

# Assessing Porter's Diamond Framework for Competitive Advantage of Nations: The Case of Lao Electricity Generation Industry

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**Abstract:-** Lao People's Democratic Republic (Laos) is a developing country in order to promote the Lao economic growth. The government has realized the significance of creating stable economy which has laid out policies and strategies such as that electricity generation, it has a potential industry for drive economic growth as well as promoting the local and foreign investments.

This paper investigates that applied Porter's Diamond Framework for Competitive Advantage to analyze exploring the competitiveness of industry-level framework focusing on the electricity generation industry in Lao PDR. It is to analyze a tool determining whether the electricity generation industry and able to provide firms with such favorable conditions allowing them to compete internationally.

The findings of this study show an evidence of least cost option for energy generation because Laos may have a comparative advantage in geography and natural resources. Moreover, the mainly Lao electricity generation production industry is hydropower in addition, this production also is to fulfill the domestic and foreign countries demand.

**Keywords:-** Porter's diamond framework, Competitive advantage, Electricity generation industry.

## I. INTRODUCTION

Lao People's Democratic Republic (Lao PDR) is the abundant natural resources and landlocked country that is undergoing transition from a centrally planned to a market-oriented economy, from rural to more urbanized societies, and from subsistence to integrated economies with the Greater Mekong Sub-region (GMS) (Asian Development Bank, 2010). Meanwhile, Lao PDR imports all petroleum products and has significant hydroelectricity capacity for exporting energy. Therefore, Laos is becoming the regional power battery. The electricity sector is a strategic growth country in Laos, which has grown in recent decades and has not slowed down (Lao PDR power to the people, 2012).

Number of statistic that electricity generation industry has been very important since the mid- 2000 related construction activities and after commercial operations, which

are expected to meet the growing demand of the country and neighboring countries. The installed capacity of Laos increased by more than 6,000 megawatts between 2000 and 2016, mostly through cooperation with most foreign investors. In addition, Gross Domestic Product (GDP) of Laos growth averaged 7.8% over the last decade (Lao Economic Monitor, April 2017). The inter-relationships between the GDP growth and the electricity generation industry expanded are particularly significant in this country.

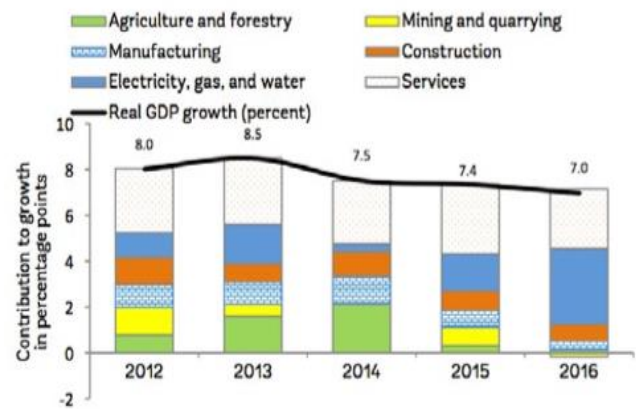


Fig1:- Sectoral contribution to real GDP growth (percentage points)

Source: Lao Economic Monitor on April 2017 by World Bank.

Growth moderated in 2016, mostly from the energy and services sectors.

Therefore, this study aims to define the term competitive advantage and to bring it into correlation with the electricity generation industry. Applied the Porter's diamond framework to analyze the key factors of strengthening role and how Lao electricity generation industry to advocate competitive advantage and supplement the regional competitiveness in region.

## II. JUSTIFICATION

The Lao electricity generation industry is rapidly growth rates, in electricity consumption of around 26 percent during 2014-2016 confirms the rapid expansion of economic

activity has a higher proportion of electricity consumption 11 percentage (Lao Economic Monitor, 2017).

This research is investigated in the electricity generation industry which is strong growth rates and number of sector expanded, this research applied the Diamond Model is the analysis of electricity generation cluster in Laos and to find out how each factor function and interface with other factor in the Lao electricity generation industry.

**III. LITERATURE REVIEW**

There have been many previous empirical studies to estimate the competitive advantage which conducted a study analyze the competitive advantage.

Masnat Al-Hiary, Bashir Al-Zu’bi, Amer Jabarin used (2010) conducted a study analysis the competitiveness of the Jordanian agricultural sector. The finding of diamond model indicated that the situation of Jordanian agricultural sector does not the reflection its full potential. Key issues of product quality, packaging standards and marketing should be improved to be able to compete with competition worldwide.

Salvador Barragan (2005) researched on the automobile industry in Mexico. This discovery points to the evidence that MNEs are more broad-minded than the original, and doubles the benefits of diamonds to demonstrate the competitive potential of the early stages of development.

Lovisa Persson and Sofie Jansson (2015) investigated the competitive advantages of Sri Lanka's garment industry. The finding of this study explained Sri Lanka garment industry has many potentials and some competitive advantages in terms of social responsibility and manpower. The fact that a country has a well-developed system of legislation in favor of this industry will certainly make Sri Lanka competitive and more attractive to Swedish companies.

**IV. THEORETICAL ISSUES**

Disillusioned by the economic theories of trade, Porter (1990) advanced a new theory to seek national competitive advantage, to lay the theoretical underpinnings of this interchange of country and industry competitiveness issues. The main question tries to answer why some countries are more successful in certain industries than others.

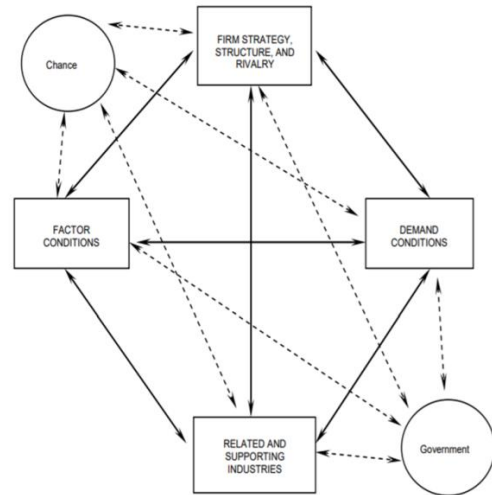


Fig 2. The Diamond Model

Source: Adapted from Porter, M.E. The Competitive Advantage of Nations. New York: Free Press, 1990

1. Factor conditions: whereas the traditional trade theories are defined factors such as land, labor and capital, as different each category including: human resources, physical resources, knowledge resources, capital resources and infrastructure.
2. Demand conditions: is a pressure depending on customer needs which is quality, prices and services in a specific industry, this needs to make the industry to ready for the international stages in future.
3. Firm strategy, structure and rivalry: The major focusing is strategies and firm structures that are heavily dependent on the national environment. Moreover, there are regular differences in business sectors, in different countries that defines how is companies in each country eventually their competitive advantage.
- 4 Related and support industries: the whole debate about where is a source of competitive advantage has to do with how it looks at the modern global economy, that are three main reasons why expertise occur and why it is important.

The Role of Chance is the opportunities for external events such as war and natural disasters may affect or benefit the country or industry.

The Role of Government, all the policies and regulations made by policymakers at all levels of government (but particularly federal) is be able beneficial or affect the ability of the country and industry.

**V. ANALYTICAL FRAMEWORK**

This study applied Porter's Diamond Framework to the electricity generation industry in Laos to explore the competitiveness on this industry.

The Diamond Model is a great tool in the pursuit of both conflict and stigma, and the country must begin to search for them. Regional competitiveness advantages relate to the strength of existing resources, factors related to regional production, competitiveness and government support.

#### A. *Factor Conditions*

The role of factor conditions in agricultural product competition depends on the form of international competition. The principal factors which are used by the electricity generation industry and which might have a significant influence on its competitiveness are natural resources and geography facilities.

- *Geography facilities*

Lao PDR is a landlocked country and a mountain, which is bordered by Vietnam, Myanmar, Cambodia, Thailand and China, it is becoming integrated with the Greater Mekong Sub-region (GMS). The abundant resources of the Mekong River and its tributaries give the potential of Lao PDR is high compared to other countries in the lower Mekong River Basin (Alternatives for power generation in the greater Mekong sub-region, 2016), it is located at optimal location and providing an opportunity Laos' strategies where production of hydro power which could be consumed on domestic and centered on the export of electricity to Thailand and other neighboring countries.

- *Natural resources*

Lao has an abundance natural resources which has a comparative advantage in the electricity generation industry such as hydropower and, coal and lignite due to least cost option for energy generation.

Laos has many rivers flowing into the Mekong River, there has totally fourteen lines that some rivers are used to consume and generate energy by creating a hydropower. The Mekong river sub basins in Laos, the hydroelectricity capacity is approximately 20,000 MW, in 2011 with a capacity of 2,570 MW and is used for domestic consumption and export. Another 2,623 MW of capacity involved 12 power plants in various stages of construction. Hydropower plants (HPPs) provide electricity both to domestic customers (through the grid) and foreign markets (Asian Development Bank, 2013).

Coal is caused by mining and burning is able to generate the electricity. The burning is caused the air pollution, this generator is still less when compared with hydropower. The Lao PDR's coal reserves are estimated to be about 600 million–700 million tons, occurring mostly as lignite with smaller amounts of anthracite. Coal consumption is currently limited to a cement factory, using about 35,000 tons per year, and a few smaller users (Asian Development Bank, 2013).

#### B. *Demand conditions*

The industry innovation faster and the sophisticated "home demand" can create the competitiveness. Developing country of Laos is rapidly growing population, which means

that energy demand has been increasing such as household demand is still lacking electricity consumption on some of area countryside. Therefore, the expansion of industrial sector is necessary which is a key factor driving the government to boost production belts and to develop the power generators, power plants to satisfy the demands of industry and households. This particular feature has a direct impact on the development of electricity generation in Laos.

- *Consumption*

Moreover, the fact that Lao electricity generation derive substantial advantages from the demand conditions is also in line with what Porter envisages for a developing country. Household electricity consumption in Lao PDR is still not accessible to some rural areas because of the lack of capital, technological restrictions, in addition to economic and social factors, both direct and indirect of electricity generation.

Electricity is generated the main grid in the Lao PDR which exports to Thailand as importing electricity from Thailand and Viet Nam into some areas which are not connected to the interconnected transmission system. Moreover, the government is an important source of revenue from royalties, taxes, and dividends by the export of hydropower. Foreign and private sector investors are contributed the development of hydropower potential in Laos (Asian Development Bank, 2013).

#### C. *Firm strategy, structure and rivalry*

The legal and regulatory framework is developed and enhances to accommodate power industry sector development by either public, private or public or private partnership approving the foreign exchange for economic and social development and poverty alleviation, and fulfill covenants under MOUs and government agreements with Thailand, Vietnam, and others..

Lao has defined the strategy that extend rural electricity uses to promote better economic and social development, and the achievement of respectively government targets of 70 and 90% by 2010 and 2020 (Akhomdeth Vongsay, 2013). However, in the long run, there has to strive to diversify its production portfolio and develop a comprehensive policy for the development of other potential sources such as solar power, wind power, biomass, biofuels and small hydropower. The off-grid renewable energy is decentralized from renewable sources which is important given that the needs of people in distances are the electricity consumption by heating and cooking, and the expansion of conventional networks is economically and technically challenging.

#### D. *Related and Supporting Industries*

The existence of relevant industries and encouragement of internationally competitive which is encouraged the electricity generation industry.

**VI. EXTENSION**

This industry promotion plays an important role in the development of infrastructure system. It also supports price policies in the household to accommodate income in addition, encourages expansion of rural electrification and the electricity consumption in the industrial sector. Lao government realized that this development needed to enrich a great deal of capital, knowledge, skills, and modern technology thus, it is open widely to both domestic and foreign investment. Increasing the scope of policies is appropriate, in order to meet the requirements. International companies as well as foreign investors, play a great role in introducing technology and know-how, in order to create efficient production and minimize environmental impacts, and also adapting innovations that helps lower the electrification program's investment costs. For this reason, complementary working relationship between private and public for this reason, the extension services have to be established.

The goal of the government's major energy sectors is the expansion of electricity and improving the main cost-effective power using off-grid power. The project is funded by the establishment of a hydropower project for export and export of electricity (Asian Development Bank, 2010).

**VII. RESEARCH**

The government of Laos encourages foreign and private investors to develop power supply projects in the domestic market because research and development is the first step in technological innovation. In addition, The Ministry of Energy and Mines (MEM) under the Prime Minister's Office is the central agency responsible for energy and renewable energy and plays a key role in developing the country's renewable energy strategy, it manages the electricity sector through the Department of Electricity.

Moreover, Institute of Renewable Energy Promotion (IREP) is operated a sustainable energy and sustainable energy project in Laos. There is role which under the auspices of the Ministry of Science and Technology, plays an important role in the research and development of renewable energy technologies. Suitable for local conditions and needs. (Lao PDR National Sustainable Energy Strategy Report, 2014).

**VIII. CONCLUSION**

At this point, it is worthwhile to draw the main conclusions from the study described in the previous sections and ascertaining what they might imply with respect to the potential for a competitive electricity industry.

Least cost option for energy generation because Laos may have a comparative advantage in geography and natural resources. Moreover, the mainly Lao electricity generation production industry is hydropower in addition, this production also is to fulfill the domestic and foreign countries demand.

**REFERENCES**

- [1]. Asian Development Bank. (2010). Sector Assistance Program Evaluation For The Energy Sector In Lao People's Democratic Republic, pp. 28-32.
- [2]. Asian Development Bank. (2013). Lao People's Democratic Republic Energy Sector Assessment, Strategy and Road Map, pp. 6-9.
- [3]. World Bank. (2017). Lao Economic Monitor April 2017: Challenges in promoting more inclusive growth and shared prosperity, pp. 7-42.
- [4]. World Bank. (2012). Lao PDR Power To The People: Twenty years of National Electrification: Country and Power Sector Overview, pp. 1-4.
- [5]. World Bank. (2005). Lao PDR environment monitor, pp. 14-26.
- [6]. Lao PDR National Sustainable Energy Strategy Report. (2014). On Enabling Environment and Technology Innovation Ecosystem for Affordable Sustainable Energy Options, pp. 21-23.
- [7]. Alternatives For Power Generation In The Greater Mekong Sub-Region. (2016). Volume 3: Power Sector Vision for the Lao People's Democratic Republic. pp. 13-16.
- [8]. Masnat, A.R., Bahir, A.B., Amer, J.S. (2010). Assessing Porter's Framework for National Advantage: The Case of Jordanian Agricultural Sector. pp. 11-24.
- [9]. Salvador, B.G. (2005). Jordan Journal of Agricultural Sciences: Assessing the power of Porter's Diamond in the automobile industry in Mexico after ten years of NAFTA. pp. 39-64.
- [10]. Lovisa, P.S., Sofie, J.S. (2015). A case study in Sri Lanka: Problems and possibilities for Sri Lanka's Textile industry. pp. 27-35.
- [11]. Porter, Michel. E. (1990). The Competitive Advantage of Nations, London.
- [12]. Akhondeth, V.S. (2013). Energy Sector Development in Lao PDR, pp. 9-15.