World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:10, No:8, 2016

Creation of Greater Mekong Subregion Regional Competitiveness through Cluster Mapping

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***Abstract*—**This research investigates cluster development in the area called the Greater Mekong Subregion (GMS), which consists of Thailand, the People's Republic of China (PRC), the Yunnan Province and Guangxi Zhuang Autonomous Region, Myanmar, the Lao People's Democratic Republic (Lao PDR), Cambodia, and Vietnam. The study utilized Porter's competitiveness theory and the cluster mapping approach to analyze the competitiveness of the region. The data collection consists of interviews, focus groups, and the analysis of secondary data. The findings identify some evidence of cluster development in the GMS; however, there is no clear indication of collaboration among the components in the clusters. GMS clusters tend to be stand-alone. The clusters in Vietnam, Lao PDR, Myanmar, and Cambodia tend to be labor intensive, whereas the clusters in Thailand and the PRC (Yunnan) have the potential to successfully develop into innovative clusters. The collaboration and integration among the clusters in the GMS area are promising, though it could take a long time. The most likely relationship between the GMS countries could be, for example, suppliers of the low-end, labor-intensive products will be located in the low income countries such as Myanmar, Lao PDR, and Cambodia, and these countries will be providing input materials for innovative clusters in the middle income countries such as Thailand and the PRC.

***Keywords*—**Greater Mekong Subregion, competitiveness, cluster, development.

I. Introduction

THE nations and territories that are located around the Mekong River basin form the GMS. They include Thailand, PRC (Yunnan Province and Guangxi Zhuang Autonomous Region), Myanmar, the Lao PDR, Cambodia, and Vietnam. The Subregion provides a large market covering an area of 2.3 square kilometers that has over 240 million people. Further, in 2010, the region had a gross domestic product (GDP) of $863 billion. The location of the GMS is very strategic since it is situated at the focal point of East Asia, which is thought to be the entry point to China and India. As a result of these factors, the countries in the GMS have seen consistent, strong, and solid economic growth since its initiation in 1992 [1].

The establishment of the GMS was assisted by the Asian Development Bank (ADB). The objective is to enhance the economic integration in the region [1]. Since its initiation, the GMS program has embraced three strategies:

1. Increasing connectivity through sustainable development in physical infrastructure and transforming transport infrastructure
2. Improving competitiveness through the facilitation of the cross-border movement of merchandise and people and integrating products, processes, and markets
3. Building a sense of community through social and environmental projects

At the moment, GMS programs include transport, facilitation of trade, energy, agriculture, and the environment. Additionally, there are also programs that involve human resource development, urban development, tourism, and ICT in the cross-border economic region.

GMS Economy

Ever since the initiation of the GMS in 1992, the nations forming it have accomplished numerous milestones due to sub-regional economic cooperation. This has resulted in the nations in the Subregion being changed from centrally-planned economies to market-driven economies. Between 1992 and 2009, the average GDP growth was 7.6%. Of that average GDP, 10.5% came from PRC (Yunnan), 9.1% from Myanmar, 7.8% from Cambodia, 7.5% from Vietnam, 6.6% from the Lao PDR, and 4.1% from Thailand [1].

The transition from centrally-planned economies to a market-driven economy that has expanded market efficiency and created a better investment atmosphere in the region is also evident [1]. Additionally, between 1993 and 2009, the gross national income expanded three times in Cambodia, the Lao PDR, Vietnam, and Yunnan Province, while the GNI of Thailand almost doubled. This indicates that, among the GMS nations, Thailand is a vital trade partner with Myanmar, the Lao PDR, and Cambodia. It can also be noted that Thailand is the largest import partner with Cambodia and the Lao PDR, and is the third largest partner with Myanmar, following the PRC and Singapore [1].

Infrastructure Development in the GMS

The ADB has played the biggest role in the regional GMS infrastructural projects, which include the roads, rail networks and air transport that have been developed so far. On average, air freight transport in the GMS between 2001 and 2001 increased enormously, more specifically in Thailand, Vietnam, and Yunnan countries. Road networks dramatically increased in Thailand and the PRC (Yunnan), while on the other hand, rail lines were essentially expanded in PRC (Yunnan) [1]. Nonetheless, the communications and information infrastructure did not receive as much consideration in a few of the GMS countries. For example, telephone lines were scarce in Myanmar, Cambodia, and the Lao PDR, while on the

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contrary the same lines expanded to a great extent in Thailand, Vietnam, and PRC (Yunnan).

Several other studies have indicated that the information and communication technology (ICT) sector is the source of this competitiveness [8], [9]. It is however noted that research and development have generally been underestimated by the GMS nations since the average expenditure on research and development among the GMS countries was below 1% of the GDP. Nonetheless, the use of ICT only accounted for 6-7% of the GDP in Thailand, Vietnam, and the Yunnan regions (PRC) [1]. However, huge infrastructural projects, for instance, highways, railways, and energy networks, may not be attainable in most of the GMS countries on account of insufficient capital, human resources, the presence of regulatory and institutional restrictions, and insufficient local demand.

Social Development in the GMS

A large number of individuals in Cambodia, the Lao PDR, Vietnam, and the Yunnan (PRC) countries lived with an income of less than two dollars a day between 1990 and 2000. This phenomenon was, however, reduced between 2001 and 2009 to 16.4% in Yunnan Territory, 20.7% in Vietnam, 24.1% in Cambodia, and 31% in the Lao PDR [1].

The GMS has experienced slow social development and broadening of the income gap because of a lack of complementary economic, social, and political components. The GINI index has increased on average between 1990 and 2000. The income share held by the largest 10% of the population has been expanding, from 32.7% in 1990-2000 to 35.9% in 2001-2009 in Cambodia, and from 29.2% in 1990-2000 to 30.6% in 2001-2009 in Vietnam [1].

A declaration by Kunming at the second GMS summit in July 2005 consented to lessening the income disparity through the following measures [2]:

1) Accelerating connectivity and related software components and growing cooperation in air, rail, and water transport
2) Improving competitiveness by encouraging trade and investment, and promoting learning and innovation
3) Promoting environmental sustainability through the core environmental programs

Resources in GMS

In the GMS, there are quite a number of natural resources including timber, agricultural resources, fisheries, minerals, energy resources in the form of hydropower and large coal and petroleum resources [1].

GDP per Capita in the GMS

The PRC was the biggest trader in 2006, stretching to around two fifths of the aggregate trade while Thailand was second, achieving 35% of the aggregate trade. Vietnam represented 16% of the GMS intraregional trade, whereas the Lao PDR, Cambodia, and Myanmar had little stake in the GMS intraregional exchange [1].

In general, it can be concluded that the GMS countries are widely diversified as far as development pace and level are concerned. The countries range from the most developed countries, for example, the PRC (Yunnan and Guangxi), and Thailand with a GDP per capita of more than three thousand US dollars, contrasting with the less developed, for example Cambodia, the Lao PDR, and Myanmar, with a GDP per capita of under five hundred US dollars. Therefore, the GMS countries can obtain several advantages from the participation and cooperation of every country in bridging the development gap among them.

II. Literature Review

Competitiveness, as defined by Michael Porter of the Harvard Business School, is the productivity with which a country utilizes its human, capital, and natural resources. Porter continues to state that competitiveness does not rely on what industries and enterprises in a country compete for, but on how the industries compete. Additionally, he indicates that total productivity in a country is obtained from combining the domestic and foreign firms' productivity. Productivity permits a country to set living standards for its people regarding measures such as wages, return on capital, and returns on natural resources, and this is the reason why each county contends to provide the best environment for business [3].

Stages of National Competitive Development

Each country has its own conditions that are used to measure competitiveness. As indicated by Porter, there are three key stages of competitive development for a country as follows [3]-[5]:

A. Factor-Driven Economy: At this stage, countries compete on the basis of low-cost inputs and thus only the under-developed countries are in this category. The fundamental goal at this stage in enhancing competitiveness is to create political and legal stability, enhance human capital, and create efficient basic infrastructure and lower regulatory and other costs of doing business.
B. Investment-Driven Economy: Countries here compete on the basis of the creation of a good business environment for investment. The countries in this category are the developing countries, and Thailand would be classified in this category. The fundamental goal at this stage for intensifying competitiveness is to increase local rivalry, opening the market, the creation of advanced infrastructure, and creating cluster formation and activation.
C. Innovation-Driven Economy: This stage is made up of the developed countries that normally have world-class companies and whose competition is mostly based on innovation. At this stage, the main aim of enhancing competitiveness is to develop a pool of advanced skills and establish institutions of science and technology. Porter also suggested that a considerable number of countries in an investment-driven economy cannot restructure their economies to an innovation-driven economy since they are not able to develop innovation on their own.

Cluster

Porter describes "clusters" as "the geographical

concentration of interconnected companies, specialized suppliers, service providers, industry and other related institutions such as universities, standard agencies, trades associations and so forth. Specifically, these are fields that may be competing but in one way or another they cooperate. Clusters create productivity by improving efficiency since organizations and companies in the cluster can share resources and coordinate in developing new innovations [6], [7].

Cluster Mapping

This is the initial step in cluster analysis, which includes the process of the identification of the constituents in a cluster and the relationship they have with each other [6], [7]. The process is represented in Fig. 1. As shown in the figure, there are eight segments in the cluster: 1. Core industries, 2. Supporting Industries, 3. Related Industries, 4. Academic/Training Institutions, 5. Standard Organizations, 6. Government Agencies, 7. Research Institutions, and 8. Institutes for Collaboration.

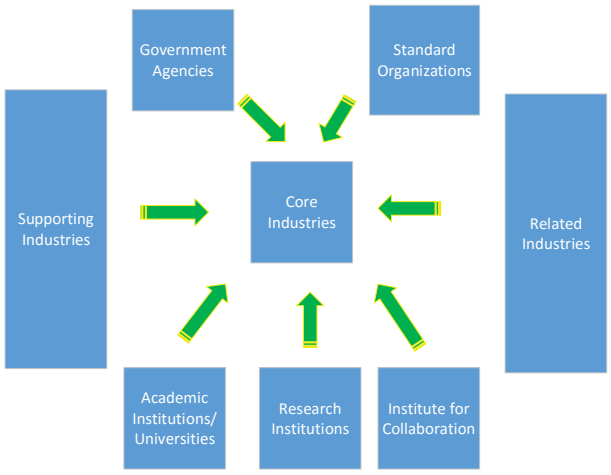

Fig. 1 Cluster Mapping Process

III. Research Method

This is a descriptive research and the data collection techniques involved various document analyses. Data were gathered from interviews, focus groups, and various secondary sources, for example, research databases, news, and other related reports. All of the qualitative data were analyzed using the thematic coding method and themes were recognized from the data pattern.

IV. Findings

Any industrial zone in any part of the world is a clear indicator of the members' economic development. In the case of the GMS, though the economic zones here have been set up for only a couple of decades, they have created a commendable number of products that are exchanged in the worldwide economy. Every innovative cluster is normally created in the cutting edge modern technology zones in every nation. With various manufacturers and production plants situated in the area, the GMS economy can possibly and considerably have an impact on the value chain of the global market [2].

Vietnam

In Vietnam, around 250 modern zones have been built up with an aggregate capital contribution of 70 billion USD from more than 8,500 investment ventures. The zones are situated in the three main economic territories in the northern, central, and southern regions. The economy has quickly grown and accomplished a momentous point of reference to attract an investment atmosphere from two decades ago. A few divisions, for example manufacturing and ICT, have continued to offer splendid venture opportunities with a very important blend of demands from other parts of the world.

Yunnan

Kunming is one of the top cities in China and is known for foreign investment. It has two main cutting-edge industrial zones, which are the Kunming Economic and Technological Development Zone (KETZ) and the Kunming High-tech Industrial Development Zone (KHIDZ). The two are viewed as the main national high-tech development zones in Yunnan Province. Both of them have been evaluated to have 17.85 and 15.46 billion RMB respectively. This was in the year 2012 a characteristic of the city's 10% from the aggregate (Chinaknowledge.com). The Kunming Economic and Technological Development Zone (KETDZ) is situated in the eastern part of central Kunming and is just 1.8 km from Kunming International Airport. The used FDI of the zone was evaluated at $254.05 million, which is around 16% of Kunming's aggregate FDI, and that is why it is regarded as the main high-tech zone in Kunming, Yunnan. It was set up in 1992 and is one of the modern industrial parks with most level of manufacturing assembly. It is the only zone that incorporates national-level development and processing zone, facilitating scientific and technological exchanges in Yunnan province. The same zone has brought in many investment ventures from more than 22 nations, for example, Germany, Thailand, and the USA. An estimation of imports and exports was assessed at $2.14 billion in 2012 and expanded considerably to $5.96 billion in 2013 (an increase of 178.5%). Its key manufacturing activities are in tobacco processing, mechanical manufacturing, optoelectronics and IT commercial enterprises, biopharmaceutical and the food and beverage sector [8], [9].

Thailand

In Thailand, much attention is paid to the electronic equipment and automobile clusters for its economy. These clusters contribute a great percentage to the global export and exchange inflows. Thailand is situated in the ASEAN hub, which offers incredible business potential. The majority of the industrial zones in Thailand are developed, owned, and managed by individuals.

Thailand's Board of Investment (BOI) has divided the nation into three zones that are based on economic factors. Those based on earnings and primary facilities in every province are in zone 1, which include: Bangkok, Nakhon Pathom, Nonthaburi, Pathoum Thani, Samut Prakan, and Samut Sakhon. The second zone comprises 12 provinces that are generally

situated in central Thailand. The remaining 59 provinces are in zone 3 because of the low income and low development of infrastructure. Every zone has diverse incentives, such as tax and non-tax incentives, and that fluctuate depending on the zone. Most of these privileges are for those areas farthest from Bangkok [10].

V. Discussion

The outcomes of this study propose that there are open doors for cluster development in the GMS territory for Electrical and Electronic Equipment (EEE), Automobiles, and Medical Devices. Currently, three of the GMS nations, Thailand, Vietnam, and the PRC (Yunnan), have the highest potential for the advancement of these clusters. Thailand is a major exporter of EEE and automobile parts, and its production of medicinal gadgets has been quickly developing. There are likewise R&D activities set up that could be exceptionally useful to cluster development if given favorable consideration and exertion. The PRC is the biggest producer as well as the biggest business sector for these commercial ventures. In spite of the fact that Yunnan province may not be the quickest developing or the greatest supplier in the nation, its relative significance in the GMS remains high. Vietnam's key source of power is still in the labor-intensive methods of production. Still, its labor competencies are dynamically developing, making the nation progressively attractive for foreign investors.

Regarding exports, as established from the data, 100% of the aggregate deals for all industries in Vietnam are sold to the global markets where 100% of their global deals are in exports. Firms in Yunnan, for the most part, are seen to concentrate on the local markets, where a respondent demonstrated that 100% of aggregate deals are from the local market. The other two firms in Yunnan have only 2% and 20% of the aggregate deals globally and under half of those aggregate deals involve direct exports. Another key finding is that fewer than 10% of the aggregate deals for firms in Yunnan are sold locally to brokers, who deal with export goods and services. Conversely, two firms in Thailand showed that around 70% and 84% of their aggregate deals are sold to the international markets, where their direct exports are 0% and 40% respectively. Additionally, around 30% and 60% of their aggregate sales are sold to the brokers that export them.

More than 80% of the inputs that are supplied from nearby sources in Yunnan are supplied by local sources. Only two firms in Thailand have demonstrated that their inputs are imported at around 60% and 95% from outside sources. Equally, a respondent in Vietnam showed that around 37% of the inputs originated from nearby suppliers. Concerning the other three GMS nations—Cambodia, Myanmar, and Lao PDR—despite everything, they have constrained abilities that are required for high-tech productions, and clearly are presently in generally low value-added trade with their partners among the GMS nations. Thus, as the GMS innovative cluster builds up, these nations will be prone to end up becoming the primary source of labor-intensive production globally.

As seen earlier, trade flows are in high concentration in only three developed nations, Thailand, Vietnam, and PRC (Guangxi), while low value-added trade flows are in the other three less developed countries, Cambodia, Lao PDR, and Myanmar. This may suggest that value-added trading activities bring to a nation high economic development and growth. As established from the cluster survey, most of the companies in Yunnan, Thailand, and Vietnam are not currently involved in inter-country trade due to the existence of barriers such as tariffs and financial and administrative support. Hence, more support is important for expanding the linkages between nations.

The current labor skill inequalities between the GMS nations make it difficult for Cambodia, Lao PDR, and Myanmar to take part in trading activities at the same level as Thailand, Vietnam, and the PRC. The nations with high levels of labor skills are more proactive as they trade with high value-added products, for example R & D production of high-tech components, promoting the advancement of innovative clusters. This linkage should also involve academic institutions, international organizations, government agencies, and chambers of commerce. These linkages should be encouraged by introducing regional policies that focus on promoting collaboration among nations such as regional and corporation integration (RCI).

V. Conclusions

In general, cluster developments were discovered in the GMS, though there was no clear sign of joint efforts from the components in those clusters as has taken place in the Baltic Sea cluster. The clusters in Vietnam, Lao PDR, Myanmar, and Cambodia seem to be labor intensive and those in Thailand and the PRC (Yunnan) have the potential to effectively grow to become innovative clusters. Currently, the only likely linkage between the GMS nations could be the fact that the suppliers of low-end and labor-intensive products are found in nations such as Myanmar, Lao PDR, and Cambodia and that provide input materials for innovative clusters in nations such as Thailand and the PRC. One believes that the collaboration among the clusters in the GMS region is very promising, even though the process may take a long time.

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