disadvantages since they get much lower than the standard price for their products. There is a power asymmetry in crops supply chain network. By using literature review method, this paper aims to analyze the potential benefits for Indonesian cassava farmers in the Global Value Chain (GVC) Inclusion. This paper uses a startup agriculture company which specializes in selling cassava products, Ladang Lima (Pasuruan/Surabaya), as a case study. The conclusion of this paper supports internet adoption (ICT in agriculture) that provides access to domestic and global market, enabling financial investment, and access to technology.

1 INTRODUCTION

Cassava is one of non-rice staple food that has an important role in supporting the food security of a region. Cassava is also a source of carbohydrates which used for animal feed ingredients and industrial raw materials. Therefore, the development of cassava is very important to diversify local food consumption, for the development of processing-industry, agro-industry, as a source of foreign exchange through export, and as an effort to support food security and food self-sufficiency (Outlook Kementerian Pertanian, 2016).

There are four strategic food crop commodities in Indonesia: rice, corn, soybeans, and sugar cane (Muslim, 2016). Even so, cassava remains an important commodity with an increasing national production rate. From the table below, it can be seen that Indonesian cassava production in 2015 surpassed 22 million tons (BPS, 2016). Cassava's production number is stable with the total production

in Indonesian (2010-2016) averaging at 20 million tons/year.

Tabel 1.1 Produksi, Luas Panen, dan Produktivitas Ubi kayu di Indonesia

Tahun	Produksi (Ton)	Luas Panen (Ha)	Produktivitas (Ton/Ha)
2008	21.756.991	1.204.933	18,057
2009	22.039.145	1.175.666	18,746
2010	23.918.118	1.183.047	20,217
2011	24.044.025	1.184.696	20,296
2012	24.177.372	1.129.688	21,402
2013	23.926.921	1.065.752	22,451
2014	23.436.384	1.003.494	23,355
2015	22.906.118	980.217	23,368

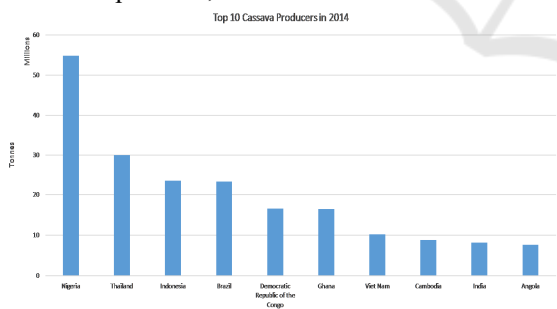
Sumber: Badan Pusat Statistika (2016)

Source: BPS, 2016

However, although domestic cassava production continues to increase, Indonesia keeps importing cassava every year. Noted, in the period of 2000-2106 Indonesia imported processed-cassava an average of 271,681 tons per year, with the value of USD 100.63 million. In contrast to the value of

imports, for the national production level that reaches millions of tons/year, the amounts of Indonesian cassava exports is very small. In the period of 2000-2016, the average number of Indonesian cassava exports was only 42.251 tons per year, with the value of USD 13.1 million (Muslim, 2016). The large amount of cassava production is still largely absorbed by the domestic market for consumption and industry. The Ministry of Agriculture (2016) notes that there is a cassava surplus of about 1 million tons per year. From the small export value numbers, it is concluded that Indonesia is not an important actor in the world's cassava global value chain (GVC). The role of Indonesia in cassava's GVC is low.

The problem of "large production but small exports" is not only owned by Indonesia. Other countries such as Nigeria and Brazil, which have large domestic cassava's production numbers, also have a small export value. For example, Indonesia is only able to export approximately 3% -5% of national cassava products, while Thailand is able to export around 60% of their national cassava production (Dirgantoro, 2017). Below is the table of largest cassava producers reported by FAO (Food and Agricultural Organization) in 2015. Nigeria is ranked first with total cassava production per year reaches above 50 million tons, followed by Thailand, Indonesia and Brazil. Nigerian cassava production in 2010-2016 averages 40 million tons/year (FAO, 2015), but for the biggest exporter of cassava products, Thailand is ranked first.



Source: FAO, 2015

	Cassava (fresh, dried)		Cassava starch		Total	
	World	To China	World	To China	World	To China
All exporters	2,059 M	1,910 M	2,175 M	1,360 M	4,234 M	3,269 M
	100.0%	92.8%	100.0%	62.5%	100.0%	77.2%
Thailand	1,539 M	1,536 M	1,191 M	539 M	2,729 M	2,075 M
	74.7%	74.6%	54.8%	24.8%	64.5%	49.0%
Vietnam	399 M	360 M	914 M	808 M	1,312 M	1,168 M
	19.4%	17.5%	42.0%	37.2%	31.0%	27.6%
Thailand + Vietnam	94.1%	92.1%	96.8%	62.0%	95.5%	76.6%

*Reported by exporters

Source: Comtrade 2015

There are several problems faced by Indonesian cassava farmers, which are: 1) inequity in terms of the fair distribution of the economic gains in the value chain amongst different players; farmers operate individually rather than as a cooperative, making it difficult to exert the pressure (bargaining power) on local traders and exporters, and better control of the price, 2) power imbalances in participation with local farmers and exporters having many alternatives (many suppliers to choose from) compared to farmers (limited pool of people to sell to), 3) economic empowerment of farmers is low, due to inadequate information on market prices, limited time to sell a raw product before it spoils and lack of access to credit to make a larger investment in the farm, this results in farmers having the lowest bargaining power and smallest economic gain compared to other players in the value chain, 4) capacity to value add is low in communities, and poor knowledge and skills in processing means most farmers are selling cassava raw, and there are no government initiatives to improve processing knowledge and skills, 5) limited access to market-related information, 6) technological limitations.

The purpose of this paper is to explain the potential benefits of global value chain inclusion for Indonesian cassava farmers. One of the downsides faced is the difference (gap) price of fresh cassava from farmers with the same product in the international market, due to the asymmetry of power especially in terms of supply (supply side). Of course, there are some things that should be in the government's attention before the development of technology and communication (ICT), through internet adoption, will be able to improve the welfare of farmers, especially for cassava farmers.

2 METHODS

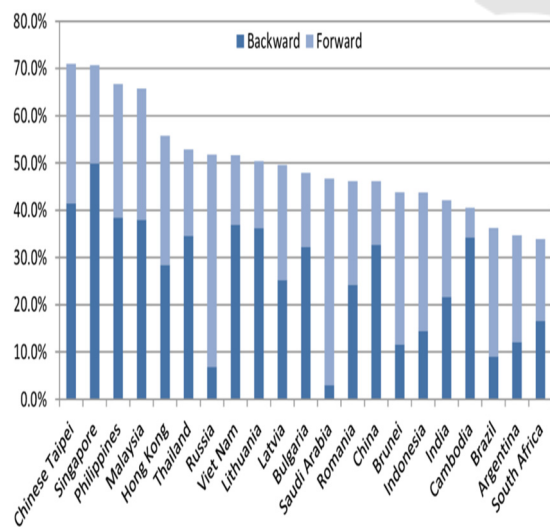
This paper uses literature review method. The type of research is descriptive research. This paper uses a global value chain perspective and the presence of internet innovation/ internet adoption in the food supply chain network in reducing asymmetry with new benchmark standards from the growing global cassava market.

3 RESULTS

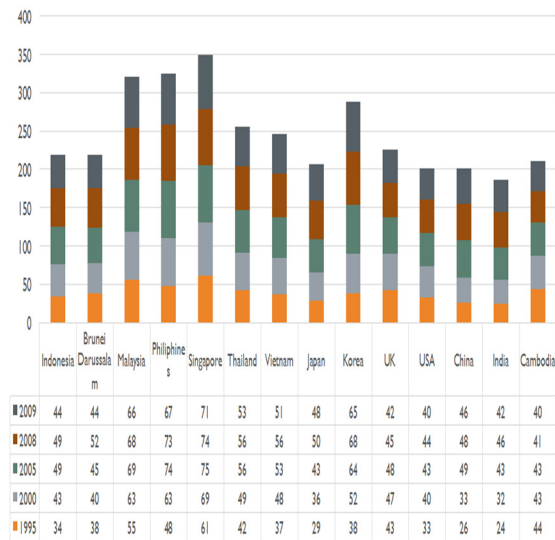
In the modern era, businesses do not recognize boundaries. To raise participation in the global market, Indonesia needs to conduct economic activities openly, ie through export activities and imports of goods. Based on this, many business lines are currently adopting a business model called Global Value Chain or GVC (Richie & Cendani, 2017).

The growing GVC business model today offers a competitive advantage that is the efficiency of corporate activities. It is put into practice by specialization and risk-sharing between the owners of capital. If the investor is willing to take a high risk, the company can also boost its production level (Gereffi & Luo, 2014). GVC can also embrace some disadvantaged countries to join the world supply chain so that there is no need to wait for decades to build their own country (Richie & Cendani, 2017).

Below are the graphics of GVC participation rate of several countries



Source: researchgate.net, 2009



Source: Departemen Pengembangan UMKM Bank Indonesia, 2016

From the data above, it can be seen that until 2009 Indonesia's participation in GVC is still relatively low compared to another ASEAN countries such as Malaysia, Philippines, Singapore, and Thailand. This is caused by the lagging of Indonesia in several aspects such as logistics, economic openness, and the reliability of communication technology. The lack of standardizations and specifications of Indonesian products in line with international markets has also resulted in poor performances of Indonesian businesses in meeting global consumption demand.

For cassava, Indonesia's position in the world cassava trade chain is very small. The exported products are mainly derived-cassava-products such as starch, chips, and pellets. The problem faced is the absence of standardization of cassava products. The government does not socialize or facilitate the knowledge transfer and technology needed to support the farmers. This caused the quality of cassava yields to be varied. The quality of cassava that does not meet the international standard become the main factor of fresh cassava from Indonesia unable to penetrate the global market. In addition, farmers also do not have the access to information and technology to develop their products. This limited information and technology make the majority of farmers to sell their cassava to the *cukong* (food mafia) who are willing to buy directly from them. Despite the fact that these mafias play the crops' price to stay at a low level. For example, the price of fresh cassava in the global market in 2017 is around Rp. 2500/kg, but the price of fresh

cassava from farmers (in Indonesia) is only Rp. 700/kg. The highest price of cassava is only Rp. 970/kg (Dirgantoro, 2017). This significant price difference is clearly detrimental to farmers whose crops are priced very low.

To address this, farmers need to produce processed-cassava which has a higher selling value than fresh cassava or to sell to consumers without going through intermediaries/*cukong*. In this case, farmers need knowledge about cassava market conditions, cassava prices elsewhere, what processed products are currently sought by consumers, how to process derivative products and technology to process them. They also need a platform that is able to connect producers directly to consumers while observing market opportunities. In this case, ICT (information and technology communication) came in to provide wider market access to farmers. The platform used for ICT inclusion is e-commerce.

One cassava company that is able to apply ICT inclusion in Global Value Chain is Ladang Lima. Ladang Lima is a startup company from Pasuruan that has successfully exported processed-cassava products to United Kingdom since 2016. The company is innovating by processing cassava into versatile flour, as well as launching cakes and flour products "premix" while continuing to strengthen the distribution of their products nationwide. In 2017 Ladang Lima successfully export their products to UK and United States of America (USA). The company is processing fresh cassava into cassava flour which can be cooked for pastry and pasta (ladanglima.com, 2018).

Ladang Lima has a factory, covering an area of 3.3 hectares, and a 100 hectares of cassava cultivation farm in Pasuruan (cooperate with local farmers). It is a cassava farmer union managed by businessmen. Approximately 60% of their products are channeled directly to consumers through online sales (internet) and the rest goes into the industrial sector. The company managed to hook investor from Lima Ventura Co. and plans to use the additional capital to increase the marketing capacity and standardization of products to be ready for monthly export. The market targeted is the European and US markets. Export targets to Europe and the US are planned to run smoothly by 2019. One of their main goals is to support local cassava farmers' sustainability.

4 DISCUSSION

4.1 Global Value Chain (GVC)

Value Chain is a model developed by Prof. Michael Eugene Porter from Harvard Business School. This model describes a business process from raw material acceptance, processing, to products ready to be marketed to consumers. This includes innovation, research, development, feasibility trials, marketing, etc. The resulting product value is an aggregate of all values added in the process. Global Value Chain is a value chain that processes through integration of various countries by exploiting the comparative advantage of each country (Swadeshi, 2017).

With the exploitation of comparative advantage, each stage of production in GCV can be done with a specialization that enables the company to make efficiency. In addition, the risks involved in the production process are also shared between the owners of capital so that they are willing to take greater risks to increase the production rate in large quantities (Gereffi & Luo, 2014).

The core of Global Value Chain (GVC) is the value chain itself. All the activities in a value chain can be done by a single company or divided among a number of them. They can be placed within a single geographical location or spread over wider areas/countries. So Global Value Chain (GVC) is an international fragmentation of production chains.

Studies analyzing the trade flows of intermediate products between nations show that Global Value Chains (GCVs) are ubiquitous (Mudambi & Puck, 2016). They are operationalized through business strategies that incorporate significant amounts of offshoring and offshore-outsourcing (Contractor et al, 2010). In globalization era, the majority of developing countries are increasing their participating in GVC. GVC participation in developing countries is important for economic growth. Domestic value added from GVC trade can be very significant to local economies.

GVC gives us an understanding on the nature of the interaction between demand side and supply side in a specific sector and provides the analysis tool in developing an intervention to include small farmers in the value chain (Zylberberg, 2013). The author will use GVC perspective in identifying the opportunities for cassava farmers to increase their value chain by producing a higher value of product and processes as well as an effective tool for farmer empowerment.

4.2 Governance in Global Value Chain

The value chain governance is divided into producer-driven chains with the barriers to entry are capital and proprietary knowledge due to the existence of high technology; and buyer-driven chains in which the key barrier to entry is marketing costs, product design and market information (Gereffi et al, 1994).

The degree of standardization of product and process as a basis to divide the supply relationship is divided into three types: 1) commodity suppliers, depend on generalized assets and often produce standard products, do not connect directly to the customers, price is the key factor, and suppliers could switch easily, 2) captive suppliers, depend on dedicated assets, high connectivity with customers and tend to be found within symbiotic supplier networks, 3) turn-key suppliers, relatively independent stance toward their customers, high level of competence, ability to serve any type of customers and/or businesses (Sturgeon et al, 2001).

Gereffi et al (2005) use three key determinants of value chain patterns: 1) the complexity of transaction, 2) the ability to codify information, and 3) the capability of supplier. Based on those variables, there are five types of value chain governance structures:

- 1) The market, involve transaction that is relatively simple, typical spot market; repeated transaction and low switching cost for both parties
- 2) The modular, made by order to customers' specification, use generic machinery that limits transaction-specific investment and makes capital outlays for components and materials on behalf of customers
- 3) The relational, exist when buyers and sellers rely on complex information which creates mutual dependence and high level of asset specificity, such linkages require trust and generate mutual reliance regulated through reputation, social and spatial proximity, and family and ethnic ties
- 4) The captive, small suppliers are transactionally dependent on much larger buyers and faces significant switching cost (captive). Such network is frequently characterized by a high degree of monitoring and control by the lead firm
- 5) The hierarchy, characterized by vertical integration and dominated by a managerial control such as headquarters to subsidiaries and affiliates

Gereffi (2011) identifies some dynamics of global value chain governance, such as 1) shifting from market governance to relational by increasing complexity of transactions and reduces supplier competence in relation to new demands, 2) shifting from relational governance to market by reduce the complexity of transactions and greater ease of codification, 3) better codification of transactions to shift from relational to modular, 4) the other way around by de-codification of transactions, 5) increasing supplier competence to shift from captive to modular, 6) the other way around by decreasing supplier competence.

Table of dynamics in GVC governance (Gereffi, 2011)

Governance type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base
Market	Low	High	High
Modular	High	High	High
Relational	High	Low	High
Captive	High	High	Low
Hierarchy	High	Low	Low

With reference to Indonesia cassava value chain, all five archetypes of governance in the global value chain exist in Indonesia cassava value chain as well as opportunities to upgrade the linkage and benefit according to the dynamics in global value chain governance.

4.3 Potential Upgrading in the Dynamic of Global Value Chain Governance

Kaplinsky (2000) uses GVC framework to explain that inequality has expanded in spite of increasing integration of developing countries into the world economy due to these issues of governance and power symmetry. Humphrey et al (2010) states that small-holders are generally at a disadvantage when participating in GVCs for a multitude of reasons such as lack of information about market opportunities and technology, and they generally work through intermediaries and see marginal benefits from inclusion into value chains and not become a part of high-value activities concentrated in developed countries. To grab the potential gains for the farmers, the governance of the chain need to be changed due to a very fragmented production of small farmers and the varied of intermediaries quality in agricultural market (Humphrey et al, 2011).

Small-holders tend to participate in buyer-driven value chains, the power asymmetries present in these trading relationships hamper possibilities for upgrading into higher value-added activities

(Zylberberg, 2013). It causes a shifting from market governance to more relational, reduced the power asymmetries substantially but pushed the intermediaries on the supply side to produce more from their own farms rather than purchased from small farmers (Gereffi et al, 2005). It needs an innovative smallholder-based business model as a viable path out of poverty in countries with low labor costs, suitable climatic conditions, and basic infrastructural capacities (Zylberberg, 2013).

Global Value Chain or global production network is a revolutionary production system in the 21st century where the production and distribution of goods are jointly organized by several countries. In GVC, one production stage of a unified production process is conducted in one country while the next stage is done in another. GVC is possible because of the communications technology revolution (ICT) and logistics and the declining inter-state trade barriers that make goods and services move almost unimpeded from one country to another.

The level of state participation in GVC is largely determined by three things: communication technology (ICT), logistics, and economic openness (trade and investment rules). Indonesia still lags behind in those 3 aspects. In addition, there are other obstacles in the form of high-interest rates, relatively high labor costs compared to neighboring countries, limited access to the internet facilities, poor logistics performance, and complicated licensing process. For the food and beverage industry, many companies are constrained by the fulfillment of international standards, different specifications of goods between countries and difficulties to obtain local raw materials in accordance to the global demand.

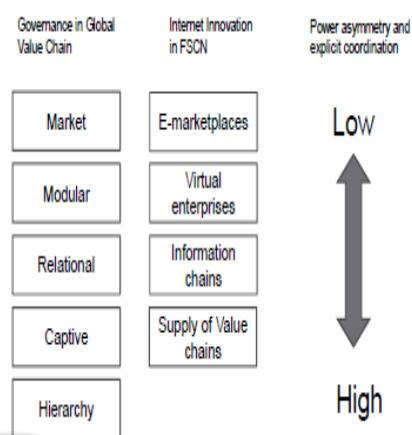
4.4 Potential Contribution from ICT Inclusion

The utilization of ICT in agribusiness could contribute in the areas such as access to a better technology in production system management, access to the market, and access to financial institutions (FAO, 2013). The role of the internet in the competition will reduce the competitive advantage by making information widely available; reducing the barrier to entry such as physical stores, sales force, and channel distribution; and creating a virtual market for more buyers and sellers (Porter, 2011).

Combination of global value chain governance reference with internet innovation in food supply chain network provides an opportunity for the

supply side (farmers) to get the benefit on the global value chain inclusion with internet adoption by lowering the degree of power asymmetry. In addition, we need to commoditizing a generic specification of product in the virtual market.

Below is the figure of combination between GCV governance and internet innovation (Gereffi, 2005 & Van der Vorst, 2005)



Consequently, by providing product at a basic level (raw products), the farmers will be located at the bottom of the value chain. Even though there is a possibility of utilizing internet for beneficiary of farmers, there are some issues in ICT adoption by small-holders. Stuart (2004) states that the success factor in information technology adoption is government projects related to the development of broadband infrastructures such as e-government and e-procurement. While Aleke et al (2010), based on the results of their research, stated that to ensure the success of the diffusion of an ICT adoption, a balance must be maintained between the work done during the design of information and communication technology with social factors such as language and lifestyle. Sangha et al (2010), which examine the role of ICT in the agriculture sector in India, states that the barriers in adopting information and communication technology (ICT) by farmers are the lack of training, inadequate infrastructure, and equipment costs.

5 CONCLUSIONS

Participation in cassava global value chain does not automatically improve the cassava smallholders' quality of life, but there is a room for improvement by riding the dynamic of global value chain governance. Information and communication

technology could help farmers to improve the level of complexity of transaction as well as increase farmers' ability to codify transaction by giving them access to virtual market and the latest technology & information about market needs.

A widely broadband infrastructure is a necessity to create an ICT ecosystem for the farmer communities (Stuart, 2004). Sangha (2010) adds the importance of device penetration on the market. Aleke (2010) adds the right application should be in place to complete ICT ecosystem. Broadband infrastructure deployment in farming area (rural) could face a profitability problem, decreasing trend of internet device price will automatically push the device penetration, and there are a lot of internet application in the market that provides the related info on technology (from cultivation to after-harvest processing) and last but not least is an adequate training to use it (Sangha, 2010) and induction of local context into the application (Aleke, 2010). Given the potential of cassava value chain, there is an opportunity for small farmer to shift their selling product to a more advanced product along the value chain by adopting the proper technology. Government and business communities could help them in technology adoption process and the form of farmer association could strengthen their position in many aspects.

It is concluded that global value chain (GVC) inclusion increases domestic value added, especially on the selling side, which holds across all income levels. The results highlight the importance of policy for economic upgrading through global value chain integration. Although a causal evidence cannot be claimed, all the assessed policy areas are consistently shown to mediate the effects of global value chains and magnify the gains for domestic value added (Kummritz et al, 2017).

E-commerce is an alternative to promote inclusive and integrated Global Value Chain. It can be one of the best method to fix GVC. In order to do that, we need to solve the problem from grassroots level, because producers—in this case farmers—are the center of gravity of fixing GVC. This will also help the government to build the national economy through villages. Fixing GVC can only be achieved if every country can manage the National Value Chains (NVC) within their own country.

For next research, a value chain analysis is needed. Value chain analysis (VCA) is a detailed description of a full range of activities and services required to bring a raw product from its initial state to a marketable commodity for delivery to final customers (Kaplinsky & Morris, 2000). It is a simple

and systematic way of evaluating an existing chain and assessing if a chain is viable. VC analysis allows anyone to do a VC awareness to provide some information to address the misinformation/misconception and allow people to see where the weak links are along the chain so the focus is on those whilst capitalizing on strengths. VC analysis is not only for farmers and retailers but also for policy-makers. So it is more than just about analysis. It should also lead to action and interventions, preferably by the government.

REFERENCES

- researchgate.net, (2009). *GVC Participation Index for Selected Non-OECD Economies*. [online] Available at: https://www.researchgate.net/figure/GVC-participation-index-for-selected-non-OECD-economies-2009_fig1_272498512 [accessed 7 June 2018]
- ladanglima.com, (2018). *About*. [online] Available at: <http://www.ladanglima.com>. [accessed 8 June 2018]
- Aleke, B., Ojiako U., and Wainwright D. W. (2011). ICT Adoption in developing countries; perspective from small-scale agribusiness. *Journal of Enterprise Information Management*, 24(1), pp. 68-84
- Ant. (2017). *Cuma Kantongi Skor 43.5, Indonesia Harus Manfaatkan Peluang Global Value Chain*. [online] economy.okezone.com. Available at: <https://economy.okezone.com/read/2017/11/20/320/1816999/cuma-kantongi-skor-43-5-indonesia-harus-manfaatkan-peluang-global-value-chain> [accessed 6 June 2018]
- Bappenas. (2015). *Strategic Direction for Indonesia. Realising the Potential for Growth and Jobs*. p 7
- Canadian Trade Commissioner Service/CTCS. (2013). *Applying Global Value Chain: An Introduction for SMEs*
- CIDP (Coconut Industry Development for the Pacific). (2017). *Workshop Report*. Pacific Coconut Sector Value Chain Workshop: Pacific Community
- Contractor, F. J., Kumar, V., Kundu, S. K. and Pedersen, T. (2010). Reconceptualizing the firm in a world of outsourcing and offshoring: The organizational and geographical relocation of high-value company functions. *Journal of Management Studies*, 47, pp. 1417-1433
- Dirgantoro, Kokok. (2017). *Bodo Amat, Pokoknya Indonesia Sampai Impor Singkong Itu Salah Pemerintah*. [online] mojok.co. Available at: <https://mojok.co/kokok-dirgantoro/esai/imporsingkong/> [accessed 6 June 2018]
- Gereffi, G and Luo, X. (2014). Policy Research Working Paper. *Risks and Opportunities of Participation in Global Value Chain*. P. 3
- Gereffi, G. (2011). Global value chains and international competition. *The Antitrust Bulletin*, 1(56), pp. 37-55

- Gereffi, G., Humphrey, J., and Sturgeon, T. (2005). The Governance of Global Value Chain. *Review of International Political Economy*, 12(1), pp. 77-104
- Humphrey, J., and Navas-Aleman, L. (2010). Value Chains, Donor Intervention and Poverty Reduction: A Review of Donor Practice. *IDS Research Report*, 63
- Kaplinsky R. and Morris M. (2000). A Handbook for Value Chain Research. *Report for IDRC*, 113 pp
- Kaplinsky, R. (2000). Globalisation and unqualisation: What can be learned from value chain analysis. *The Journal of Development Studies*, 37(2), pp. 117-146
- Kummritz, Victor, et al. (2017). *Economic Upgrading through Global Value Chain Participation: Which Policies Increase the Value Added Gains?* Policy Research Working Paper. World Bank Group: Trade and Competitiveness Global Practice Group
- Mangubhai Sangeeta, et al. (2016). Value Chain Analysis of the Wild Caught Sea Cucumber Fishery in Fiji. Wildlife Conservation Society and the Fiji Department of Fisheries. *Report No. 02/16. Suva, Fiji*, 66 pp
- Mudambi, Ram and Jonas Puck. (2016). A Global Value Chain Analysis of the 'Regional Strategy' Perspective. *Journal of Management Studies*, 53(6), pp. 1076-1093
- Muslim, Ahmad. (2016). Skripsi: *Prospek Ekonomi Ubi Kayu di Indonesia*. Fakultas Ekonomi Universitas Al Azhar Indonesia
- Nabhani, et al. (2015). Can Indonesia Cocoa Farmers Get Benefit on Global Value Chain Inclusion? A Literature Review. *Asian Social Science*, 11(18), pp 288-294
- Richie and Cendani, Cindy. (2017). *Memacu Laju UMKM Indonesia: Strategi Menapaki Global Value Chain*. [online] kumparan.com. Available at: <https://kumparan.com/cindy-chyntia/memacu-laju-umkm-indonesia-strategi-menapaki-global-value-chain-1509120963055> [accessed 6 June 2018]
- Sangha, A. S., and Rakshit, S. K. (2010). Role of ICT in the Agriculture Sector: A Study of Progressive Farmers, Malwa Region, Punjab India. *Proceeding of the AFITA 2010 International Conference*
- Stuart, L. (2005). Farmer Adoption of ICT in New Zealand. *The Business Review Cambridge*, 3(2), pp. 191-197
- Swadeshi, Noah Ikkyu. (2017). *Apa itu Global Value Chain (GVC)*. [online] himiespa.feb.ugm.ac.id. Available at: <http://himiespa.feb.ugm.ac.id/apa-itu-global-value-chain-gvc/> [accessed 8 June 2018]
- UN Conference on Trade and Development. (2013). *Global Value Chains and Development: Investment and Value Added Trade in the Global Economy. A preliminary analysis*
- Van der Vorst, J., Beulens, A., and van Beek, P. (2005). Innovation in Logistics and ICT in Food Supply Chain Network. *Innovation in Agri-Food System*, 10, pp. 245-292
- Widaningsih, Roch. Outlook Komoditas Pertanian Sub Sektor Tanaman Pangan: Ubi Kayu. 2016. Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian
- Yulianto, Agus. (2018). *Startup yang Ekspor Singkong Hingga ke Inggris*. [online] republika.co.id. Available at: <https://www.republika.co.id/berita/ekonomi/korporasi/18/02/12/p41pl8396-startup-yang-ekspor-singkong-hingga-ke-inggris> [accessed 6 June 2018]
- Zylberberg, E. (2013). Bloom or bust? A global value chain approach to smallholder flower production in Kenya. *Journal of Agribusiness in Developing and Emerging Economies*, 3(1), pp. 4-26.