

## A Review on the Competitiveness of Global Supply Chain in a Coffee Industry in Indonesia

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### INTRODUCTION

In order to be competitive in the world market, many exporting companies including the coffee industry in Indonesia have to meet the challenges and demands posed by the current global trading environment. According to Tsai and Lin (2009), the question is how these companies can use their competitive advantage in the global supply chain to run their global market operations. Globalization has restructured the business world and introduced the concept of a global supply chain; a global supply chain consists of companies networking and outsourcing all over the world (Prasad and Sounderpandian, 2003; Balan *et al.*, 2006). In a global supply chain, outsourcing has brought the promise of better margins and has become big business; there are many reasons for doing outsourcing. For example, outsourcing is a popular strategy for many industries to reduce production costs and enable the industries to focus on core competition (Ruiz-Torres and Mahmoodi, 2008). The reasons can be grouped into five areas: financial, technology, resource management, managerial and personal (Waters, 2007).

In the current global market, industries have to plan and design an effective supply chain, either upstream or downstream to provide the product to the customer. This is known as the concept of supply chain. In current global terms, supply chain management is now better known as global supply chain management and involves the fundamental balancing of supply and demand on a global basis (Reyes *et al.*, 2002). According to Manuj and Mentzer (2008), global supply chains are a source of competitive advantage. An effective supply chain provides opportunities to create competitive advantage (Tracey *et al.*, 2005). The effective management of a supply chain is measured by the decline in lead time, decline of raw material, improved product quality and efficiency which affect the company and business performance (Kannan and Tan, 2005). According to Smichi-Levi and Kaminsky (2000), business enterprises now focus on supply chain management to improve quality and lead-time. Indonesia's economy is not only

closely linked to and affected by the Asian economic region but also has to compete with the economies of the Asia-Pacific region and beyond. The Indonesian economy has to be prepared to face these challenges as well as exploit the opportunities that are available (Yohansyah, 1998). According to Balan *et al.* (2006), the supply chain in Asia tends to be fragmented and less competitive and lags behind the West. Many Indonesian companies are not adequately prepared to compete in a global free trade market. This is because of their low level of competitiveness. In order to meet the challenges of an accelerated global economy, global supply chains have become a key component. Many industries have developed effective global supply chains that deliver quality products at the lowest cost to end consumers. Consequently, these products and hence industries are able to dominate the global market (Yoon and Sil, 2004). This study will review on the competitiveness of global supply chain for the coffee industry in Indonesia.

**Literature review:** Coffee is one of the five most important commodities in the world market (Taylor, 2005; Gabriele and Vanzetti, 2005; Ponte, 2002). Furthermore, a report by Nestle (2004) described coffee as the second most important agricultural commodity on the world. Indeed as (McEwan and Allgood, 2001; Kaplinsky, 2004) have noted, the coffee industry is worth about US\$ 60 billion worldwide which effectively makes coffee the second most important commodity after oil with >25 million people depending on it for their livelihood. Since many coffee exporters come from developing countries, the profits generated by the coffee industry helps to facilitate the distribution of wealth from middle and high-income countries to developing countries. In addition, coffee exports also play a vital role in servicing foreign debt (Nestle, 2004).

Many developing countries open their economies to international trade and investment and develop export industries in order to obtain foreign exchange (Pritchard, 2004). In this context, coffee is an important source of foreign exchange for many developing countries

(Gabriele and Vanzetti, 2005; Brata, 2007). In some countries, coffee has also the power to influence foreign exchange rate of the host countries. However, the size of the influence depends on how big the coffee industry is in those countries; the bigger the industry the bigger the impact on foreign exchange. It has been shown that in countries like Ethiopia, Honduras, Nicaragua and Uganda, for example, coffee plays an important role in the macro-economy of these countries (Gilbert, 2005).

The profitability and economic power of the coffee commodity has influenced coffee producing countries to compete with each other in increasing their export trading in the international market (Kustiari, 2007). Vietnam, for example, the second largest coffee producer in the world has anticipated the need to upgrade and improve the country's coffee marketing process and the government is actively involved in this process. However, the coffee industry in Indonesia has to compete without any support from global partnerships or the government (Kopi Indonesia, 2009b). In comparison to other coffee exporting countries, the Indonesian coffee products are not competitive in the international markets due to the high production costs faced by exporters coupled with high transportation costs, port fees and lack of infrastructures. In turn, the productivity of the industry is affected resulting in products lacking the competitiveness advantage in the international market (Ramelan, 2005). These unfavorable factors have adversely affected the competitive advantage of the Indonesian coffee trading companies. In addition the supply chain in Indonesia is still inefficient because the principles and the underpin strategies good supply chain management have not been properly understood and hence implemented (Pujawan, 2005). The ineffective implementation of supply chain in Indonesia impacts adversely on the coffee industry in the early stages of the supply chain. For instance, farmers do not process the coffee to meet international standards because farmers do not have the knowledge and lack information regarding coffee processing (Kopi Indonesia, 2008a).

**Coffee industry in the global context:** Coffee is one of the most profitable commodities in world trade. The importance of coffee in the world economy cannot be overstated (<http://www.ico.org>). In many developing countries, the local coffee industry is the source of foreign exchange. Furthermore, its cultivation, processing, trade, transportation and marketing provide employment for millions of people around the world. According to the International Coffee Organization (ICO), 80% on average of foreign exchange earnings of developing countries come from coffee trading. It is also considered the major commodity traded in commodity exchange in London and New York. As an international commodity, coffee contributes significant foreign exchange earnings to coffee producing countries compared to other agricultural products. Table 1 shows that coffee contributes significantly to total exports and Gross Domestic Product (GDP) of coffee producing countries.

The trend in coffee consumption shows a steady increase in growth (Table 2). In 2002, coffee consumption grew by only 0.72%. Then it rose to 5.95% in 2008. The growth percentage from 2003-2008 was also consistent averaging around 4-5% every year. This indicates that the demand for coffee not only exhibits a consistent growth but also shows that coffee is becoming an increasingly important and viable export commodity in the world market. Thus the information that can be gleaned from Table 2 corroborates the information shown in Table 1 in terms of the role and significance of coffee as a commodity in the world market.

Table 3 shows the five biggest coffee producing countries in the world. On average 2000-2008, Brazil occupies the number one spot while Guatemala is the 5th biggest coffee producing country. However, among the five countries only Brazil and Indonesia have increased their coffee production. The others showed decreasing production. In terms of value, Brazil is the only country that does not register an increase among the big five. This is interesting because in terms of production Brazil has experienced an increase. (The ratio of production

**Table 1: The Role of coffee commodity in agriculture, national export and GDP in 5 biggest coffee producing countries 2008 (US\$ billions)**

Countries	Exported coffee	Total agricultural production value	Total national export	Gross Domestic Product (GDP)	Proportion of coffee on total agriculture	Proportion of coffee on national export	Proportion of coffee on GDP
Brazil	4.85	96.75	225.76	1612.54	5.01%	2.15%	0.30%
Vietnam	2.65	N/A	N/A	90.70	N/A	N/A	2.92%
Colombia	1.82	21.80	41.19	242.27	8.36%	4.42%	0.75%
Indonesia	0.94	72.01	154.32	514.39	1.31%	0.61%	0.18%
Guatemala	0.62	4.29	7.81	38.98	14.48%	7.95%	1.59%

Source: [www.ico.org](http://www.ico.org) and [www.worldbank.org](http://www.worldbank.org)

**Table 2: World domestic coffee consumption (000 bags) in crop years**

Years	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Total consumption	26375	27559	27758	28650	29999	31468	33337	35320
Consumption growth	-	4.49%	0.72%	3.21%	4.71%	4.90%	5.94%	5.95%

Source: [www.ico.org](http://www.ico.org)

Table 3: Ratio coffee production per value for the biggest five coffee producing countries

Countries	Dimensions	2007	2008	Average 2000-2008
Brazil	Total production (000 bags)	36070	45992	37418.3333
	Export value in US\$ (millions)	4592.794	4592.794	4592.79379
	Ratio	7.853608	10.01395	8.14718341
Colombia	Total production (000 bags)	12515	10500	11680
	Export value in US\$ (millions)	1609.59	1821.885	1247.86277
	Ratio	7.775273	4.741244	11.5508229
Vietnam	Total production (000 bags)	16467	16000	14931.2222
	Export value in US\$ (millions)	530.7413	620.8645	468.768833
	Ratio	31.02642	5.427915	38.1548036
Indonesia	Total production (000 bags)	7777	8638	7505.33333
	Export value in US\$ (millions)	591.0264	943.5063	636.756965
	Ratio	13.15846	9.155212	14.7605086
Guatemala	Total production (000 bags)	4100	3370	3898.66667
	Export value in US\$ (millions)	2554.768	2646.335	1680.64875
	Ratio	1.604842	3.967752	3.23768711

Source: www.ico.org

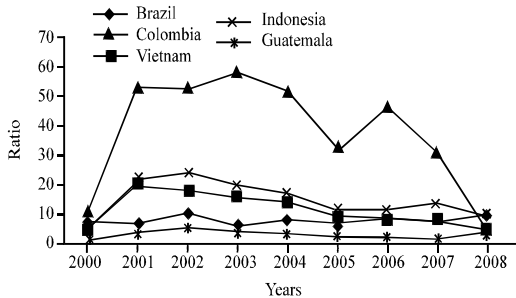


Fig. 1: Ratio coffee production per value

and export value is employed to figure out the total value obtained by each country on its one unit production). Figure 1 provides information on coffee production per value of the five biggest coffee producers in the world. As can be seen, Guatemala has the lowest ratio among the five countries for the period 2000-2008 while Brazil, the biggest world coffee producer was on average the country with the highest ratio for the same period, except in 2008. This means that Guatemala's coffee has more value compared to Brazil's coffee. It indicates that the supply chain in Guatemala is more efficient than in Brazil. In the case of Vietnam it has shown a rapid increase in value.

It is significant to note that while Vietnam's coffee production decreased in 2008, the value, however showed a steady increase. This indicates that the supply chain in Vietnam has become increasingly more efficient. Accordingly as Fig.1 indicates Vietnam moved from being the country with the lowest value to one with the highest value in coffee production. On the other hand countries like Indonesia, Brazil and Colombia have fluctuating ratio of value which indicates that the coffee value of these countries is not stable.

**Coffee industry in the context of Indonesia:** Indonesia, one of the biggest coffee exporters in the world has

1,309,505 ha of land cultivated with coffee. This area is spread over 31 provinces. This makes Indonesia the 2nd largest coffee trader in terms of utilized area for coffee plantation. However, in the past few years coffee commodity productivity has declined significantly. Hence, this problem needs further investigation to ascertain the reasons behind the decline in productivity. The problem can be investigated from two perspectives that is production or quality.

According to the General Director of Plantation in the Agriculture Department Jakarta, Achmad Mangga Barani, (Kopi Indonesia, 2008a). Even though Indonesia is the world's 2nd largest coffee trader in terms of cultivated area, in terms of production and export it is only at 4th position out of the big five exporters. Currently, Indonesia's coffee productivity of 792 kg dry coffee bean per hectare per year is far below that of Columbia (1,220 kg/ha/year), Brazil (1,000 kg/ha/year) and even Vietnam (1,540 kg/ha/year). Of the 1.3 million ha in 2006 as shown in Table 4, most of it (95.9%) is cultivated by smallholders while the rest (4.10%) is under plantation companies, either PTPN or Private. The General Directorate of Plantation revealed that currently most coffee plantations in Indonesia cultivate Robusta coffee (1.3 million acres) and Arabica coffee (177,100 acres). The total production was 682,158 tons and the export was 413,500 tons in 2006. This is equal to USD 586,877. Further in 2007, the total national coffee production was 686,763 tons harvested from 1.3 million acres. In order to improve the competitiveness of the Indonesian coffee industry in the international market by 2025 a long term strategy will be implemented to enhance coffee exports and value to national coffee added products.

Barani's comments are corroborated by Razali who also states that in 2008 the total Indonesian coffee production was 689,140 tons, composed of Robusta coffee 557,190 tons (81%) and Arabica coffee 131,950 tons (19%) while Indonesia's coffee plantation area

Table 4: The contribution of the coffee commodity to Indonesia's Gross National Product (GNP)

Years	Foreign exchange value (million US\$)			Total GNP	Share (%) Coffee		
	Coffee commodity	Agriculture sector	Non-oil sector		Agriculture sector	Non-oil sector	GNP
1993	335.366	2,644.20	27,077.10	36,823.00	12.68	1.24	0.91
1994	723.468	2,818.40	30,359.70	40,053.40	25.67	2.38	1.81
1995	619.439	2,888.30	34,953.40	45,418.00	21.45	1.77	1.36
1996	627.655	2,912.70	38,092.90	49,814.90	21.55	1.65	1.26
1997	604.458	3,132.60	41,821.10	53,443.60	19.30	1.45	1.13
1998	597.598	3,653.50	40,975.30	48,847.60	16.36	1.46	1.22
1999	444.409	2,901.50	38,873.20	48,665.40	15.32	1.14	0.91
2000	316.107	2,709.10	47,757.40	62,124.00	11.67	0.66	0.51
2001	215.805	2,438.50	43,684.60	56,320.90	8.85	0.49	0.38
2002	281.157	2,568.30	45,046.10	57,158.80	10.95	0.62	0.49
2003	222.922	1,861.10	35,413.50	45,804.70	11.98	0.63	0.49
2004	251.922	2,496.00	55,939.00	71,584.00	10.09	0.45	0.35
2005	316.224	1,308.00	42,924.00	55,177.00	24.18	0.74	0.57

AEKI (2007)



Fig. 2: Coffee producing areas in Indonesia (Indonesia investment co-ordinating board)

of 1,309,184 ha is the world's second largest after Brazil's with 2.3 million ha in terms of coffee production Indonesia only occupies the world's fifth position (Kopi Indonesia, 2009a). If Barani and Razali are referring to the coffee commodity supply chain in Indonesia and comparing it to the big five world coffee exporting countries it is obvious that Indonesia's coffee productivity is far behind that of Brazil, Colombia and especially Vietnam. Even though, Vietnam is a new comer to the big five world coffee exporters, the coffee value and the ratio of Vietnam cannot be underestimated and is in fact higher than that of Indonesia.

In addition Barani's comments corroborate the findings shown in Table 3. The absence of a well-organised and managed supply chain has contributed to the low ratio of coffee production in Indonesia. The coffee producing areas in Indonesia is shown in Fig. 2. According to Table 4, the increase in the value of coffee exports will significantly influence the value of the GNP. For example, in 1994 the value of coffee exports had a direct influence on the increase in foreign exchange income and vice versa. As stated earlier, coffee is one of

the important commodities in Indonesia. Coffee contributes considerable foreign exchange to state revenues, in Table 4 compared to the agricultural sector, non-oil sector and total GNP as a whole. In terms of the ratio of the value of coffee compared to the agriculture sector, the foreign exchange income contribution of coffee reached 25.67%. If it is compared to the non-oil sector, it is 2.38%. Lastly, the percentage of coffee value on GNP is 1.81% which is the highest compared to all the other commodities. These numbers show the significant contribution of coffee on GNP.

According to Table 3, although, in terms of production area, Indonesia has a much larger area under coffee cultivation than Vietnam and Columbia the value of Indonesia's coffee exports had low ratio compared to Vietnam, Colombia and Brazil in 2008. Vietnam, a country with less coffee utilized production area has a higher ratio and export value than Indonesia. Table 5 shows that the productivity of the coffee industry in Indonesia is far below that of other coffee-producing competitors such as Colombia, Vietnam and Brazil. This clearly indicates the

Table 5: Coffee plantation areas and coffee production in Indonesia

Provinces	Utilize area		Production			Productivity (ton)
	(Ha)	(%)	Years	Tons	(%)	
Bali	1,385	2.397	2006	14,309	1.683	0.456
Bangka-Belitung	43	0.003	2006	14	0.002	0.326
Banten	9,827	0.750	2006	2,509	0.295	0.255
Bengkulu	21,579	9.284	2006	63,757	7.500	0.524
Daerah Istimewa Yogyakarta	1,832	0.140	2006	396	0.047	0.216
Irianjaya Barat	8,318	0.635	2006	2,583	0.304	0.311
Jambi	24,458	1.868	2006	10,190	1.199	0.417
Jawa Barat	21,723	1.659	2006	7,719	0.908	0.355
Jawa Tengah	39,289	3.000	2006	14,268	1.678	0.363
Jawa Timur	91,801	7.010	2006	50,132	5.897	0.546
Kalimantan Barat	13,937	1.064	2006	4,303	0.506	0.309
Kalimantan Selatan	7,701	0.588	2006	2,810	0.331	0.365
Kalimantan Tengah	8,133	0.621	2006	3,804	0.447	0.468
Kalimantan Timur	17,469	1.334	2006	4,614	0.543	0.264
Kepulauan Riau	156	0.012	2006	14	0.002	0.090
Lampung	164,006	12.524	2006	141,305	16.623	0.862
Maluku	7,964	0.608	2006	1,469	0.173	0.184
Maluku Utara	3,129	0.239	2006	457	0.054	0.146
Nanggroe Aceh Darussalam	107,544	8.213	2006	41,894	4.928	0.390
Nusatenggara Barat	13,937	1.064	2006	4,979	0.586	0.357
Nusatenggara Timur	69,211	5.285	2006	188,972	22.230	2.730
Papua	708	0.054	2006	218	0.026	0.308
Riau	10,816	0.826	2006	3,804	0.447	0.352
Sulawesi Barat	26,730	2.041	2006	12,857	1.512	0.481
Sulawesi Selatan	1,622	5.469	2006	30,257	3.559	0.422
Sulawesi Tengah	10,714	0.818	2006	2,987	0.351	0.279
Sulawesi Tenggara	10,703	0.817	2006	3,682	0.433	0.344
Sulawesi Utara	9,579	0.731	2006	5,951	0.700	0.621
Sumatera Barat	48,714	3.720	2006	29,615	3.484	0.608
Sumatera Selatan	276,864	21.143	2006	150,167	17.665	0.542
Sumatera Utara	79,613	6.080	2006	50,032	5.886	0.628
Amount	1,309,505	100.000	-	850,068	100.000	0.649

Indonesia plantation statistic 2006-2008; General Directorate of Agriculture Department

Table 6: Total coffee plantation areas and production in Indonesia 1989-2009

Years	Total coffee plantation area (ha)	Total coffee production (ton)
1986	935,119	356,822
1987	961,640	388,669
1988	1,025,947	391,095
1989	1,036,550	401,048
1990	1,069,848	412,767
1991	1,119,854	428,305
1992	1,133,898	436,930
1993	1,147,567	438,686
1994	1,140,385	450,191
1995	1,167,511	457,801
1996	1,159,079	459,206
1997	1,170,028	428,418
1998	1,153,369	514,081
1999	1,127,277	531,689
2000	1,260,687	554,574
2001	1,313,383	569,234
2002	1,372,184	682,079
2003	1,291,910	671,629
2004	1,303,943	647,386
2005	1,255,272	640,365
2006*	1,263,626	652,668
2007**	1,279,294	665,529
2008**	1,295,312	678,388
2009**	1,311,330	691,249

\*Estimate; \*\*Tentative estimate; Directorate General Agriculture and Estate Crops 2007

weakness of the coffee commodity management system in Indonesia. On the whole the productivity levels of the big plantation and estates are. On the other hand where the plantations are managed by private owners the productivity levels are much higher such as productivity coffee commodity of the province of Nusatenggara Timur has the highest productivity level compared to all the other provinces in Indonesia.

But in other side, coffee productivity in Indonesia (1,309,505 ha only have productivity 0.649%) is low compare to Colombia, Vietnam and Brazil as stated by Achmad Mangga Barani.

Thus, while the development and growth of the coffee industry in Indonesia has seen a steady expansion since 1986 from 935,199 ha in 1986 to 1,311,330 ha (estimate) in 2009, as shown in Table 6 and made Indonesia a major world coffee exporter, the industry itself is still plagued by low productivity levels. Given that there are not only significant differences in productivity levels between provinces but also huge differences between in terms of percentages there is an urgent need to investigate further to ascertain the reasons behind such

a poor performance especially in relation to the role of supply chain in Indonesia and whether it is being managed and implemented in an efficient way.

**MATERIALS AND METHODS**

**Supply chain implementation and the coffee industry in Indonesia:** In this era of globalization, the concept and implementation of a supply chain is an integral component of industrial activity. The supply chain concept and its mechanism has been a part of industrial activity for some time now and the definition of supply chain management was first introduced by Oliver and Webber (1982) (Lambert *et al.*, 1998; Pujawan, 2005). A supply chain refers essentially to the processes and activities that transform a product from its raw state until it is sold to a customer. However, in the case of Indonesia the development of supply chain is still in its infancy and even when they exist, they are inefficiently managed because as Pujawan (2005) point out many crucial aspects relating to the concept and implementation of supply chains have not been clearly understood.

The coffee industry, like all industries cannot function effectively without a supply chain. For coffee the chain is usually complicated and differs from country to country but in general it includes: growers, intermediaries, processors, government agencies, exporters, dealers/brokers, roasters and retailers. Generally, the

supply chain of exported commodities is a long one starting from the farmers (producers), collectors, traders/cooperation, big traders, exporters, importers, retailers and finally the consumers. In the context of coffee before the final product is made available to consumers, the intermediary agents of the supply chain that is the importer and the processor (industry) will have to play their roles. The importers will sell the commodity to the industry (as the processors) to process the raw commodity and produce the finished product which is then sold to the distributors or wholesalers. Then the wholesalers will sell to retailers of all levels from supermarkets and shops to coffee shops and small shops before it is sold to the consumers (Suhendra, 2008). The illustration of the coffee supply chain can be seen in the Fig 2 and 3. The supply chain implementation for the coffee industry in Indonesia is currently managed by Non-Government Organizations (NGO) such as the Aceh Partnership for Economic Development (APED) through the United Nations Development Program (UNDP) which aims to improve efficiency through supply chain modification (APED Newsletter). Besides that the Special Coffee Association Indonesia (SCAI) supported by the Agribusiness Market and Support Activity (AMARTA) under the United States International Development Agency (USAID, 2009) also created a kopi luwak supply chain for the coffee farmers guild of Sidikalang/Anggota Petani Kopi Sidikalang (ASPEK) with

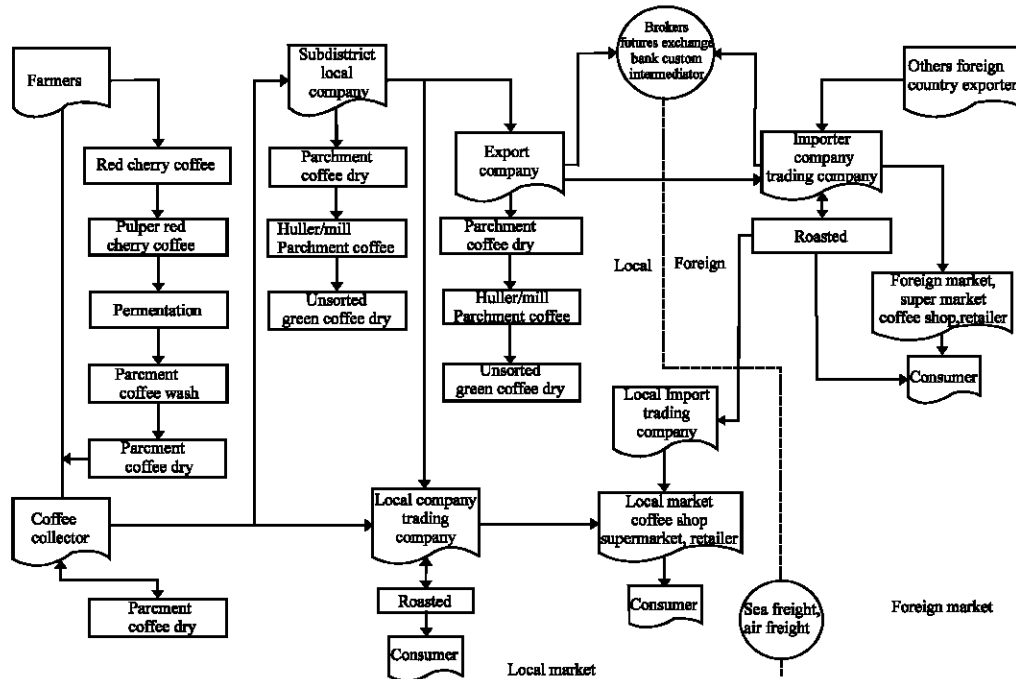


Fig. 3: Coffee supply chain in Indonesia (Nestle, 1999; Suhendra, 2008; Ibrahim and Zailani, 2009; Baburrayyan, 2008)

the objective of securing premium coffee price for the farmers (<http://www.wamarta.net>). The traditional marketing system has been taken over by supply chain, due in general to the private sector and also market driven forces that influence coffee as a world commodity (Evens and Mawardi, 2008).

However, despite the problems with productivity and value associated with the coffee industry in Indonesia, the pace of development of the coffee industry in Indonesia has been steadily increasing. For example production and sales of coffee products such as instant coffee, tinned coffee, liquid extract coffee and powdered coffee have registered significant increases. And some of the companies dealing in these products have managed to make inroads into the international market. One such company is PT Aneka Coffee Industry (ACI) which is located in Surabaya. In terms of production, this company focuses on a business to business strategy by using forwards contracts. PT ACI can produce 3,600 tons of processed coffee each year with 70% for export and 30% for the local market. The raw coffee beans are sourced from a number of coffee bean supply centers in Indonesia. Additionally, this company also acts as a distributor for specialty coffee from Central America and Africa for consumers who prefer mixed coffee (Kopi Indonesia, 2008b).

Besides PT ACI, there is PT Indraco in Surabaya which has also developed its market by working with coffee agents who are based in the big Indonesian cities. PT Indraco is able to produce 3 tons of powdered coffee every day. Apart from these two companies other coffee producers and manufacturers who are also doing well are UD Putra Mandiri which produces the CAP SINGA labeled coffee; PT Perkebunan Bina Nusantara XII which has a direct outlet to reach end consumers and also produces the Luwak (Ferret) coffee priced at Rp. 275.000 for each 250 g (Kopi Indonesia, 2008c). Another coffee manufacturing company is PT Kapal Api which has already penetrated the international market.

However, these companies face competition from Singapore and Malaysia in that when there is an inefficient and ineffective supply chain among Indonesian coffee producers and manufacturers the domestic market will intervene by importing coffee products from these two countries. It is also worth noting that the recent financial crisis has adversely affected the development of the coffee industry in Indonesia. The crisis has not only affected the exporters but also the farmers due to the decline in coffee prices. Another issue that Indonesian exporters have to confront is the uncertainty of payment from foreign importers. On account of this uncertainty many coffee exporters in Indonesia have to cancel or

delay their overseas exports (Widjaya, 2008). The uncertainty in payment is a result of the fact that the Indonesian coffee industry does not have a systematic and uniform supply chain infrastructure. Since the Indonesian coffee industry lacks an efficient and effective global supply chain to market its products successfully it has led to a situation whereby the Indonesians have failed to build a network of importers which would ensure that there is no disruption in orders and payments.

**Issues:** One of the effects of the global economic crisis of the past few years has been the reduction in demand for goods and services. This in turn has led to the excess in supply and production. The coffee industry in general and the new cultivation areas which have provided extra employment opportunities have not been spared these effects. The oversupply of coffee as a consequence of decreased demand has led to unemployment and retrenchment of workers. In addition all the elements that make up the supply chain from coffee producers/exporting companies to coffee retailers and supplies to end users have been adversely affect. Indeed, many companies have reduced their production activities or even closed their outlets around the world in order to save or reduce operational costs as well as to minimize loss in profits. In order to overcome the effects of the global economic melt down, Cooper *et al.* (1997) and Dowst (1988) suggest that planning and control are needed to reduce supply chain inventory and improved cost efficiency. If such measures are implemented, retailers, exporters and importers may be able to survive the crisis.

Furthermore, the impact and role of global supply chain has to be explored by investigating the driver factor of global supply chain, either externally or internally. According to Reyes *et al.* (2002), the drivers of global supply chain management are low cost of material, labor, product availability, advanced technology and product quality. However, as Meixell and Gargeya (2005) state there are constraints that affect developing countries from achieving global supply chain competitive advantage and these constraints are culture, language and lack of infrastructure such as transportation, communication, skilful labor and technology utilities and the equipment. Wood *et al.* (2002) and MacCarthy and Atthirawong (2003) claim that global supply chain is more difficult to manage than domestic supply chain while Tsai and Lin (2009) claim that supply chain management becomes more complicated when it is related to global supply chain management. In supply chain, geographical distance is the crucial factor that affects increase in transportation cost, inventory and lead-time (Meixell and Gargeya, 2005). Similarly, Eksioglu *et al.* (2008), state that substantial

geographical distances in global supply chains not only results in higher transportation costs but forces complicated decisions in inventory policies because of trade-offs between inventory cost and increased lead-time. Furthermore, as Dornier *et al.* (1998) note unique risks including variability and uncertainty in currency exchange rates, economic and political instability and changes in the regulatory environment have significant impact on companies' market performance.

Theoretically, all coffee retailers, importers and exporters have to implement a global supply chain mechanism in their operations in order to survive in the global market. Yoon and Sil (2004) state that in terms of globalization, a global supply chain is the most important element that will ensure the success and ability of a company to compete in the global market and help it to increase its market share. By setting up a global supply chain, a company will be able to establish itself as a global industry with a worldwide distribution network. Globalization makes it imperative for companies to explore and create effective ways to manage and control production and exports and in the process maximize profits. This global orientation can also increase performance (Mentzer *et al.*, 2001). By going global, a company can exploit the opportunities available to increase market growth and sales (Yoon and Sil, 2004). Given that the creation, implementation and management of a global supply chain is seen as a crucial step in ensuring the success and profitability of a company, it remains to examine further how the concept of a global supply chain can be effectively introduced and implemented with regard to the Indonesian coffee industry. Two pertinent questions need to be investigated. Firstly would the introduction and implementation of a global supply chain have a significant impact on the Indonesian coffee industry and secondly would it be possible for a company to perform well without the use of a global supply chain?

Indonesia is the fourth largest coffee exporting country in the world. The most recent problem that the Indonesian coffee industry faces is the low quality of its coffee which has affected its competitiveness in the international market. The relatively low price of Indonesian coffee in the international market is a consequence of the low quality of harvested coffee. The poor and inefficient production process is the primary cause (Kustiari, 2007). The poor quality of the coffee is caused by the termination of the first element that makes up the supply chain in the coffee production process. Consequently, the other elements that make up the supply chain are also affected leading to a production process that is inefficient and produces coffee of low quality.

While this situation may affect most Indonesian coffee producers, it is still the case that where the production of Indonesian specialty coffee is concerned, the industry is able to produce quality specialty coffee that is on par with premium Columbian or Jamaican coffee. However, despite this on the whole the Indonesian coffee commodity price is cheaper. In order to improve the overall quality of Indonesian coffee it is necessary to put into place an efficient and effective global supply chain because as Bozarth *et al.* (1998) point out, quality is the important measurement in global supply chain management.

This means that if the Indonesian coffee industry has an efficient and effective global supply chain, it would be able to control and ensure the quality of its coffee exports. Similarly, as Hult and Thomas (2004) points out an effective global supply chain, management can increase a company's competitive advantage. The implementation of a global supply chain helps industries to structure their operations in a systematic way which then allows them to have control over all the processes of production and export. As Klassen and Whybark (1994), Prasad and Sounderpandian (2003) and Balan *et al.* (2006) have noted a global supply chain provides industries with the opportunity to develop extensive global networks which will then lead to competitive advantage over their rivals. This is achieved through increase in product quality and lead-time. Indeed, with increasing globalization, industries cannot possibly function effectively without a global supply. Waters (2007) notes the interlocking relationships that exist among exports determinants make it imperative that exporting industries have an efficient global supply chain.

In a coffee quality/grading exercise based on a multistage selection of 220 coffee bean samples from Indonesia carried out in Jakarta in 2008 by the Indonesian Coffee Exporters Association the 220 samples were divided into two groups: 136 samples of Arabica coffee beans and 84 samples of Robusta coffee beans. It was revealed that 63 (28%) of the samples passed the quality test. However, what is more important to note is only 27 (12%) coffee samples of Robusta and 36 (16.4%) of coffee samples of Arabica passed the quality test. The rest of the samples of 157 (71.4%) did not pass quality test. It indicates how low the quality of Indonesian coffee is. The reason why most of the samples did not pass the quality test was because of soil or fungi contamination. And this is a direct result of the poorly managed production process. The purpose of this quality test was to explore the potential of specialty coffee in Indonesia so that the Indonesian industry would be able to make inroads into the global market and sell the coffee at premium prices (Kopi Indonesia, 2009b). Apart from improving the



production process it would also be necessary as Yoon and Sil (2004) points out for the exporters to implement product specification. Like all exporting industries the coffee exporters are equally affected by forces that operate in the international market. One such force is currency volatility which constitutes a major as the fortunes of the exporters are affected by monetary policies and governments which are outside their control. For example the of the US dollar in export trading. Christopher and Lee (2001) state that the inherent risks present in a global supply chain include market risk such as exchange rates and natural disasters. Another obstacle that the coffee industry faces is that of coffee certification. Coffee certification as Inman and Hubler (1992) suggests is intended to guarantee the quality. Coffee certification means that importing companies have to control and limit their imports because the purchasing has to be traced.

According to Leenders companies in selecting suppliers always base their decisions on whether suppliers can meet the quality, quantity, delivery and service expected. In this regard an exporter that possesses certification will meet the criteria set by the importers and hence will be able to sell its coffee at premium prices. Certification, therefore, bestows an added value to a company by increasing its competitive advantage in international trading. However, underlying all this is the fact that the company must maintain a tight control of its supply chain coordination. If not, an imbalance in supply and demand along the entire level of the supply chain would result. For example, big companies must be able to coordinate the activities of smaller companies which make up their supply chain because if the smaller companies are inefficient in some way it would affect the entire supply chain of the big companies and in the long run affect the credibility and reliability as exporters. Besides supply chain coordination, companies must also strive to make accurate and visible forecasting for all levels of the supply chain level to increase the bottom line (Aberdeen Group, 2006).

In 2003, Indonesia agreed to become a member of the ASEAN Free Trade Area (AFTA) but it is only in 2010 that the Indonesian government will have to abide by the rules and regulations as set down by AFTA (Yohansyah, 1998). Furthermore, Yohansyah (1998) states that in 2020, Indonesia will join the General Agreement on Tariff and Trade (GATT), Asia Pacific Economic Cooperation (APEC) and the World Trade Organization (WTO). This indicates that the Indonesian economy will have to prepare itself to face international trading competition because by joining these various trading bodies the international players will have freer access to the Indonesian economy. According to Diederichs and

Leopoldseeder (2008), one of the key challenges faced by companies in developing countries is how to achieve cost effective production and delivery schedules in the face of poor infrastructure and labor skills and complex government regulations. They add these factors hinder the efficient and punctual production and delivery of products which directly opens up the companies to risk and eventually affects company performance and product profitability. While in theory, a global supply chain should work efficiently, in reality global supply chains are affected by local and global conditions which impact on the actual performance of the global supply chains.

It is obvious, therefore that for the Indonesian economy in general and the coffee industry in particular to develop its efficiency and cost productivity in order to face the challenges of globalization and the opening up of its own economy to foreign players, the implementation of a well structured and maintained global supply chain is needed. As discussed before, one of the major problems holding back the Indonesian coffee industry is the absence of an integrated global supply chain infrastructure.

## **RESULTS AND DISCUSSION**

According to Tracey *et al.* (1999), price/cost, quality, delivery and flexibility have an impact on the competitiveness of firms. The development of a theoretical framework for a global supply chain for coffee industry in this study is to investigate its impact on the competitive advantage of companies through an examination of internal and external drivers or motivators for the setting up of a global supply chain for the coffee industry and the moderating effects of barriers on the relationship between internal and external drivers and the global supply chain for the coffee industry. This study is expected to contribute further knowledge; especially about global supply chain and its positive effects on competitive advantage in coffee commodity trading.

## **CONCLUSION**

The practical applications of the findings of this study could be used by all stakeholders in the Indonesian coffee industry to improve the quality, production and supply of Indonesian coffee locally, regionally and international. This could be achieved through the application and implementation of a global supply chain predicated on a theoretical framework. Apart from the Indonesian context, the suggestions and framework could also be used by other similar industries in other developing countries to improve their competitive

advantage. From a wider perspective the theoretical framework could also be used as a basic template for other industries that are looking for ways to improve their competitive advantage. The application of the suggestions and theoretical framework would provide useful insights into management styles, corporate decisions and the day to day running of industries and help to identify inherent weaknesses and provide solutions.

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