

WORLD TRADE OF CASSAVA WITH SPECIAL REFERENCE TO THAILAND

¹Prof. Vilas Bhikaji Khandare, ²Mr. Pholwat Choomsook

¹Head Department of Economics, Shri Asaramji Bhandwaladar College,
Deogaon, Dist. Aurangabad, M.S., India-431115.

²Department of Economics, Faculty of Social Sciences,
Mahachulaongkornrajavidyalaya, University, Bangkok, Thailand

ABSTRACT

The main object of this research is to examine the share of Thailand in the trade of world cassava and Thai trade of cassava during the period from 2008-09 to 2016-17. Total export of Thailand in agricultural products was 1,355.50 trillion Thai Bath, which increased from 2016 about 1,216.72 trillion or equivalent to 11.41 percent. On an average the share of Thailand in total export of world cassava flour and starch was 88.39 percent; Thailand world export of cassava flour and starch went up from 84.21 percent to 86.57 percent in 2016-17. The share of Thailand in total export of world cassava chips and pellets was on an average 63.69 percent and recorded 6.79 percent average annual growth rate. The share of Thailand in world export of chips and pellets decreased from 82.26 percent to 54.47 percent. Thai trade of cassava flour and starch was highest 32.17 percent with China followed by 19.56 percent with other countries. It is found that the trade of Thai cassava flour and starch decreased in case of Japan (14.94 percent to 9.72 percent) and Taiwan (13.70 to 6.92 percent). Whereas, China increased from 24.43 percent to 41.69 percent and the share of Indonesia increased from 12.36 percent to 25.94 percent. It is found that major trade of cassava chips and pellets of Thailand was shared by the China which shows on an average 98.72 percent.

Keywords: World Trade, Cassava Flour, Cassava Chips, Cassava Pellets, Cassava Starch

INTRODUCTION

Cassava is the fifth most important world food crop after wheat, maize, rice and potatoes. It is a vital food crop in tropical regions especially those in Africa and South America, while countries in Asia that consume cassava a lot are Indonesia and India. Cassava is a tall semi-woody perennial shrub that can easily cultivate and can grow in low-nutrient soil and tolerate drought as

well as it has an enormous ability to adapt to different climates (Office of Agricultural Economics). Southeast Asia and East Asia are the major global trade flows in cassava in these region the commodity is in the form of processed products, chips, pellets, flour and starch competes fiercely with domestic as well as other imported substitutes. The China has accounting for approximately 80 percent of world trade of cassava and become the principal destination for internationally traded cassava products. China has using the cassava product for ethanol, food processing, animal feed and industry. Many countries of the Southeast Asia and East Asia region including several Least Developed Countries have made heavy investment in the cultivating cassava, gearing their sectors towards satisfying regional demand in the lucrative Chinese market. In China the demand for cassava almost entirely shaped by domestic policies for grains, especially maize, this constitutes cassava's chief rival.

Cassava roots can be converted through processing into lot of food and it is capable crop to provide food security. For great value add and profit making the machine application for cassava roots processing has helpful. In case for drying of cassava product the farmers of villages were depend on the sun. The farmers were obtaining firewood from forests and use fossil fuel from petroleum to power the tractor and small internal combustion engine (Oladele).

Thailand is the world leader in the cassava production although cassava is not a native crop, not good collaboration between the private sector and farmers and do not have strong support from the government (Watananonta). Cassava is one of the most important food crops in the humid tropics and called as manioc, tapioca or yucca, being particularly suited to conditions of low nutrient availability and able to survive drought (Burrell). Though the cassava leaves are sometimes consumed but it is the major harvested organ is the tuber, which is actually a swollen root. The plant is propagated mostly from stem cuttings. A major limitation of cassava production is the rapid post harvest deterioration of its roots is a major limitation of cassava production which usually prevents their storage in the fresh state for more than a few days (Okezie and Kosikowski).

In the tropics after rice and maize cassava is the third most important source of calories. In Africa, Asia and Latin America most millions of people depend on cassava product. In the world for more than half a billion people cassava crop is an essential part of the diet and it provides to millions of farmers, and many processors and traders a livelihood. Nigeria, Brazil, Thailand, Indonesia and the Congo Democratic Republic these five countries have almost 60 percent of world cassava production. Mostly the world trade in cassava is in the form of pellets and chips for feed (70 percent) and followed by in the form of starch and flour. Thailand is a dominant supplier of the cassava product in the world with accounting 80 percent global trade of cassava. Overcoming the competitive advantage that Thailand possesses in exporting cassava products

will prove a daunting challenge, particularly in the feed and starch markets. The future growth market for cassava is the Emerging demand for bio-fuels (Adam, (2005).

REVIEW OF LITERATURE

The market for cassava products is highly potential for the growth in the food and starch sector in ESA signals. The study recommended that the use of improved varieties, fertilizer, mechanized production techniques, and improved agronomic practices, is required to increase production efficiency (Adebayo, Nicholas, Roger, Monde, Ivor, Steffen, Beatrice and Nicolaus, 2013). There is decline trend in the value of manufactured exports which registered in 1996 was taken as evidence of a loss of competitiveness of the Thai industry. Thai cassava industry cannot be attributed to higher wages in the 1990s. Product and market diversification has given high priority; Thailand is reliance on its top export items like electronic products which is increased significantly in recent years (Shafiq and Philippe, 2002).

There were negative trends in production of cassava in the Thailand during the study period. The cassava production decline from 20 million metric tons of 1992 to 15 million metrics tons of 1998. It is also found that the cost of cassava production was increased in Thailand. Thailand processed cassava mainly chips, pellets, starch, flour and alcohol. Though the total export of the cassava has been declined during the study period; Thailand is the major supplier of the cassava product in the world during the study period (Tsorng, Kamol and Narumol, 2001). Cassava and its flours have low values in protein, fat, and minerals thought having major sources of carbohydrates. The study stated that the cassava flour remains restricted to cooking sima, baking, and brewing in Malawi. Diversifying and promoting cassava flour use is found to be desirable (Kalenga Saka, 1996).

In case of conversion of solar energy to starch it is highly efficient. The generation of income and employment the added value is indispensable (Dany, 1996). The cassava processing into kaopi is significant value adding and profitable and process. This process has high potential for the attainment of food security and income and employment generation. The processors using mechanized have greater level of profitability and value added than those processors who using manual mechanize (Haji, Asmiati, Rosmawaty and La Ode, 2015). Polices regarding women problem regarding their participation in cassava processing should be develop. The women interest in cassava processing in the study area is contributed significantly by the Experience, socio economic situation, age and membership in cooperative society (Okebiorun and Jatto, 2017). The mean technical efficiencies were below the frontier for all the systems; this leads to indicates that the cassava farmers of Nigerian still need to improve conversion of input to output more efficiently in order to be on the best practice frontier (Temitayo and Victor, 2018).

About 38 percent of population in developing countries the primary source of livelihood is agricultural employment. In agricultural resources gender gaps and inequalities in access to a wide range including land, livestock, farm labour, education, extension services, credit, fertilizers and mechanical equipment, market access etc. In cassava of production the women are farmers, workers and entrepreneurs but these women's facing more severe constraints than men in accessing productive resources, markets and services (Ahmadu1 and Idisi, 2014). The cassava value addition had positive impact on the income generation of selected farm household of Etinam L.G.A of Akwa Ibom State of Nigeria. Domestically in terms of economic return to value addition value added food product compete favorably to industrial cassava value added products because of non-exploration of relevant markets for industrial value added product by the local producers (Umeh, 2015).

OBJECTIVES OF THE PRESENT STUDY

The main object of the present study is to study the world trade of cassava with special reference to Thailand. Following are the particular objectives of the present study.

1. To study the structure and direction of world trade of cassava.
2. To study the structure and direction of Thai cassava trade.
3. To examine the place of Thailand in world trade of cassava.

RESEARCH METHODOLOGY

The present study is based on secondary data. The regarding structure and direction of world trade of cassava and the structure and direction of Thai cassava trade were collected form Food Outlook, 2018 United Nations Food and Agricultural Organization and from the Office of Agricultural Economics, 2018 and from Thailand Foreign Agricultural Trade Statistics (2017), Office of Agricultural Economics, Ministry of Agricultural and Cooperatives, Thailand. To analyze the data the statistical techniques such as annual average growth rates, compound annual growth rates are used.

Thailand Exports and Imports of Agricultural Products:

In 2017, total export value of Thailand was 7,294.29 trillion Thai Bath, of which non-agricultural products accounted for 5,938.79 trillion Thai Bath, and agricultural products accounted for 1,355.50 trillion Thai Bath. Export of agricultural products were classified into food and agricultural products 1,118.37 trillion Thai Bath, and agricultural products for agro-industry 237.13 trillion Thai Bath. Most agricultural products were exported to East Asia 496.69 trillion Thai Bath, which increased from 443.51 trillion Thai Bath in 2016 or increased by 11.99 percent;

ASEAN 330.94 trillion Thai Bath, which increased from 293.13 trillion Thai Bath or increased by 12.90 percent; the Americas 170.93 trillion Thai Bath, which increased from 165.01 trillion Thai Bath or increased by 3.59 percent; EU (exclude Croatia) 118.35 trillion Thai Bath, which increased from 116.45 trillion Thai Bath or increased by 1.63 percent.

Total imports value of Thailand was 6,974.84trillion Thai Bath, of which non-agricultural products accounted for 6,468.49 trillion Thai Bath and agricultural products accounted for 506.35 trillion Thai Bath. Imports of agricultural products were classified into food and agricultural products 485.72 trillion Thai Bath, and agricultural products for agro-industry 20.63 trillion Thai Bath. Most agricultural products were imported from the Americas 145.04 trillion Thai Bath, which increase from 144.81 trillion Thai Bath in 2016 or increased by 0.16 percent; ASEAN 110.52 trillion Thai Bath, which increase from 100.36 trillion Thai Bath or increased by 10.12 percent; East Asia 96.62 trillion Thai Bath, which decrease from 99.07 trillion Thai Bath or decreased by 2.48 percent; and EU (exclude Croatia) 46.76 trillion Thai Bath, which decrease from 50.05 trillion Thai Bath or decreased by 6.56 percent(Thailand Foreign Agricultural Trade Statistics (2017)).

Thailand Exports of Agricultural Products:

In 2017, total export of Thailand in agricultural products was 1,355.50 trillion Thai Bath, which increased from 2016 about 1,216.72 trillion or equivalent to 11.41 percent. This caused by the increasing export value of natural rubber, rice and products and fruits and products. The increasing in export value was from natural rubber which demand for rubber using in automotive and industrial sectors was rising because the economy of major trading partner (such as China, Japan, United State and Malaysia) improved. Export of rice and products were pushed up by implementation of government to government trading contract by delivery rice to China, Indonesia, Philippines and Bangladesh. In addition, Thailand's rice price was closed to the competitors which increased competitiveness of Thailand. Export of fruits and products significantly expanded as increasing of demand from Longan, Durian and Mangosteen from China, Vietnam and Indonesia. Sugar and products were increase by the rising in world sugar price which cause by decreasing in world sugar production. Export of chicken meat and products significantly expanded as increasing of demand from Japan and ASEAN market and the export to South Korea has increased because of the permission to import frozen chicken from Thailand since November 2016. Shrimps and products were increased because of continuously demand from Japan, China and Vietnam. Vegetable and products were caused by increasing exports to Japan and Pakistan. Exports of residues and waste for prepared animal fodder also increased by rising demand from United State. On the other hand, the export value of some agricultural products decreased; for examples, Fishes and products were dropped by decreasing in Japanese

demand which was the major trading partner. Cassava and products were decreased because China slowed down the import of cassava products from Thailand to pressure the price of cassava starch to a lower level.

Moreover Vietnam, which is a major competitor, sold cassava products at a lower price than Thailand. Top ten of agricultural product exports were natural rubber valued 216.05 trillion Thai Bath, of which block rubber is as the majority as 98.45 trillion Thai Bath; rice and products value 193.37 trillion Thai Bath, of which white rice was as the majority as 62.77 trillion Thai Bath; fruits and products 142.61 trillion Thai Bath, of which durians fresh was the majority as 22.02 trillion Thai Bath; fishes and products 108.64 trillion Thai Bath, of which fishes prepared or preserved was the majority as 89.87 trillion Thai Bath; sugar and products 97.39 trillion Thai Bath, of which refined sugar was the majority as 50.34 trillion Thai Bath; chicken meat and products 96.27 trillion Thai Bath, of which chicken prepared or preserved the majority as 76.10 trillion Thai Bath; cassava and products 93.06 trillion Thai Bath, of which cassava chips was the majority as 36.08 trillion Thai Bath; shrimps and products 71.04 trillion Thai Bath, of which shrimp prepared or preserved was the majority as 35.09 trillion Thai Bath; vegetable and products 28.51 trillion Thai Bath, of which vegetable, prepared or preserved was the majority as 9.76 trillion Thai Bath; residues and waste for prepared animal fodder 21.73 trillion Thai Bath, of which preparations of a kind used in animal feeding was the majority as 18.58 trillion Thai Bath (Thailand Foreign Agricultural Trade Statistics (2017).

World Export of Cassava:

Table no. 1 presented the World Export of Cassava during 2008-09 to 2016-17. Total world cassava export was 11291 thousand tons in 2008-09 which reached up to 21805 thousand tons in 2016-17 with on an average annual growth rate of 9.36 percent; the compound annual growth rate recorded -7.90 percent. World flour and Starch export was increased by average annual growth rate of 6.73 percent and chip and pellets export was increased by average annual growth rate of 11.66 percent during the study period. The compound annual growth rate is found to be -5.82 percent and -9.79 percent in case of flour and starch and chip and pellets respectively. On an average share of flour and starch was 46.82 percent and it was 54.10 percent in case of chip and pellets. It is found that share of flour and starch in total export of cassava decreased (from 52.51 percent to 43.92 percent) While share of chip and pellets increased from 47.49 percent to 56.08 percent during the study period.

Share of Thailand in World Export of Cassava Flour and Starch:

Table no. 2 reveals the share of Thailand in world export of cassava flour and starch for the period 2008-09 to 2016-17. On an average the share of Thailand in total export of world cassava

flour and starch was 88.39 percent; while the share of Vietnam is 7.25 percent and the share of other countries were 4.36 percent. The average annual growth rate of Thailand world export of cassava flour and starch was 7.13 percent and it was 24.23 percent for Vietnam and -3.65 percent in case of other countries during the study period. Thailand world export of cassava flour and starch was 84.21 percent in 2008-09 which went up to 86.57 percent in 2016-17, while share of Vietnam increased slightly from 10.12 percent to 10.94 percent and the share of other countries decreased from 5.67 percent to 2.49 percent during the same period.

Share of Thailand in World Export of Cassava chip and pellets:

Table no. 3 reveals the share of Thailand in world export of cassava chip and pellets for the period 2008-09 to 2016-17. On an average the share of Thailand in total export of world cassava chips and pellets was 63.69 percent; while the share of Vietnam is 21.55 percent, Cambodia 8.78 percent and the share of other countries were 4.92 percent. The average annual growth rate of Thailand world export of cassava chips and pellets was 6.79 percent and it was 34.38 percent for Vietnam, 113.59 percent for Cambodia and 59.93percent in case of other countries during the study period. Whereas, the compound annual growth rate of export of cassava chips and pellets for Thailand was 5.29, it was 26.12 percent for Vietnam, 47.41 percent for Cambodia and 11.09 percent for other countries during the study period. During the study period the share of Thailand in world export of chips and pellets decreased from 82.26 percent to 54.47 percent, the share of other countries decreased from 6.55 to 1.12 percent during the same period. The share of Vietnam and Cambodia was increased from 9.32 percent to 26.17 percent; and 1.86 percent to 18.24 percent respectively during the study period.

Table No. 1: World Export of Cassava

(Figures in ‘000’ Tons)

Year	Flour and Starch	% To Total	Chip and Pellets	% To Total	Total
2008-09	5929	52.51	5362	47.49	11291
2009-10	5483	53.80	5430	53.28	10192
2010-11	6185	48.95	6451	51.05	12636
2011-12	7618	46.32	9028	54.90	16445
2012-13	7391	41.90	10247	58.10	17638
2013-14	8588	45.01	10492	54.99	19080

2014-15	10019	44.17	12666	55.83	22685
2015-16	9749	44.79	12016	55.21	21765
2016-17	9576	43.92	12229	56.08	21805
Average	7837.56	46.82	9324.56	54.10	17059.67
Maximum	10019	53.80	12666	58.10	22685
Minimum	5483	41.90	5362	47.49	10192
CAGR	-5.82		-9.79		-7.90
AAGR	6.73		11.66		9.36

Source: 1. Food and Agricultural Organization of the United Nations, Food Outlook, 2010 to 2018.

2. Thai Tapioca Trade Association

Table No. 2: Thailand in World Export of Cassava Flour and Starch

(Figures in '000' Tons)

Year	Thailand	% To Total	Vietnam	% To Total	Other	% To Total	Total
2008-09	4993	84.21	600	10.12	336	5.67	5929
2009-10	4864	88.71	250	4.56	369	6.73	5483
2010-11	5362	86.69	500	8.08	323	5.22	6185
2011-12	6651	87.31	600	7.88	367	4.82	7618
2012-13	6686	90.46	355	4.80	350	4.74	7391
2013-14	7919	92.21	336	3.91	333	3.88	8588
2014-15	9292	92.74	411	4.10	316	3.15	10019
2015-16	8446	86.63	1055	10.82	248	2.54	9749
2016-17	8290	86.57	1048	10.94	238	2.49	9576
Average	6944.78	88.39	572.78	7.25	320	4.36	7837.56
Maximum	9292	92.74	1055.00	10.94	369	6.73	10019.00
Minimum	4864	84.21	250.00	3.91	238	2.49	5483.00
CAGR	-6.14	-0.34	-6.73	-0.97	4.40	10.85	-5.82

AAGR	7.13		24.23		-3.65		6.73
------	------	--	-------	--	-------	--	------

Source: 1. Food and Agricultural Organization of the United Nations, Food Outlook, 2010 to 2018.
 2. Thai Tapioca Trade Association

Thai Trade in Cassava:

Table no. 4 shows the Thai trade of cassava flour and starch during 2008-09 to 2014-15. The Thai trade of cassava flour and starch was highest 32.17 percent with China followed by 19.56 percent other countries, 17.68 percent Indonesia, 13.09 percent Japan, 9.7 percent Taiwan and at bottom 7.79 percent Malaysia during the study period. The highest compound annual growth rate of Thai export of cassava flour and starch was 25.49 percent in case of Indonesia followed by China 21.24 percent, Malaysia 6.99 percent and 3.23 percent in case of Japan. Compound annual growth rate of Thai export of cassava flour and starch was negative in case of Taiwan and other countries during the study period. It is found that the trade of Thai cassava flour and starch to Japan was decreased from 14.94 percent to 9.72 percent, the trade of Taiwan from 13.70 to 6.92, the trade of Malaysia from 8.29 percent to 6.68 percent and the trade of other countries decreased from 26.28 percent of initial year to 9.05 percent during 2008-09 to 2014-15. In the trade of Thai cassava flour and starch the share of China increased from 24.43 percent to 41.69 percent and the share of Indonesia increased from 12.36 percent to 25.94 percent from 2008-09 to 2014-15. China and Indonesia have contributed on an average 49.85 percent trade of Thai cassava flour and starch during the period under study.

Table No. 3: Thailand in World Export of Chips and Pellets

(Figures in ‘000’ Tons)

Year	Thai	% to Total	Vietnam	% to Total	Cambo dia	% to Total	Other	% to Total	Total
2008-09	4411	82.26	500	9.32	100	1.86	351	6.55	5362
2009-10	4364	80.37	550	10.13	250	4.60	266	4.90	5430
2010-11	3723	57.71	1500	23.25	1000	15.50	228	3.53	6451
2011-12	5000	55.38	1800	19.94	1000	11.08	1228	13.60	9028
2012-13	6006	58.61	2700	26.35	361	3.52	180	1.76	10247
2013-14	6927	66.02	2565	24.45	350	3.34	650	6.20	10492
2014-15	8203	64.76	3463	27.34	350	2.76	650	5.13	12666

2015-16	6441	53.60	3241	26.97	2182	18.16	181	1.51	12016
2016-17	6661	54.47	3200	26.17	2230	18.24	137	1.12	12229
Average	5748.44	63.69	2168.78	21.55	869.22	8.78	430.11	4.92	9324.56
Maximum	8203	82.26	3463	27.34	2230	18.24	1228	13.60	12666
Minimum	3723	53.60	500	9.32	100	1.86	137	1.12	5362
CAGR	5.29	-5.02	26.12	13.77	47.41	32.98	11.09	-19.80	10.86
AAGR	6.79		34.38		113.59		59.93		11.66

Source: 1. Food and Agricultural Organization of the United Nations, Food Outlook, 2010 to 2018.

2. Thai Tapioca Trade Association

Table No. 4: Thai Trade in Cassava Flour and Starch

(Figures in '000' Tons)

Year	Japan	% to Total	China	% to Total	Taiwan	% to Total	Total
2008-09	746	14.94	1220	24.43	684	13.70	4993
2009-10	719	14.78	1322	27.18	549	11.29	4864
2010-11	801	14.94	1291	24.08	570	10.63	5362
2011-12	841	12.64	1460	21.95	505	7.59	6651
2012-13	872	13.04	2774	41.49	628	9.39	6686
2013-14	916	11.57	3513	44.36	665	8.40	7919
2014-15	903	9.72	3874	41.69	643	6.92	9292
Average	828.29	13.09	2207.71	32.17	606.29	9.70	6538.14
Maximum	916	14.94	3874	44.36	684	13.70	9292
Minimum	719	9.72	1220	21.95	505	6.92	4864
CAGR	3.23	-6.92	21.24	9.31	-1.02	-10.76	10.91
AAGR	3.35		24.34		-0.06		11.33

Table No. 4 Contd..

Year	Indonesia	% to Total	Malaysia	% to Total	Other	% to Total	Total
2008-09	617	12.36	414	8.29	1312	26.28	4993
2009-10	695	14.29	417	8.57	1161	23.87	4864
2010-11	1065	19.86	462	8.62	1173	21.88	5362
2011-12	2023	30.42	615	9.25	1207	18.15	6651
2012-13	647	9.68	436	6.52	1329	19.88	6686
2013-14	888	11.21	525	6.63	1412	17.83	7919
2014-15	2410	25.94	621	6.68	841	9.05	9292
Average	1192.14	17.68	498.57	7.79	1205.00	19.56	6538.14
Maximum	2410	30.42	621	9.25	1412	26.28	9292
Minimum	617	9.68	414	6.52	841	9.05	4864
CAGR	25.49	13.15	6.99	-3.53	-7.14	-16.28	10.91
AAGR	49.41		9.04		-5.28		11.33

Source: 1. Food and Agricultural Organization of the United Nations, Food Outlook, 2010 to 2018.

2. Thai Tapioca Trade Association

Table no. 5 Shows the Thai trade in cassava chip and pellets during 2008-09 to 2014-15. It is found that major trade of cassava chips and pellets of Thailand was shared by the China. On an average China contributed 98.72 percentage share in the total trade of cassava chips and pellets of Thailand. While other countries have only on an average 1.28 percentage shares in the total trade of cassava chips and pellets of Thailand. The total trade of cassava chips and pellets of Thailand was 4411 thousand tons in 2008-09 which went up to 8203 in 2014-15 with 12.07 average annual growth rates during the study period. While the share of China varied between 96.06 percent to 99.85 percent and recorded 12.72 percent average annual growth rate during the period from 2008-09 to 2014-15.

Table No. 5: Thai Trade in Cassava Chips and Pellets

(Figures in ‘000’ Tons)

Year	China	% to Total	Other	% to Total	Total
2008-09	4237	96.06	174	3.94	4411
2009-10	4287	98.24	77	1.76	4364
2010-11	3687	99.03	36	0.97	3723
2011-12	4964	99.28	36	0.72	5000
2012-13	5930	98.73	77	1.28	6006
2013-14	6918	99.87	09	0.13	6927
2014-15	8191	99.85	12	0.15	8203
Average	5459.14	98.72	60.14	1.28	5519.14
Maximum	8191	99.87	174	3.94	8203
Minimum	3687	96.06	9	0.13	3723
CAGR	11.61	0.65	-35.96	-42.25	10.89
AAGR	12.72		-8.35		12.07

Source: 1. Food and Agricultural Organization of the United Nations, Food Outlook, 2010 to 2018.

2. Thai Tapioca Trade Association

CONCLUSION

Cassava is the fifth most important world food crop after wheat, maize, rice and potatoes. It is a vital food crop in tropical regions especially those in Africa and South America, while countries in Asia that consume cassava a lot are Indonesia and India. Thailand is the world leader in the cassava production although cassava is not a native crop, not good collaboration between the private sector and farmers and do not have strong support from the government. Mostly the world trade in cassava is in the form of pellets and chips for feed (70 percent) and followed by in the form of starch and flour. Thailand is a dominant supplier of the cassava product in the world with accounting 80 percent global trade of cassava. Overcoming the competitive advantage that Thailand possesses in exporting cassava products will prove a daunting challenge, particularly in the feed and starch markets. Total export of Thailand in agricultural products was 1,355.50 trillion Thai Bath, which increased from 2016 about 1,216.72 trillion or equivalent to 11.41 percent. On an average the share of Thailand in total export of world cassava flour and starch

was 88.39 percent; Thailand world export of cassava flour and starch went up from 84.21 percent to 86.57 percent in 2016-17. The share of Thailand in total export of world cassava chips and pellets was on an average 63.69 percent and recorded 6.79 percent average annual growth rate. The share of Thailand in world export of chips and pellets decreased from 82.26 percent to 54.47 percent. Thai trade of cassava flour and starch was highest 32.17 percent with China followed by 19.56 percent with other countries. It is found that the trade of Thai cassava flour and starch decreased in case of Japan (14.94 percent to 9.72 percent) and Taiwan (13.70 to 6.92 percent). Whereas, China increased from 24.43 percent to 41.69 percent and the share of Indonesia increased from 12.36 percent to 25.94 percent. It is found that major trade of cassava chips and pellets of Thailand was shared by the China which shows on an average 98.72 percent.

REFERENCES

1. Office of Agricultural Economics (2018). Asian Food Security Information System, the Study of Cassava Supply Chain in Kanchanaburi Thailand
2. FAO, (2018). Food Outlook - Biannual Report on Global Food Markets, Rome.
3. (Adam, P. (2005). Cassava: International market profile, Trade and Markets Division, Food and Agriculture Organization of the United Nations).
4. Oladele, P. K., (2014). Cassava Processing and the Environmental Effect, Conference Proceedings Paper, the Fourth World Sustainability Forum.
5. Watananonta W. 2002. The progress of research and development of cassava production in Thailand. *In: Research and Development of Cassava Production to Increase its Potential for Processing Animal Feed and Ethanol*. Proc. of a Seminar, organized by DOA in Bangkok, Thailand.
6. Burrell, M. M.(2003). Starch: the need for improved quality or Quantity: an overview, *Journal of Experimental Botany*, vol. 54, no. 382.
7. Okezie, B.O. and Kosikowski, F.V.(1982). Cassava as a food, *Critical Review of Food Science and Nutrition*, vol. 17, no. 3.
8. Adebayo B. Abass, Nicholas Mlingi, Roger Ranaivoson, Monde Zulu, Ivor Mukuka, Steffen Abele, Beatrice Bachwenkizi and Nicolaus Cromme.2013. Potential for commercial production and marketing of cassava: Experiences from the small-scale cassava processing project in East and Southern Africa. IITA, Ibadan, Nigeria.

9. Shafiq, D. and Philippe, S. (2002). Thailand's Manufacturing Competitiveness: Promoting Technology, Productivity and Linkages, United Nations Industrial Development Organization (UNIDO), Working paper no.8.
10. Tsorng, C.H., Kamol, N.and Narumol, K. (2001). Bilateral Trade in Cassava Products Potential between Taiwan and Thailand, International Symposium, The Ministry of Agriculture and Cooperatives.
11. Odongo, W. and Etany, S. (2018). Value Chain and Marketing Margins of Cassava: An Assessment of Cassava Marketing In Northern Uganda, *Afr. J. Food Agric. Nutr. Dev.*, Vol. 18 (1).
12. Olga, R.C., Patricia, T. L., Didier, A., Jean-Luc, F. and Maria del C. Z. (1996). A Typical Rural Agroindustry of Cassava Starch Extraction with High Contamination Potential. Dufour, D. and Brien, G.M. (edt.), CIAT Publication No. 271, Colombia.
13. Kalenga Saka, J.D.(1996). Processing, Quality, And Uses of Cassava Flour in Malawi. Dufour, D. and Brien, G.M. (edt.), Cassava Flour and Starch: Progress in Research and Development, Centro Internacional de Agricultura Tropical, CIAT Publication No. 271, Colombia.
14. Dany, G.(1996). Adding Value To Products, Byproducts, And Waste Products Of Small And Medium-Scale Cassava-Processing Industries. Dufour, D. and Brien, G.M. (edt.), Cassava Flour and Starch: Progress in Research and Development, Centro Internacional de Agricultura Tropical, CIAT Publication No. 271, Colombia.
15. Haji, S., Asmiati, A., Rosmawaty, B. and La Ode, N.(2015). Profitability and Value Addition in Cassava Processing: A case study of Buton District of Southeast Sulawesi Province, Indonesia , *Journal of Sustainable Development*; Vol. 8, No. 1.
16. Okebiorun, E.O. and Jatto, N.A. (2017). Value Addition in Cassava Processing: Evidence from Women in Ilesa West Local Government Area of Osun State, *Agriculture and Food Sciences Research*, Vol. 4, No. 1.
17. Temitayo, A. A. and Victor, O. O.(2018). Value Addition and Productivity Differentials in the Nigerian Cassava System, *Journal of Sustainability*, 10, 4770; doi: 10.3390/su10124770.
18. Ahmadu1, J. and Idisi, P.O.(2014). Gendered participation in cassava value chain in Nigeria, *Merit Research Journal of Agricultural Science and Soil Sciences*, Vol. 2(11).

19. Umeh, G. N.(2015). Effect of Cassava Value Addition on the Income Generation of Farm Households in Etinam Local Government Area of Akwa Ibom State, Nigeria International Journal of Science and Research (IJSR) Volume 4 Issue 8.
20. Thailand Foreign Agricultural Trade Statistics (2017), Centre for Agricultural Information , Office of Agricultural Economics.