

CHAPTER 2

2.1 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This review of literature referenced from magazines, article, text book, newspapers, internet information and Gems and Jewelry institute Library and so on. In this chapter researchers try to explain briefly about the gemstones sector, consumer behavior and marketing aspects.

(i) Literature relating to the relationship between attitude & behavior of an individual, psychologist has developed several models that can better explain or predict the behavior.

(ii) Literature relevant to the marketing aspects of gemstones products.

(iii) Literature relating to the problems and prospects of the gemstones sector.

2.1 Definition;

Attitude is defined as a mental, emotional or rational predisposition with regard to a fact, state, person or an object. In the context of consumer behavior we are studying the attitude of buyers towards all the relevant attributes of a product or services as well as the marketer and markets. The study includes the following major areas

People are not born with an attitude. But they develop it over the growing & learning period. There are several ways the attitude can be formed:

Researchers also suggest that there are several different components that make up attitudes which influence the behavior of investor and consumer of gemstones export and import market. They are,

1. Psychological factors influencing Customer Behavior
2. An Emotional Component: How the object, person, issue or event makes you feel.
3. A Cognitive Component: Your thoughts and beliefs about the subject.
4. A Behavioral Component: How the attitude influences your behavior.
5. Sociological factors influencing Customer Behavior
6. Economic factors influencing Customer Behavior.
7. Attitudes form directly as a result of experience.

Consumer Perception

Perception is defined as the special interpretation that individual pays attention to objects or ideas searched or brought to the consumer's sensory (Walters, 1989). Other authors distinct that perception is a way of explaining how individuals choose and

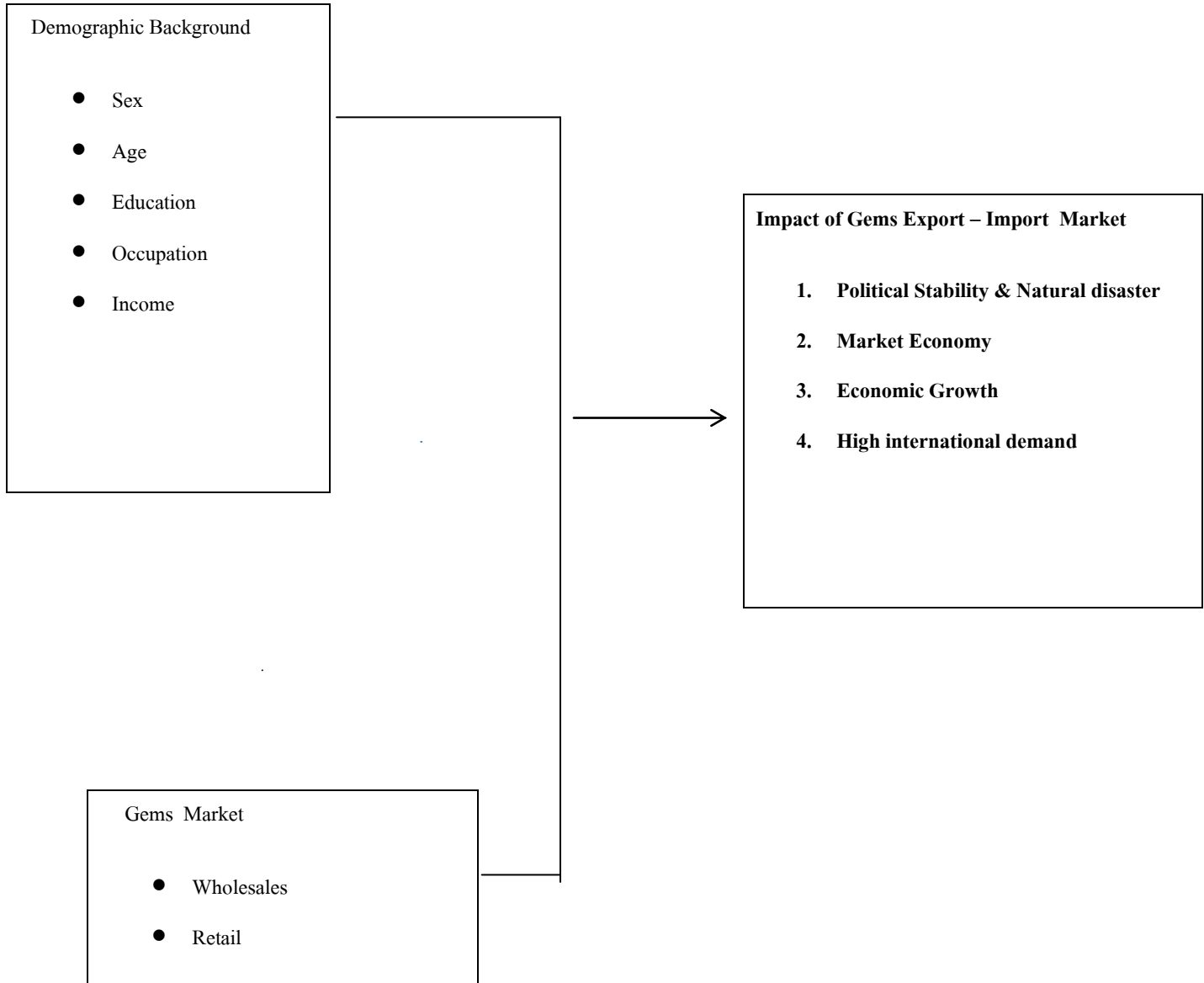
organize various information they are going to expose Middleton Perception is a set of attitude, motivations, experience and learning, particularly correlated with a previous purchase (Middleton & Clarke, 2001). Perception is a series of progress of people choose, form, and interpret information to gain an understandable picture of the world (Kotler, 2004). Perception is identified as the progress of an individual chooses, arranges, and interprets stimuli to be meaningful and logical frame of the world (Solomon and Stuart (2005) defined that three basic aspects of consumer's perception are exposure, perceptive selection and interpretation. It means that firstly, consumers perceived about products to their sensory from some stimuli, at the same time consumers pay attentions to a particular stimuli more than others and after that consumers make a consistent or significant reaction to a particular stimuli based on their memory picture (interpretation).

It can be seen from the various literatures that gems and jewelry business are good in countries such as India, China, Brazil, Myanmar and Thailand but all depends on factors mentioned in the conceptual framework. In the case of Thailand, the past political unrest affected the gem and jewelry business tremendously. Suppliers feared to come to Thailand to do the business. Again, natural disasters that occurred in some countries where gemstones are mined and exported to Thailand also affected the export and import of it.

2.2 Conceptual Framework

Independent Variable

Dependent Variable



Research Hypothesis

H1: The different demographic backgrounds have different attitude towards factors that facilitate import and export trade of gemstones in Thailand.

H2: The difference between wholesaler and retailer have difference attitude towards factors that facilitate import and export trade of gemstones in Thailand.

2.3 Variables to be reviewed

Demographic

Kotler (2000) said that demographic factors are famous for basic distinguishing and easiest to measure the groups of customers regarding their wants, preferences and rates of usage. Demographic factors consist of age, gender, family life cycle, income, occupation, education, religion, race and nationality (Kotler, 2000). Wang et al., (2010) stated that demographic variables are influenced by marketing mix variables and easy indicators for use in marketing. Demographic factors are important to consider for business process regarding consumer behaviors in making their purchase such as what, how, where and when (Reddy, 2010).

Age is one of the factors often used to segment for two purposes as age is the most helpful substitute variable to determine perception, motivation, and interest (Engel, 1993). In this study, age of respondents was divided into four groups, that is 20 and below 20 years old, 21 to 30 years old, 31 to 40 years old and over 40 years old.

Kotler (2000) stated that “consumer wants and abilities change with age”.

Different groups of age affect different needs and wants (Kotler, 2000). Age affects

Individuals’ interests, tastes, purchase, preferences and behavior (Sheth et al,1999). Age variable can be used for part of the market segmentation especially for niche mark

et (Kanuk&Schiffman, 2004). Age is also a factor that changes the requirements of consumers. The needs of product and service and interests usually vary with the age of consumers (Schiffman&Kanuk, 2000).

Gender is named by society in terms of the aspects of biological sex (Jafari, 2000). Because parents treated babies differently because of different sex since they were born, such as given playing things/jobs to be appropriated to men and women. And these different treatments are still with them the whole lives. Thus, this study used gender to test the similarities and differences of

respondents in terms of different sexes based on their perceptions of shopping Burmese gems and jewelry products. “Today, marketers notice an opportunity for gender segmentation. Some manufacturers are designing certain features to appeal to women” (Kotler, 2000). Consumers’ thoughts, values, wants and the decision to buy are influenced by gender-related behavior (Kotler, 1997).

Income is “money received as wages, rents, interest, royalties, or proceeds from business” (Henslin, 2002). Purchasing power is based on current income, prices, savings, debt, and available credit (Kotler, 2000). Different levels of income affect individuals’ values, behaviors and life style (Peter and Olsen, 1986). Income is a strong ability to be able to pay for a product or service (Kanuk&Schiffman, 2004). Monthly income influences consumers to determine the places where to shop, amount of spending (Reedy, 2010). Income also affects consumers’ choices to purchase according to the type of products. In addition, income is also an indicator of the ability to buy a product and service (Schiffman, 2000). In this study, income refers to the discrimination of respondents’ expenditure for paying goods or services. Education has a strong influence on one’s tastes and preferences” (Hawkins et al, 1992). In addition, Skinner (1994) stated that “education also influences how decisions are made”.

Education influences consumers’ choices (Reedy, 2010). Thus, educational levels are very useful in the market segmentation. In this study, education refers to the levels of education of respondents and whether their educational levels related to their perceptions for paying or evaluating products or services. In this study, income refers to the discrimination of respondents’ expenditure for paying goods or services

2.4 Overview of Thai Jewelry Industry

Gems businesses are close related with Jewelry businesses. They have a quite-long value chain, starting from the natural resources to the end-consumers. Firstly, the gems dug from mine are sold by passing through agents. Gemstone weight more than 0.5 Carat is sold each; the smaller ones are sold in large amount. For the gemstones that are not beautiful enough, they are passed through heat-treating technique. The cooked or heated gemstones and the left will be sold to small agents who will cut and polish them later. Lastly, all the agents will sell gemstones to the jewelry manufacturer or other retailers in country or export them to foreign countries.

Gemstones that passed all cutting processes are sent to jewelry industry to sell in the form of loose stones. Nowadays, loose stone trading is expanding drastically to support the increasing need of both Thai and foreigners. There are several big gemstone markets in Thailand. So, the plentiful supply of jewelry industry in Thailand is the advantage of this business.

Gem stones purchaser and seller behavior.

(1) Product ,Price,

In my review, there are two types of gemstones purchaser and seller in gems industry. They are trader and collector .The traders are mostly gemstones dealer (broker), jewelry designer or purchaser and some investor/speculator. But there are much different type of collectors, some interest to collect gemstones only as an example; gemologist and some stones lover are not intention to sell but some collector are for healing health, fortune or for luck in terms of astrology. When gems trader buying and selling of gemstones both party would like to make decision on not only the product quality and price but also trust and satisfaction too.

Firstly it is essential to have the basic knowledge about the gemstones before customer buy ,example colour, clarity, cutting style and the weight of the gemstones that customer are selecting. The commercial value, hardness, and durability of semi-precious stones are normally less than precious stones.

There are so many different kinds of precious stones that can be set into a proper setting that it can be daunting to even consider all of the possibilities. When a person has a gem to sell and he is not sure how to do so, the entire process can be a difficult and frustrating experience in every possible way. However, any type of gemstone that a person wanted to buy at some point in the past may also be an attractive potential acquisition for someone online, which means that there is a market if he goes to the right kind of online gem broker. Any kind of well-cut gemstones have value, and the person can get a good price for just about any of them.

When a stone seems something interesting, the owner has a fair chance of receiving a decent amount of money for it if he ever decides to sell down the road. If the stone is in some way rare and is considered precious, this price is most likely going to go upward. The most important aspect to consider, when a person looking into selling his gems is that he must find an online or other market where the number of potential buyers significantly outnumber the amount of sellers. If the person can do this, he is not going to have any problem getting the price he desires for his gem.

Gemstones that passed all cutting processes are sent to jewelry industry to sell in the form of loose stones. Nowadays, loose stone trading is expanding drastically to support the increasing need of both Thais and foreigners. There is several big gemstones market in Thailand. So the plentiful supply of jewelry industry in Thailand is the advantage of this business. The important gemstone market in Thailand is as follows.

Most gem dealers specialize, either in particular gem varieties or in higher or lower grade gems. Some dealers focus on commercial grade stones, and it is usually easy to detect, since their inventory will include lower grade stones, such as fracture-

filled ruby and beryllium diffused sapphire. The quality of the cutting on these commercial grade stones also tends to be poor, with many windowed stones. The prices will reflect the quality. As in any business, you get what you pay for.

Higher end dealers specialize in one-of-a-kind gems with top color and excellent cut. Where the dealers in commercial grade material buy their gems in large lots, higher end dealers hand select individual gems from the best material available in the market. When you buy from a high end dealer the benefit from this year of experience would be evaluating top grade gems for quality and value. When you're in the market for a gemstone for a special piece of jewelry that will be treasured in your family for generations, you want to rely on gem experts who stock heirloom quality gemstones. Of course the price is higher, but high quality gems maintain their value over time, while commercial grade stones have essentially no value.

(2) Promotion

The main important features of export market and import are as follows;

Thailand is no (1) exporter gemstones of the world. Because of the exhaustion of gemstone in Thailand, both Thai government and private sectors try hard to outsource this important raw material in consistency and long term. They try to import gemstone from neighbors such as Myanmar, Cambodia and Vietnam; and any countries which have rich minerals. One of the successful organizations is Thai Gem & Jewelry Traders Association (TGJTA) and The Gem and Jewelry (GIT) organization, which has formed the outsourcing committee for more than ten years was established to function as the main organization to promote and develop Thai gem and jewelry -----industry to be able to compete in the global trade arena with sustainability, as stated in the objectives of the Royal Decree on Establishment of the Gem and Jewelry institute of Thailand. Along that time, this committee could help to find and negotiate for gemstones a lot. It has the working outlines as follows:

- (1) To cooperate with the businessmen in this field to advise and exchange their thinking and help each other to solve the problems that occur in this industry.
- (2) To contact and cooperate with the related government sectors to inform the problems and determine the policies in giving gems importers more convenience and also save the international trade problem that may occur.
- (3) To inform and announce the essential information, and invite both government and private sectors to travel to the supply countries for starting the good relationship for the benefits of Thai businessmen.

According to (51st Bangkok Gem and Jewelry Fair 2013) association press released Bangkok Gems & Jewelry Fair is a dynamic place to conduct good business and network with over 1,200 exhibitors in 16 key product categories and thousands of international jewelers and traders pursuing supplies. It is organized twice a year, in March and September, at the Impact Challenger, with more than 3,500 stalls spread over 80,000 square meter in a single-floor layout, BGJF has been a vibrant marketplace where over 1,200

exhibitors from over 35 countries such as UK., Italy, Russia, USA, China, Taiwan, Hong Kong, Israel and etc. participate in each BGJF which attracts 35,000 international delegates and visitors.

The members of Thai Gem and Jewelry Traders Association have worked closely with the Department of International Trade Promotion (DITP) towards building the success of the fair and then through a unified effort to increase Thailand's reputation as The World's Gems & Jewelry Hub.

The following paragraphs are taken from the TGJTA organization press release

In an effort to promote the industry further, the **TGJTA** is concentrating on having its Road Show Team attend all the major international gem and jewelry shows in order to promote Thai craftsmanship and expertise and especially to promote the Bangkok Gems & Jewelry Fair. Barter agreements have been made with all major fair organizers securing booth space for the association and allowing for participation in more events worldwide, the team distributes information related to the Bangkok Gems & Jewelry Fair, copies of Manee, the **TGJTA** quarterly publication, and also answers questions related to the industry.

The **TGJTA** has been working closely for many years with the Ministry of Commerce in cooperation with the Department of Export Promotion (DEP) in organizing the Bangkok Gems & Jewelry Fair. The expansion of the exhibition hall in February 2004 was met with great success and is seen as a strong indicator that the fair will draw more international buyers. The fair is now held on-floor 60,000 sq. exhibition center making it Asia's largest one-floor gem and jewelry show. The Bangkok Gems & Jewelry Fair draws approximately 30,000 visitors and far exceeds standards, offering complete facilities, comfort, and services.

(3) Place and G- Competitor Market

The marketing and sale should be improved every channel to compete with other countries. The main channels of distribution for gemstones are Chain Jewelers, Independent stores, Department stores, Catalogue Showrooms, Discount Stores, and TV Shopping Programmers. Marketing and Sales people need to create attractive advertisement and to provide marketing information. Give good training and teaching more knowledge and tactics in marketing and sales staff and create Thai brand name in the international market. But now a day's most of the Thai companies are selling retail and wholesale from online. And also the service of Thai gemstones industry should be improved, such as guarantee certificate, 30 days warranty, etc., are help to added value and increase the trustfulness of Gemstones market.

At the present, the exporters of gemstones are facing with the high competition since they need to compete with other exporter countries like. The first group consists of those countries that are the leaders in technology and fashion but don't have their own resources. Those countries are Italy; France and Hong Kong. Another group consists of developing countries that are trying to develop their products to be more competitive.

China is the good example of this group because now China market becomes bigger market industry. According to Vietnam, Yuen said that Thailand, he observed, maintains its position as the top supplier of colored gemstone to the United States, Hong Kong, Italy, Germany and Japan, but Thailand's growing economic status could soon disqualify it for tax exemption when exporting gems to the United States. In this respect, Thailand is likely to face competition from Cambodia, which is likely to take advantage of its customs-free status.

With a reform process underway in Myanmar, and the promise of the continued relaxing of the economic sanctions that has been imposed against the country, growth can be expected in the Burmese gem industry, he stated. Singapore is providing stronger competition to Hong Kong for the high-end gemstone and jewelry market, and is helped by the fact that both Indonesia and Malaysia use Singapore as their primary financial platform, he said.

Technology Development,

Thailand has unique technology that can add value to the gemstone, which is "cook technique with this technique, those damaged stones that need to be repaired or poorly cut stones that need to re-cut can be added more value and improved its quality, so that they can be sold out at a higher price. Besides cook technique, Thailand has a few high technologies in Jewelry industry. Most of high technologies only used in big producers' operation are imported technologies. Thus small producers' have to use only domestic technologies, which are low-tech, due to low capital of investment. In conclusion, the technology development of Thai Jewelry needs to enhance.

Based on the link Gem and Jewelry Institute of Thailand news press, Director of the Gem and Jewelry Institute of Thailand, Ms. PornsawatWathanakul and Director of The Gemology and Lapidary Centre of Nampula, Mr. Joao Manuel Antonio have signed a MoU at a ceremony held on June 19th, 2013 during GIT visit to Mozambique. The MoU has the subject of the establishment of cooperation between two institutes, aimed at promoting the development of the gem industry in countries, scientific and technological research and training.

Due to the link, "http://www.ehow.com/about_5272890_natural-gemstones-treated-reveal-color.html", in order to provide broader understanding of gemstones technique below paragraph.

Another technique of natural gemstones, when mined, are not always as colorful as they appear in a jeweler's case or shop. In order to bring about the intensity of a gemstone's color, enhancements need to be made. These can include heating, oiling, dyeing and irradiation.

Heating

Heat treatment is the most common form of gemstone enhancement. Techniques can vary, from putting stones into a fire and "cooking" them, to using gas or electric furnaces at certain pressures to receive the desired effect. Heating is a permanent technique, used to enhance, intensify or a change a gemstone's color. Examples of heat-treated gemstones include carnelian, aquamarine, sapphire, citrine, ruby, amethyst and tourmaline.

Irradiation

Irradiation of gemstones to change or increase their color can occur naturally within the earth, but may take millions of years. Artificial irradiation only takes a few hours. Irradiation uses gamma rays, neutrons or high energy electrons to change a gemstone's color. This process is often followed by a heat treatment. Topaz, which in its natural form, is a very pale blue to clear color, is irradiated to bring about its deeper shades of blue and even green. Other examples include tourmaline, ruby, chrysoberyl, cat's eye, kunzite and even cultured pearls.

Oiling

Emeralds are commonly "oiled" whereby oil, resin or wax is used to fill fissures in the gemstone's surface, thus making the stone's color more uniform. Other gemstones that may be oiled are opals (though rarely) and peridot.

Dyeing

Intensifying a gemstone's present color or improving its uniformity is sometimes brought about by dyeing, where color is added to the gemstone. Black onyx is always dyed to keep its rich, black color. Other gemstones that may be dyed are rose quartz, amber, and carnelian, agate, lapis lazuli, jade, serpentine and turquoise.

Chemical Diffusion

The use of high heat temperatures with chemical additives to a stone's surface is chemical diffusion. The process leads to a more intense color or a complete color change altogether. Because chemical diffusion often results in artificially altering a gemstone's color, it must be disclosed on documents and advertising of the gemstone on which it is used. Rubies, sapphires and green topaz are sometimes chemically diffused.

(2.5) About Color Stones Export and Imports

Based on the Gem and Jewelry institute of Thailand (Public organization) may 2001,2012 article, Color stones industry is very important for Thai economy as it produce to additional value to rough color stones. Thailand has been accepted from the

international community as the world's leading colored stone manufacturer and trader due to its valuable know-how and outstanding capability in value addition of rough stones through heat treatment and polishing. Its colored stones are widely recognized in terms of quality standard and are highly demanded in the global market. Generally speaking, almost all quality colored stones traded in the global market has been circulated through Thailand. In 2012, Thai colored stone industry was valued at around 903.97 million US dollars, with a slight decline of 0.83 percent, comprising the export value of 610.68 million US dollars, growing by 2.19 percent; and the import value of 293.28 million US dollars, dropping by 6.58 percent.

Colored stone Imports and Exports

Thailand's import value of colored stone under the Customs Tariff heading 7103 in 2006 was estimated at USD 166.90 million, accounted for 4.18 percent of the total gem and jewelry import value. The imports of rough colored stone under the Customs Tariff heading 710310 accounted for USD 19.09 million, 11.44 percent of the total import value of colored stone. Thailand's key sources for rough colored stone were Brazil, Myanmar, Madagascar, Hong Kong and Germany, respectively. The import value of polished colored stone was estimated at USD 147.81 million, accounted for 88.56 percent share. The import values of polished precious stone were at USD 48.06 million, 32.51 percent of total import value of polished colored stone. The import value of polished semi-precious stone was at USD 99.75 million, 67.49 percent of the total import value of polished colored stone. Major sources of polished precious stone were Hong Kong, US, India, Sri Lanka and Brazil, respectively. Major sources for polished semi-precious stone were India, Hong Kong, US, Germany and China, respectively.

Thailand's Colored Stone Imports during 2001-2006

Item	2001	2002	2003	2004	2005	2006
Rough	15.50	12.63	15.91	13.77	15.94	19.09
Polished Precious Stones	28.09	35.84	31.81	49.92	44.83	48.06
	51.98	49.92	52.38	69.05	84.55	99.75
	95.57	98.39	100.10	132.74	145.33	166.90

Source: the Gem and Jewelry Institute of Thailand (Public Organization)

Thailand's Major Sources for Colored Stones during 2001-2006

Country	2001		2002		2003		2004		2005		2006	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Brazil	2.40	15.5	2.69	21.3	2.37	14.9	2.20	16.0	3.55	22.3	3.98	20.8
Myanmar	0.59	3.8	0.36	2.8	0.85	5.4	1.45	10.5	0.87	5.5	2.65	13.9
Madagascar	0.36	2.3	0.27	2.1	0.90	5.7	0.86	6.2	1.32	8.3	1.86	9.8
Hong Kong	0.58	3.8	0.61	4.8	0.90	5.7	0.99	7.2	1.01	6.3	1.39	7.3
Germany	0.64	4.1	0.26	2.1	0.23	1.5	0.32	2.3	1.15	7.2	0.97	5.1
India	0.25	1.6	0.50	4.0	0.28	1.8	0.36	2.6	0.74	4.6	0.85	4.4
US	0.46	3.0	1.04	8.2	1.13	7.1	0.88	6.4	0.93	5.8	0.83	4.3
Austria	0.14	0.9	0.54	4.3	0.26	1.7	0.56	4.1	1.27	7.9	0.71	3.7
China	0.49	3.1	0.73	5.8	0.34	2.2	0.42	3.0	0.58	3.6	0.58	3.0
Nigeria	2.38	15.4	1.12	8.9	0.82	5.1	0.94	6.8	0.57	3.6	0.55	2.9
Others	7.21	46.5	4.51	35.7	7.81	49.1	4.80	34.8	3.97	24.9	4.73	24.8
Total	15.50	100.0	12.63	100.0	15.91	100.0	13.77	100.0	15.94	100.0	19.09	100.0

In 2006, Thailand exported colored stones under the Customs Tariff heading 7103 for around USD 263.69 million, accounted for 7.3 percent of the total export value of gem and jewelry. Most of the exported colored stones were polished precious stones with the total export value of USD 133.45 million, accounted for 50.61 percent of the total colored stone export value. Polished semi-precious stones export value contributed USD 108.99 million, accounted for 41.33 percent of total export value of colored stones. The remaining share of 8.06 percent belonged to the export of rough colored stones, accounted for USD 21.26 million. The major buyers of Thailand's rough colored stones were India, Hong Kong, Austria, US and Italy, respectively. The major export markets for Thailand's polished precious stones were US, Hong Kong, Japan, Switzerland and India, respectively. Polished semi-precious stones were mainly exported to the US, Hong Kong, Japan, India, and Germany, respectively.

Thailand's Exports of Colored Stone during 2001-2006

Items	2001	2002	2003	2004	2005	2006
Rough	11.63	13.56	21.15	21.97	20.74	21.26
Polished Precious Stones	120.38	130.15	108.39	126.35	124.03	133.45
Polished Semi-Precious Stones	67.83	65.02	59.21	74.76	86.03	108.99
Total	199.84	208	188.75	223.08	230.80	263.69

Country	2001		2002		2003		2004		2005		2006	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
India	9.10	78.3	7.90	58.2	8.46	40.0	11.29	51.4	12.00	57.9	10.33	48.6
Hong Kong	1.03	8.9	1.42	10.5	6.79	32.1	1.66	7.6	2.30	11.1	3.49	16.4
Austria	0.38	3.2	3.17	23.4	3.57	16.9	3.37	15.3	2.77	13.4	2.58	12.1
US	0.21	1.8	0.41	3.0	1.01	4.8	1.56	7.1	0.66	3.2	1.18	5.5
Italy	0.12	1.0	0.15	1.1	0.32	1.5	0.38	1.7	0.45	2.2	0.82	3.9
Israel	0.00	0.0	0.00	0.0	0.00	0.0	0.78	3.5	0.02	0.1	0.77	3.6
Japan	0.04	0.3	0.04	0.3	0.05	0.2	1.37	6.3	0.25	1.2	0.43	2.0
Germany	0.26	2.3	0.06	0.4	0.16	0.8	0.40	1.8	0.46	2.2	0.38	1.8
Australia	0.01	0.1	0.00	0.0	0.07	0.3	0.14	0.6	0.06	0.3	0.28	1.3
UAE	0.02	0.2	0.03	0.2	0.25	1.2	0.03	0.1	0.46	2.2	0.19	0.9
Others	0.47	4.0	0.38	2.8	0.47	2.2	0.99	4.5	1.29	6.2	0.82	3.9
Total	11.63	100.0	13.56	100.0	21.15	100.0	21.97	100.0	20.74	100.0	21.26	100.0

Thailand's Major Rough Colored Stone Buyers during 2001-2006

(2.5) Colored Stone Exports

In 2006, Thailand exported colored stones under the Customs Tariff heading 7103 for around USD 263.69 million, accounted for 7.3 percent of the total export value of gem and jewelry. Most of the exported colored stones were polished precious

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During the past few years, the export value of Thailand colored stones has gradually increased, after the slowdown of the colored stones markets in 2003. Most of the growth was due to the rise of the export value of the polished colored stones, particularly, semi-precious stone as the global fashion trend boosted its popularity.

Thailand's Exports of Colored Stone during 2001-2006

Items	2001	2002	2003	2004	2005	2006
Rough	11.63	13.56	21.15	21.97	20.74	21.26
Polished Precious Stones	120.38	130.15	108.39	126.35	124.03	133.45
Polished Semi-Precious Stones	67.83	65.02	59.21	74.76	86.03	108.99
Total	199.84	208.74	188.75	223.08	230.80	263.69

Source: The Gem and Jewelry Institute of Thailand (Public Organization)

Thailand's Major Buyers of Polished Precious Stones During 2001-2006

Country	2001		2002		2003		2004		2005		2006	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
US	38.09	31.7	44.90	34.5	41.12	37.9	44.42	35.2	36.28	29.3	34.97	26.2
Hong Kong	9.30	7.7	12.06	9.3	13.62	12.6	14.82	11.7	16.56	13.4	20.06	15.0
Japan	26.06	21.7	28.23	21.7	17.62	16.3	18.57	14.7	22.08	17.8	19.20	14.4
Switzerland	14.36	11.9	12.18	9.4	8.44	7.8	11.08	8.8	10.79	8.7	14.26	10.7
India	0.85	0.7	0.93	0.7	1.81	1.7	2.95	3.1	3.93	3.2	6.26	4.7
France	6.06	5.0	5.34	4.1	4.35	4.0	5.90	4.7	4.44	3.6	5.26	3.9
Italy	4.81	4.0	3.17	2.4	2.39	2.2	3.35	2.7	3.99	3.2	5.03	3.8

UK	4.12	3.4	4.11	3.2	3.84	3.5	4.57	3.6	4.48	3.6	4.86	3.6
Brazil	0.08	0.1	0.00	0.0	0.04	0.0	1.12	0.9	2.89	2.3	2.67	2.0
Germany	2.55	2.1	2.85	2.2	2.41	2.2	2.73	2.2	2.38	1.9	2.43	1.8
Others	14.08	11.7	16.39	12.6	12.76	11.8	15.84	12.5	16.20	13.1	18.45	13.8
Total	120.38	100.0	130.15	100.0	108.39	100.0	126.35	100.0	124.03	100.0	133.45	100.0

Thailand's Major Buyers of Polished Semi-Precious Stone during 2001-2006

Country	2001		2002		2003		2004		2005		2006	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
US	22.37	33.0	21.91	33.7	21.54	36.4	31.01	41.5	28.70	33.4	45.56	41.8
Hong Kong	8.87	13.1	11.47	17.6	10.51	17.8	13.06	17.5	18.22	21.2	21.52	19.8
Japan	13.60	20.1	12.68	19.5	11.36	19.2	9.07	12.1	12.05	14.0	10.12	9.3
India	1.01	1.5	1.57	2.4	1.71	2.9	5.52	7.4	9.89	11.5	8.25	7.6
Germany	1.90	2.8	1.75	2.7	2.17	3.7	3.23	4.3	3.25	3.8	4.23	3.9
Italy	2.99	4.4	1.97	3.0	1.38	2.3	1.16	1.6	2.16	2.5	2.38	2.2
Switzerland	2.66	3.9	1.88	2.9	1.24	2.1	1.14	1.5	1.56	1.8	2.28	2.1
Sri Lanka	0.20	0.3	0.28	0.4	0.32	0.5	0.40	0.5	0.35	0.4	1.72	1.6
Austria	0.19	0.3	0.79	1.2	0.13	0.2	0.05	0.1	0.36	0.4	1.38	1.3
UK	1.04	1.5	1.07	1.6	0.96	1.6	0.73	1.0	1.05	1.2	1.33	1.2
Others	12.98	19.1	9.66	14.9	7.88	13.3	9.40	12.6	8.45	9.8	10.21	9.4
Total	67.83	100.0	65.02	100.0	59.21	100.0	74.76	100.0	86.03	100.0	108.99	100.0

Thailand's Major

In 2012 according to Gem and Jewelry Institute of Thailand, the export products can be divided into polished precious stones, polished semi-precious stones and rough stones, at the shares of 59.38 percent, 35.47 percent and 5.15 percent respectively. The increase derived from the export of polished precious stones, which grew 11.01 percent to around 362.65 million US dollars. Meanwhile, the export of polished semi-precious stones slowed down by 12.52 percent to around 216.60 million US dollars, and the export of rough stones was at around 31.43 million US dollars, up 34.72 percent.

The growth in Thailand’s colored stone export value could be attributed to fluctuation in gold price in 2012, when it moved in the range of 1,540-1,791.75 US dollars/ounce. To address this situation, jewelry manufacturers adapted their production strategy by reducing the amount of gold and adding more colored stones to their designs. Moreover, consumption demand for colored stones was higher than the supply, resulting in a 50 percent increase in colored stone price in 2012 compared to 2011.

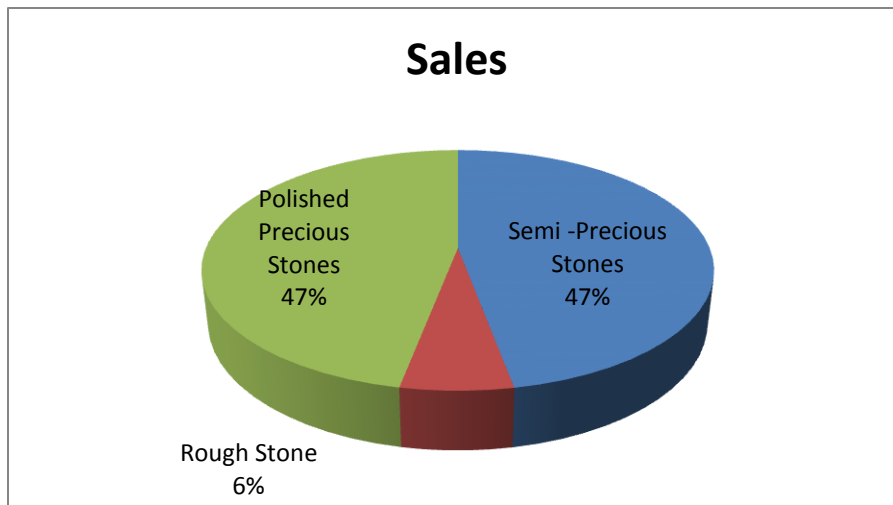


Table 1-1: Thailand’s Colored Stone Export Value in 2010-2012

Product	Value (million US dollars)			Share (Percent)			Change (Percent) ¹² 11
	2010	2011	2012	2010	2011	2012	
Polished Precious Stones	229.74	326.69	362.65	48.37	54.67	59.38	11.01
-Ruby	88.22	121.74	129.26	38.40	37.26	35.64	6.18
-Sapphire	105.03	157.46	165.63	45.72	48.20	45.67	5.19
-Emerald	36.49	47.49	67.76	15.88	14.54	18.69	42.68

Polished Semi-Precious stones	225.29	247.59	216.60	47.43	41.43	35.47	-12.52
Rough Stones	19.97	23.33	31.43	4.20	3.90	5.15	34.72
Total	475.00	597.61	610.68	100.00	100.00	100.00	2.19

Global Trade Atlas (March 2013), data calculated by The Gem and Jewelry Institute of Thailand (Public Organization) Polished Precious Stones. The export in this category grew by 11.01 percent, especially sapphire and ruby as the top two products which build reputation for Thai gem and jewelry industry and contributed 45.67 percent and 35.64 percent respectively to the overall export value. The remaining 18.69 percent was from emerald export. As for the markets, Hong Kong still maintained its status as Thailand's top export market for polished precious stones for over five years consecutively, and accounted for almost half of the export value in this product category, as it is one of the world's most important colored stone trading centers. Other major markets included the United States, Switzerland, India and China, with the shares of 12.87 percent, 6.49 percent, 5.44 percent and 3.53 percent respectively. Moreover, with increasing consumption demand in the Middle East, the export value to the United Arab Emirates (UAE), as the sixth most important export market, was over 12 million US dollars, an almost six-time increase from the previous year. Some colored stones exported to the UAE are later re-exported to other countries in the Middle East.

Table 1-2: Thailand's Colored Stone Export Value in 2010-2012

Country	Value (million US dollars)			Share (Percent)			Change (Percent)12/11
	2010	2011	2012	2010	2011	2012	
Hong Kong	105.00	155.49	174.33	45.70	47.60	48.07	12.12
The United States	32.67	37.04	46.66	14.22	11.34	12.87	25.97
Switzerland	18.01	23.06	23.53	7.84	7.06	6.49	2.04
India	22.84	26.02	19.73	9.94	7.96	5.44	-24.17
China	3.00	10.38	12.81	1.31	3.18	3.53	23.41
The United Arab Emirates	1.64	1.82	12.63	0.72	0.56	3.48	593.96
Japan	8.18	12.12	11.96	3.56	3.71	3.30	-1.32
Italy	6.62	11.22	10.21	2.88	3.43	2.81	-9.00

Country	Value (million US dollars)	Share (Percent)	Change
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	2010	2011	2012	2010	2011	2012	(Percent)12/11
The United Kingdom	4.88	10.43	9.02	2.12	3.19	2.94	-13.52
France	4.52	5.64	6.04	1.97	1.97	1.67	7.09
Others	22.38	33.47	35.73	9.74	9.74	9.85	6.75
Total	229.74	326.69	362.65	100.00	100.00	100.00	11.01

Source: Global Trade Atlas (March 2013), data calculated by the Gem and Jewelry Institute of Thailand (Public Organization)

Polished Semi-Precious Stones Thailand's export of polished semi-precious stones dropped from 247.59 million US dollars in 2011 to 216.60 million US dollars in 2012, moving down by 12.52 percent (higher than a 6.32 percent decline of the overall export of this product category in the global market). The export to Hong Kong, which dominated over half of the market share in this category, and the export to Japan, as the fifth most important export market, grew by 7.22 percent and 3.60 percent respectively. However, the export value to the United States, India and China, which were among the top five markets, slowed down by 12.68 percent, 41.32 percent and 11.92 percent respectively. These markets imported more products from Hong Kong and reduced their import from Thailand. Moreover, the public debt crisis in the European Union also undermine consumers' confidence in the region, leading to more restraint in consumers' spending for luxurious items, including gem and jewelry.

Table 1-3: Thailand's Export Markets for Polished Semi-Precious Stones in 2010-2012

Country	Value (Million US dollars)			Share (percent)			Change (percent)12/11
	2010	2011	2012	2010	2011	2012	
Hong Kong	110.64	105.20	112.80	49.11	42.49	52.08	7.22
The United States	44.34	41.10	35.89	19.68	16.60	16.57	-12.68
India	15.00	20.50	12.03	6.66	8.28	5.55	-41.32
China	1.67	11.24	9.90	0.74	4.54	4.57	-11.92
Japan	5.98	6.67	6.91	2.66	2.69	3.19	3.60
Switzerland	8.48	8.38	6.04	3.76	3.38	2.79	-27.92
Italy	6.36	7.47	4.25	2.82	3.02	1.96	-43.11
Germany	5.93	7.09	3.90	2.63	2.86	1.80	-44.99
Austria	3.93	2.94	3.40	1.75	1.19	1.57	15.65
The United Kingdom	1.44	4.45	2.90	0.64	1.80	1.34	-34.83

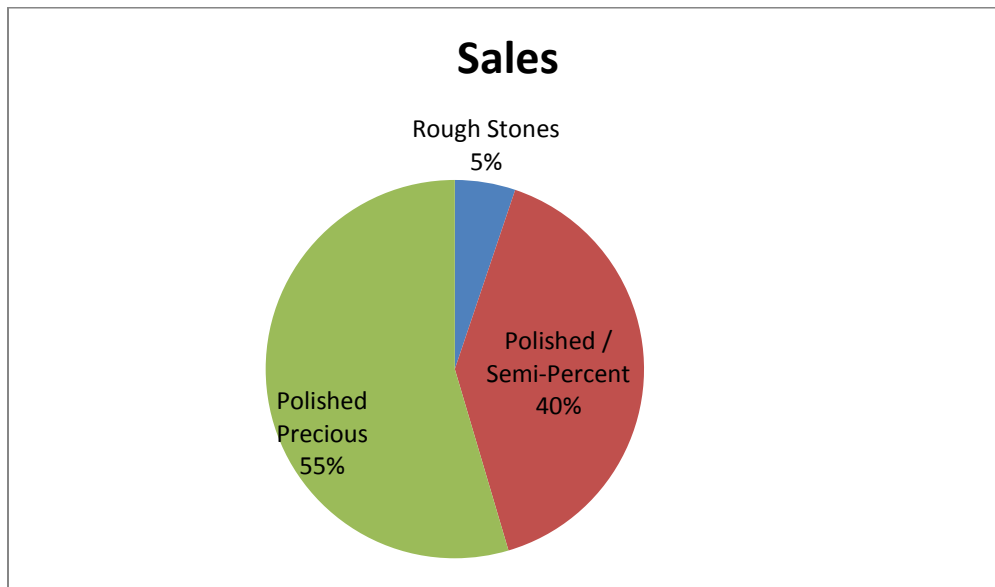
Others	21.52	32.55	18.58	9.55	13.15	8.58	-42.92
Total	225.29	247.59	216.60	100.00	100.00	100.00	-12.52

Source: Global Trade Atlas (March 2013), data calculated by The Gem and Jewelry Institute of Thailand (Public Organization)

Import Gemstones

Import In 2012, colored stone was the fifth most important product in gem and jewelry category after unwrought gold, diamond, jewelry and silver, accounting for 2.11 percent of the overall import in this category at the estimated value of 293.28 million US dollars, down 6.58 percent from 2011. Among this figure were the import of polished precious stones, polished semi-precious stones and rough stones at the shares of 54.58 percent, 40.25 percent and 5.17 percent respectively.

Figure 2-1: Thailand's Colored stone Import by Product in 2012.



Source: Global Trade Atlas (March 2013), data calculated by The Gem and Jewelry Institute of Thailand (Public Organization)

Table 2-1: Thailand's Colored Stone import Value in 2010-2012

Country	Value (million US dollars)			Share (percent)			Change (percent) 12/11
	2010	2011	2012	2010	2011	2012	
Polished precious stones	128.80	168.59	160.07	46.55	53.70	54.58	-5.08

-Ruby	38.83	54.56	40.38	30.15	32.36	25.23	-25.99
-Sapphire	57.03	69.86	53.77	44.28	41.44	33.59	-23.03
-Emerald	32.94	44.17	65.92	25.57	26.20	41.18	49.24
Polished Semi-Precious Stones	137.91	131.05	118.05	49.84	41.74	40.25	-9.92
Rough Stones	10.01	14.31	15.16	3.61	4.56	5.17	5.94
Total	276.72	313.95	293.28	100.00	100.00	100.00	-6-58

Source: Global Trade Atlas (March 2013), data calculated by The Gem and Jewelry Institute of Thailand (Public Organization)

Polished Precious Stones Excluding display products imported from international trade fairs back to Thailand at 38.39 percent of the overall value in this category, it is found that Hong Kong, Brazil, India and Sri Lanka were Thailand's top import sources, with the shares of 18.38 percent, 9.55 percent, 8.62 percent and 6.33 percent respectively. It should also be noted that the import value from Brazil increased 2.12 times from the previous year, all of which was emerald import.

One of the emerging import sources is Myanmar, from which the import in 2012 was at only 3.23 million US dollars, but with an exceptional growth of over 9 times. This was possibly a positive effect from European Union's suspension of sanctions against Myanmar at least for one year, including measures regarding gem and jewelry trading.

Table 2-2: Thailand's Polished Precious Stone Import Sources in 2010-2012

Country	Value (million US dollars)			Share (percent)			Change (percent)12/11
	2010	2011	2012	2010	2011	2012	
Thailand	62.86	61.02	61.45	48.81	36.19	38.39	0.70
Hong Kong	16.74	33.79	29.42	13.00	20.04	18.38	-12.93
Brazil	3.29	4.89	15.28	2.55	2.90	9.55	212.47
India	9.02	12.54	13.80	7.00	7.44	8.62	10.05
Sri Lanka	15.87	16.45	10.14	12.32	9.76	6.33	-38.36
The United States	7.74	15.54	10.10	6.01	9.22	6.31	-35.01
The United Arab Emirates	0.56	4.37	4.80	0.43	2.59	3.00	9.84

Colombia	2.09	2.83	4.14	1.62	1.68	2.59	46.29
Myanmar	0.24	0.31	3.23	0.19	0.18	2.02	941.94
Israel	1.13	1.90	1.24	0.88	1.13	0.77	-34.74
Others	9.26	14.95	6.47	7.19	8.87	4.04	-56.72
Total	128.80	168.59	160.07	100.00	100.00	100.00	-5.05

Source: Global Trade Atlas (March 2013), data calculated by The Gem and Jewelry Institute of Thailand (Public Organization)

Meanwhile, the import value of polished semi-precious stones dropped from around 131.05 million US dollars in 2011 to 118.05 million US dollars in 2012, or a 9.92 percent decline. India and Hong Kong were the top two import sources with the shares of 23.52 percent and 23.19 percent of the overall import in this category.

Competitive Industry Countries

Competitiveness of Thai Colored Stone Industry Today, Thai colored stone industry is facing challenges from lack of domestic supply and its dependence on raw material import. However, valuable knowledge which has been passed on through generations in value addition of rough stones through heat treatment and polishing, as well as the government's support through tax measures and customs duty which facilitate the circulation of raw materials into the country, help Thailand maintain its reputation and status as one of the world's most important center in colored stone manufacturing and trading, with the average trading value of over 600 million US dollars each year. Regarding the competitiveness of Thai colored stone industry in the world's top three markets, including the United States, Hong Kong and China, which in total contribute to over half of the world's colored stone import value, the details are explained below.

□ The United States The US economic recovery led to a 12.66 percent growth in its colored stone import from 996.43 million US dollars in 2011 to 1,122.56 million US dollars in 2012, over 70 percent of which was the import of polished precious stones, followed by polished semi-precious stones and rough stones, which accounted for 28.35 percent and 1.44 percent respectively. In 2012, the United States imported polished precious stones at the value of 788.23 million US dollars, up 17.10 percent from the previous year.

Excluding Colombia, which was the major supplier of emerald, it is found that Thailand was the most important source for the United States' import of polished precious stones, especially sapphire and ruby, with the import value of 139.50 million US dollars, or 17.70 percent of the total import in this category. Hong Kong was one of Thailand's main competitors with over two-time growth in import value. Despite its lack of colored stone manufacturing industry, Hong Kong's advantages in terms of geographical location, efficient logistics and duty-free policy make it a suitable transit area before products are re-exported to other countries.

The top two supplying countries for the United States' import of polished semi-precious stones were India and Hong Kong, with the combined share of over 40 percent from the overall import in this category, at the value of 80.77 and 50.62 million US dollars respectively. Thailand ranked at number three, with the increase in import value from 34.37 million US dollars in 2011 to 41.24 million US dollars in 2012, or a 19.99 percent growth.

Hong Kong

Although Hong Kong does not have its own manufacturing industry, advantages from its location and trading regulations make Hong Kong one of the world's most important colored stone trading centers, with the trading value of over a thousand million US dollars each year. In 2012, Hong Kong imported colored stones valued around 849.38 million US dollars, growing 31.89 percent from the previous year. The import products included polished precious stones, polished semi-precious stones and rough stones, at the shares of 39.15 percent, 36.80 percent and 24.05 percent respectively.

Hong Kong imported 332.51 million US dollar worth of polished precious stones in 2012, growing by 26.60 percent from the previous year, among which were the imports of emerald, sapphire and ruby at the shares of 45.32 percent, 33.87 percent and 20.81 percent respectively. Thailand had always been Hong Kong's most important supplying country for polished precious stones until in 2012, when its main competitor India successfully replaced it as the top import source with the import value of around 86.82 million US dollars, of which over 80 percent came from emerald import.

Hong Kong imported 312.55 million US dollar worth of polished semi-precious stones in 2012, having India, Thailand and China as major sources with the combined share of over 60 percent of the overall import in this category. Interestingly, the import value from Switzerland had an exceptional growth at over 18 times.

China

China is the world's largest consumer market with the population of over 1,300 million. It is also the third major colored stone importer in the global market after the United States and Hong Kong.

The import value in 2012 was at 787.53 million US dollars, moving down by 34.60 percent from 2011. Most imported products were polished semi-precious stones, accounting for 57.67 percent of the overall import in this category, followed by rough stones and polished precious stones at 28.07 percent and 14.26 percent respectively. China's import of polished precious stones has steadily increased, and Thailand has long maintained its status as the top import source in this market, accounting for over 70 percent of the overall import. However, in 2012, China reduced its import from Thailand and ordered more products from India, with an exceptional growth of over 21 times from 1.96 million US dollars in 2011 to 44.49 million US dollars in 2012, most of which was expected to be emerald import. As a result, Thailand moved from the top to the second import source, with a 4.62 percent decrease in import value. Since India's colored stone manufacturing industry has been consistently developed over the years, both in terms of

heat treatment and polishing techniques, India's polished precious stones have much better quality and are becoming more accepted in the global market. The level of quality may not be as high as products from Thailand, but the price is lower. As a result, Chinese jewelry manufacturers opt for lower-grade and lower-price materials for the sake of price competitiveness.

China's import of polished semi-precious stones in 2012 decreased 56.04 percent from the previous year to around 454.17 million US dollars. Hong Kong was the most important source with the import value of around 170.04 million US dollars and an outstanding growth of 3.18 times compared to the value of 40.66 million US dollars from the previous year. Other major supplying countries included Thailand, Myanmar, South Africa and Brazil, with the import value of 142.21, 89.81, 23.49 and 9.84 million US dollars respectively.

4. Opportunities and Challenges for Thai Colored Stone Industry

Although in 2012, Thailand still maintains its growth in export value and its status as one of the world's leaders in colored stone trading, this industry is still facing challenges from the lack of domestic supply. Recognizing the importance of this problem, the Thai government under the responsibility of the Ministry of Commerce, has signed the Memorandum of Understanding (MOU) with the Republic of Mozambique's Ministry of Mineral Resources, on their collaboration regarding mineral resources, in an attempt to find a channel for upstream raw materials to circulate into Thai gem and jewelry industry.

Moreover, Myanmar's political reform in April 2012 resulted in the United States' cancellation of sanction measures against products from Myanmar, but not including gem and jewelry. In the meanwhile, the European Union has suspended its trading, economic and other specific sanctions against Myanmar at least for one year, including gemstone trading. This should be a driving factor for the United States to cancel its sanction against gemstone import from Myanmar in the near future. Due to Thailand's competitiveness in terms of heat treatment and polishing techniques, as well as its status as a neighboring country, this should be a golden opportunity for Thai colored stone industry to import raw materials from Myanmar for value addition as a way to promote Thailand's gem and jewelry export value.

