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An Examination of Louisiana State Export Opportunities Using Export Decision Support Model

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Abstract
This paper presents modification and the usefulness of the Export Decision Support Model (EDSM) as a tool for identification of export opportunities and benefit of growth in exportation. The study revolved around the Export Decision Support Model (EDSM) of Viviers and Cuyvers (2012). The study used a time-series data across the various export commodities available in the State of Louisiana from 2013 to 2016. It also sourced the export growth rate of Louisiana as a proxy of total export percentage share in the gross United State exportations within the same period. The time series data was sourced from the United States Census Bureau (2017) survey on State exports from Louisiana. This current study adopted a simplified version of Export Decision Support Model (EDSM) postulated by Cuyvers (2012). The objective of this study was to demonstrate the modification of the EDSM for the development of the Louisiana State**.** The paper revealed to the policymakers the sharp drop in Louisiana exportation for the past four years. The paper further revealed to the readers and policymakers the important export commodities that needed maximum attention to ensure growth in the Louisiana State.
Keywords: Export, Export Decision Support Model, Filtration, Employment, GDP, Production, Panama Canal, and Commodities

1.0 INTRODUCTION

For decades, Americans watched with frustration as businesses shipped thousands of good-paying manufacturing jobs overseas. To my surprise, in the midst of the worst economic downturn and frustrations since the Great Depression, there is a growing belief that offshoring of U.S.-based jobs is rapidly reaching a plateau. It is an undeniable fact that exportation has been sourced by many nations as an economic recovery tool.

According to Viviers and Cuyvers (2012), exporting enable companies, institutions, and economies to increase sales/revenues, increase cash flow and smooth the normal ups-and downs in the domestic business cycle. In fact for America; the Louisiana States to tap into the global market opportunity, more American companies need to start or increase exportations. Following the expansion of the Panama Canal will be of a great advantage as it will allow passage of much larger ships more quickly. According to Robert Landry, chief commercial officer for the Port of New Orleans Louisiana which is home to 33 ports including six deep–draft ports could expect to see the boom that east coast ports are likely to see. He further argued that the ports expect to see container volume rise of 8 percent to 10 percent in the first year of the expansion, then 3 percent to 5 percent average growth rate per year, and that reflects that the Louisiana States as well as the United States as a whole could greatly benefit from the canal's expansion.

Despite the State of Louisiana endowed resources, the state struggled with funds to finance its developmental projects regarding education and other public utilities. Surprisingly, Louisiana was ranked the second best sugar cane producer in the United States. Meanwhile, sugarcane is one of the essential raw material sources of manufactured sugar in the United States. Sugarcane is produced in Florida, Louisiana, Hawaii, and Texas. In Louisiana, the northernmost cane-growing State, sugarcane production has been largely confined to the Delta, where soils are fertile and the climate is warm.

However, the sugar industry in Louisiana has expanded northward and westward into nontraditional sugarcane growing areas. Most of the expansion in sugarcane acreage has occurred when returns for competing crops, such as rice and soybeans, have decreased. Louisiana production has also expanded because of the adoption of high-yielding sugarcane varieties, along with investments in new harvesting combines. Louisiana produced an average 1.50 million STRV of sugar between FY2010-16. In addition, Louisiana is also one of the nation's top three rice-producing states, growing mostly long grain rice. While southwestern Louisiana is the primary center for rice production and milling, rice is also grown in the northeastern part of the state. Louisiana grows rice on approximately 400,000 acres each year, and the annual crop is valued around $360 million. Rice production and processing both play important roles in the state, generating annual economic activity of almost $200 million and accounting for thousands of jobs. Rice is the state's top agricultural export. Again, Louisiana Delta is one of the 17 southern states that produce cotton which generates about 200,000 jobs in the cotton industry, among the various sectors from farm to textile mill and accounts for more than $25 billion in products and services annually in the United States.

More importantly, Louisiana ranks among the top five state exporters in 10 industries, including first in grain & oilseed milling products ($3.7 billion) and second in petroleum & coal products ($25.7 billion), basic chemicals ($4.1 billion), and resins & synthetic fibers ($3.5 billion). Louisiana is America's 25th largest exporter

of agricultural products. It is the largest exporter of farmed fish and related products, the third largest exporter of rice, the seventh largest exporter of other grains, and the 12th largest exporter of cotton. Indeed, one of the Louisiana's fastest growing export categories is aerospace products & parts, which have increased by 49 percent per year since 2004. In 2014, exports of these products reached $602 million.

As discussed in Sirkin, Rose, and Michael (2012), for years, conventional wisdom has maintained that manufacturing in the U.S. is in terminal decline. Rising wages and currency rates, among other factors, have dramatically turned the tide and narrowed the gap between manufacturing costs in other competing states and the U.S. They underscored that Several U.S. companies are now bringing manufacturing jobs back to America. In relation to China Purchasing Development Report (2015) released by the China's Federation of Logistics and Purchasing, there is a clear indication that China's manufacturing industry is losing out to the U.S.in terms of its cost advantage. Prices of energy, logistics, and some raw materials in China have surpassed those in the U.S. The report shows that the U.S. has slashed its energy costs with the exploitation of shale gas that has increased the competitiveness of American manufacturers. Many raw materials are cheaper in the U.S. Taking for example; in 2014 the U.S. cotton was 30 percent cheaper than cotton produced in China. In addition, China has cost and price disadvantages in both logistics and industrial land. If the trend continues, Boston Consulting Group estimates that China's cost advantage in manufacturing is likely to disappear by 2020.

The Panama Canal expansion also prices a challenge for China. The expansion allows passage of much larger ships more quickly; therefore, providing more cost-competitive services and reducing transportation costs between U.S. and North East Asia. The anticipation is that providers of transportation services will absorb a significant amount of transportation cost savings associated with the use of larger vessels. Moreover, agricultural and energy exports to North East Asia, especially through ports on the Gulf Coast and lower Mississippi, would be able to move through the Panama Canal on larger bulk vessels operating at deeper drafts. This could, in turn, generate greater traffic on low-cost barge and rail services that bring products to Louisiana ports from Central U.S. especially along the Mississippi River.

In fact, despite this enormous prospect and opportunities as well as the economic advantages available for the states. No current study has delved into this matter. Therefore, this current study is to bring to light to educate the Louisiana development agencies in order to take advantage of the Panama Canal expansion and export promotion of competitive agricultural commodities.

2.0 LITERATURE REVIEW

Studies have suggested that south Louisiana's six deep-draft ports will see a tonnage increase of between 5% and 10% with the canal expansion, according to GNO Inc. President and CEO Michael Hecht. That's because while the wider, deeper Panama Canal can accommodate the new, larger, "neo-Panamax" vessels that carry as many as 15,000 standard shipping containers, the draft of those mega vessels is too deep to enter the Mississippi River. Still, the expansion of the canal will not only double the volume of cargo passing through the waterway but will reduce bottlenecks and lower transit times. As a result, more cargo will be offloaded onto smaller vessels at ports in Jamaica and Cuba that will then travel to the Gulf of Mexico and up the river, which is a good thing for south Louisiana.

In the recent studies by Kaliba (2014); Lukongo and Kaliba, (2015) on the Louisiana State underscored that service and manufacturing industries in some region in Louisiana (Louisiana rural area) employed 68,169 workers in 2002. The number increased by 4 percent in 2002/07 and then declined by 1 percent in 2007/12. The first tier industry cluster that employed more than 10,000 employees was the biomedical/biotechnical industry cluster, which employed 25 percent of the regional employees. The location quotient was well above 1.2, showing potential for export to other regions in Louisiana. The second tier industry cluster that employed 5,000 to 10,000 employees included the agribusiness, food processing & technology, and forest & wood products industry cluster (i.e., the agricultural industry). The cluster also has a location quotient above 1.2. While this industry cluster had experienced a continuous decline in employment, it is among the mature industry clusters and has a comparative advantage regionally and nationally with a potential for export outside the region and globally. Generally, the Regional economic ecosystem depends on natural resources and fits the profile of a distressed and underserved community.

3.0 METHODOLOGY

The study is revolved around the Export Decision Support Model (EDSM) of Viviers and Cuyvers (2012). The study used a time-series data across the various export commodities available in the State of Louisiana from 2013 to 2016. It also sourced the export growth rate of Louisiana as a proxy of total export percentage share in the gross United State exportations within the same period. The time series data was sourced from the United States Census Bureau (2017) survey on State exports from Louisiana. This current study adopted a simplified version of Export Decision Support Model (EDSM) postulated by Cuyvers (2012). Interestingly, the study does not follow the algebraic theorization of the model; meanwhile, it adopted the intuition and descriptive version of

the EDSM analysis. The model uses annual values of exports in Louisiana classified according to the Harmonized System of tariff nomenclature for 2013-2016. We use the World Bank database as a data source, which provides volumes of exports in USD.

Export Decision Support Model

Interestingly, expanding exports has become an urgent governmental priority in many nations across the globe in order to reduce a growing trade imbalance, ensure non-farm job creation, and improve economic growth. The importance of export has motivated this project to identify new opportunities for exporting Louisiana's goods and services using a new approach called the 'Decision Support Model' (DSM) to map out easy-to-access markets with low barriers to entry.

In order to assist export promotion organizations to better and more efficient design export promotion programs, geared to the continuously changing international environment, a decision support model was developed by Cuyvers et al. (1995). It was first applied to Belgium in 1992, 1993 and 1995 for the Flemish EPO (Cuyvers et al., 1995) and for academic purposes in 1996, 2003 and 2008, and to Thailand (Cuyvers, 1996; 2004) and the Philippines. The EDSM model endeavors to make a selection of possible export markets, which are potentially profitable, from the set of all possible worldwide product-country combinations. Using macroeconomic data and international trade statistics, the selection process consists of several consecutive intelligent filters that evaluate and screens all worldwide country and product combinations. The filters eliminate less realistic or promising product-country combinations (or export opportunities) in a particular market and then categorize and prioritize the shortlisted realistic export opportunities.

The model is extremely rigorous and thorough in its approach. It is the only trade model, which includes all possible product-country combinations in the world and at HS-6 product levels. The World Trade Organization uses the Harmonized System (HS) to define products. A code with a low number of digits defines broad categories. The model is a flexible enough to make export recommendations at the regional and national level. The model applications include developing and prioritizing export opportunities for the Republic of South Africa, Belgium, Thailand, Philippines, and Sweden. This recent application includes using the model to identify export opportunities for Louisiana State. This study will calibrate and apply the model to identify suitable export opportunities for Louisiana. The focus will be on agribusiness, food processing & technology, and forest & wood products industry cluster that have a national comparative advantage and a potential for global export. The DSM starts by including all worldwide countries and products and consists of a screening process through which realistic export opportunities (ROE) are identified.

The model consists of four consecutive filters that sequentially eliminate less realistic/interesting product-country combinations in an effort to categorize and prioritize REOs for the country/state which it is applied. Filter 1 will assess Louisiana political and commercial risks of doing business with every possible worldwide importing country; it will also investigate macroeconomic indicators to assess whether the importing countries have adequate overall market size and growth potential. Filter 2 will assess the import demand for the various HS-6 digit products in the remaining countries by analyzing the import size and growth. Filter 3 will examine the accessibility of each market by assessing the degree of market concentration and the barriers to entry. Filter 4 will categorize the identified potential export opportunities based on the strength of the exporting countries relative market share.

Finally, the identification of new markets for export promotion and domestic market recapturing may assist in the forthcoming review of a number of strategic plans by the Ministry of Industry and Trade, including the National Industrial Policy and the Small and Medium Enterprise (SME) Development policy.

4.0 EMPIRICAL DISCUSSION OF RESULTS

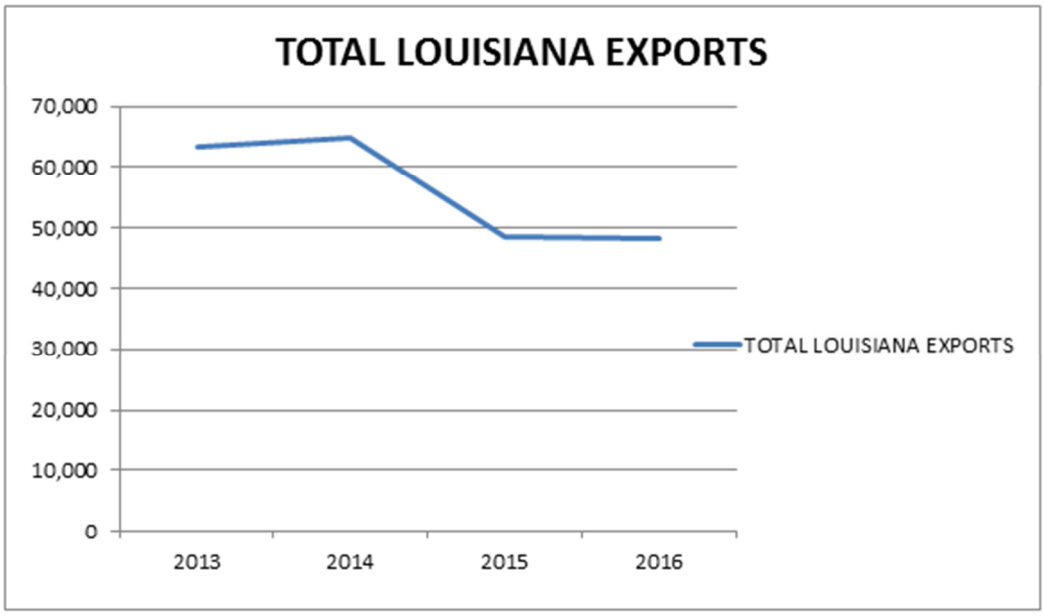
The structure of the sequential filtration of the EDSM follows the pictorial analysis of line graph and bar chart of the various export commodities produced in the state between the period of 2013 and 2015. The sequential filtration of the EDSM is as a result of attempts to maintain a balance between the supply and demand sides of export, trends in import, trade barriers, risks and global value chains. We use five filters to identify the final sample of export opportunities. The purpose and structure of the filters are explained in the text below.

First, we selected export opportunities based on the size of the exporting/importing market and its percentage share in the growth in the total output between the period of 2013 and 2016.

Analysis of the Filter Systems 1 & 2: Penetration of Louisiana Export Commodities to the World International Market

This section assists the researcher to point out the penetration of Louisiana export commodities to the world international market. The filtration system enables the researcher to select and recommend to the policy makers the export commodities that need maximum attention in order to help the state maximizing revenue.

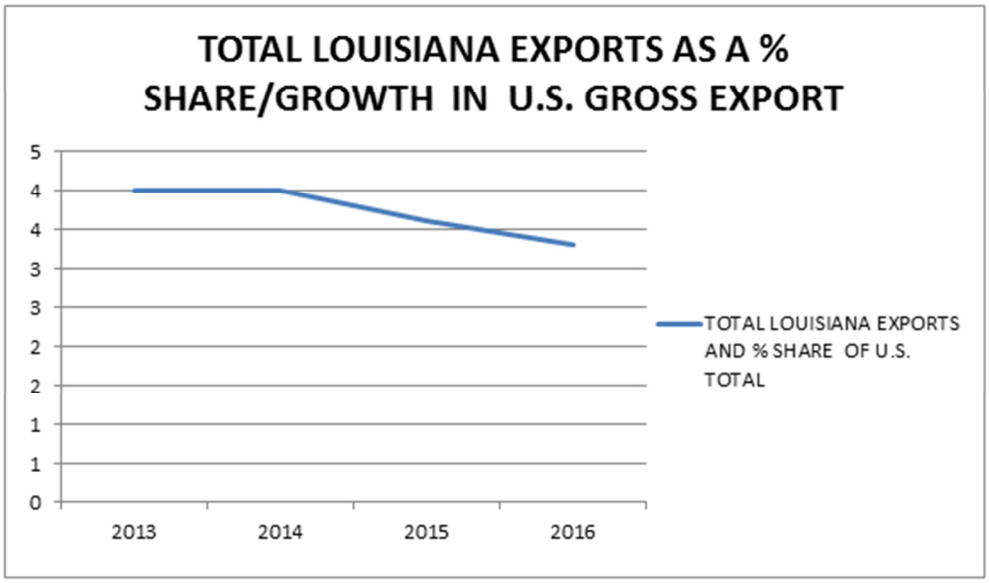
FIGURE 1: TOTAL LOUISIANA EXPORT TREND FROM 2013 TO 2016



Source of Data: *United States Census Bureau (2017) Survey on State Exports*

In relation to figure 1, Louisiana state exportation of goods for the non-traditional and traditional commodity has fallen since 2013. In 2013, total exportation for both non-traditional and traditional export commodities was 63,247, which recorded a slight in 2014 of about 64,770. The state regretfully recorded a sharp drop of total exports of goods in both 2015 and 2016 averaging of 48,686 in 2015 and 48,419 in 2016. Looking at the future of the total export it is likely to drop again in 2017 fiscal year. The sharp drop in the exportation of goods in the Louisiana state is likely to be the course of employment hardship and lack of enough revenue mobilization to fund the state projects.

FIGURE 2: TOTAL LOUISIANA EXPORTS AND % SHARE OF U.S. TOTAL

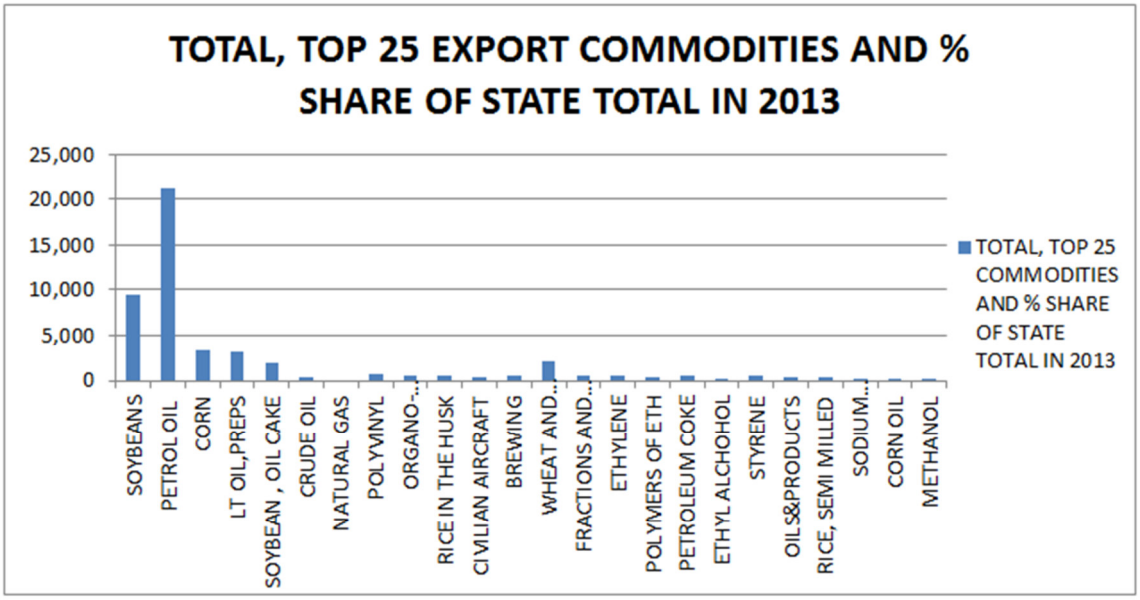


Source of Data: *United States Census Bureau (2017) Survey on State Exports.*

Figure 2 reveals the total Louisiana state exportation of goods for the non-traditional and traditional commodity as a percentage growth rate in the United States Gross Exportation from 2013 to 2016. In 2013, the total exportation growth rate for both non-traditional and traditional export commodities was 4%, which recorded same in 2014. The state recorded a sharp drop of total exports growth rate in both 2015 and 2016 averaging 3.6% in 2015 and 3.3% in 2016. The trend in total export growth is likely to drop again in 2017 fiscal year.

Analysis of the Various Louisiana Commodities that have penetrated into the World International Market (Trade)

Figure 3: Top 25 Louisiana Export Commodities Ranked in 2013

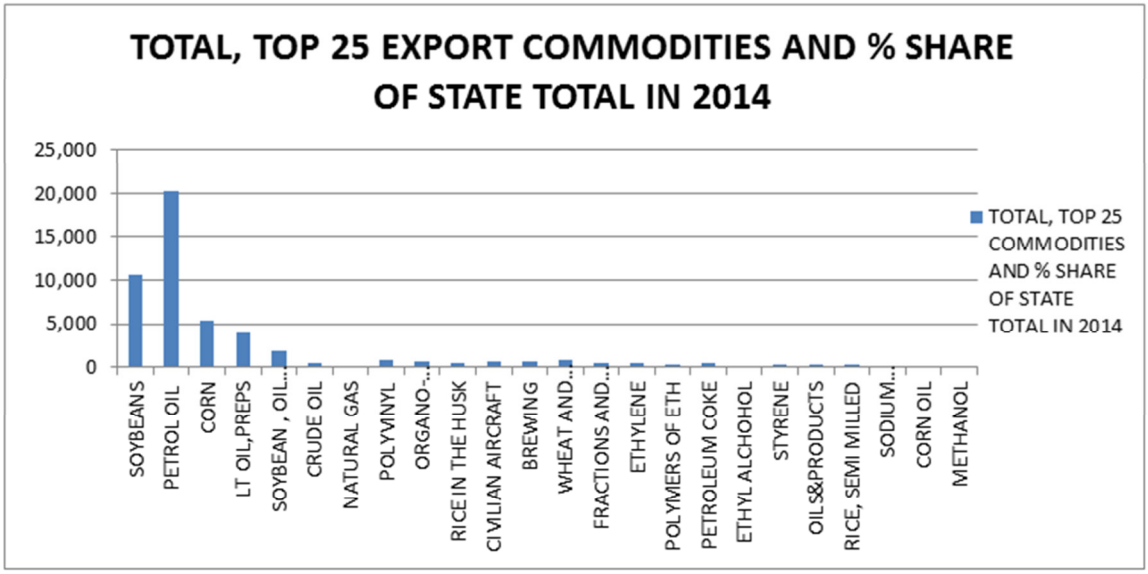


Source of Data: *United States Census Bureau (2017) Survey on State Exports.*

Figure 3 illuminates the top 25 Export commodities with respect to their percentage contribution to the total export in the State of Louisiana in 2013. In relation to the available data, perhaps, six (6) key commodities emerged as the great contributors to the Louisiana state exportations. Among them include soybeans production, petrol oil production, corn production, soybean oil production, LT oil Preps production and wheat production.

In fact, given the data set of 2013, it is obvious that Louisiana State embarked on many different commodities production, but about 24% of the total production contributes remarkably to the state exportation quota, that is, penetrated to the world international market. However, about 76% of the total production of export has little or no influence on the state exportation quota.

Figure 4: Top 25 Louisiana Export Commodities Ranked in 2014



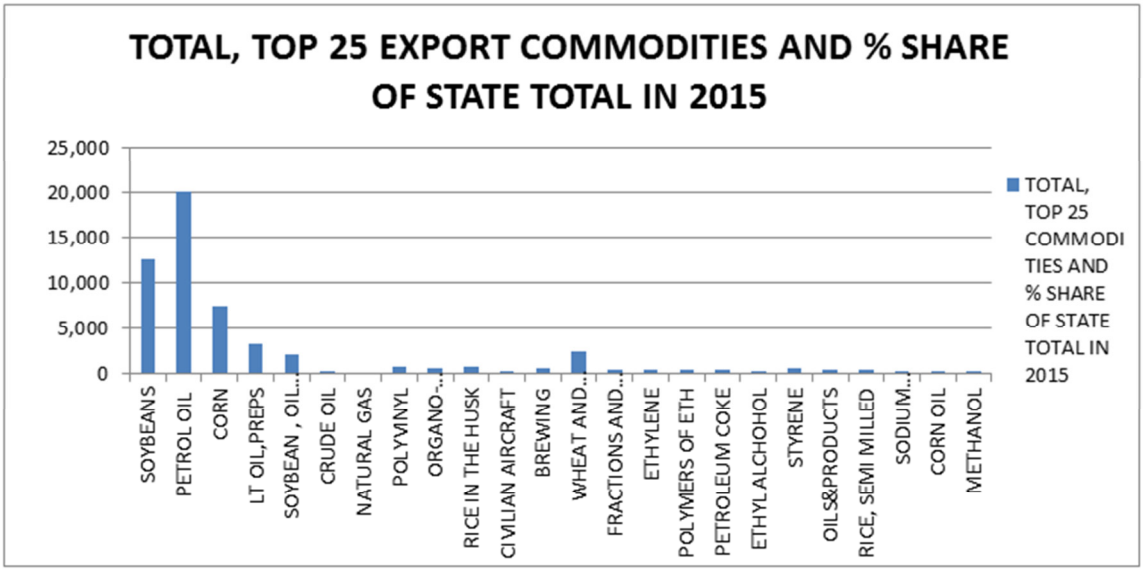
Source of Data: *United States Census Bureau (2017) Survey on State Exports*

The figure 4 lights up the top 25 Export commodities as regards their percentage contribution to the total export in the State of Louisiana in 2014. Apparently, the available data, perhaps, reveal five (5) key commodities as the great contributors to the Louisiana state exportations instead of six (6) in 2013. Among them include soybeans production, petrol oil production, corn production, soybean oil production, LT oil Preps production. Unfortunately, the wheat production drops sharply in 2014.

In fact, given the data set of 2014, it is obvious that Louisiana State embarked on many different

commodities production, but about 20% of the total production contributes remarkably to the state exportation quota, that is, penetrated to the world international market. However, about 80% of the total production of export has little or no influence on the state exportation quota.

Figure 5: Top 25 Louisiana Export Commodities Ranked in 2015

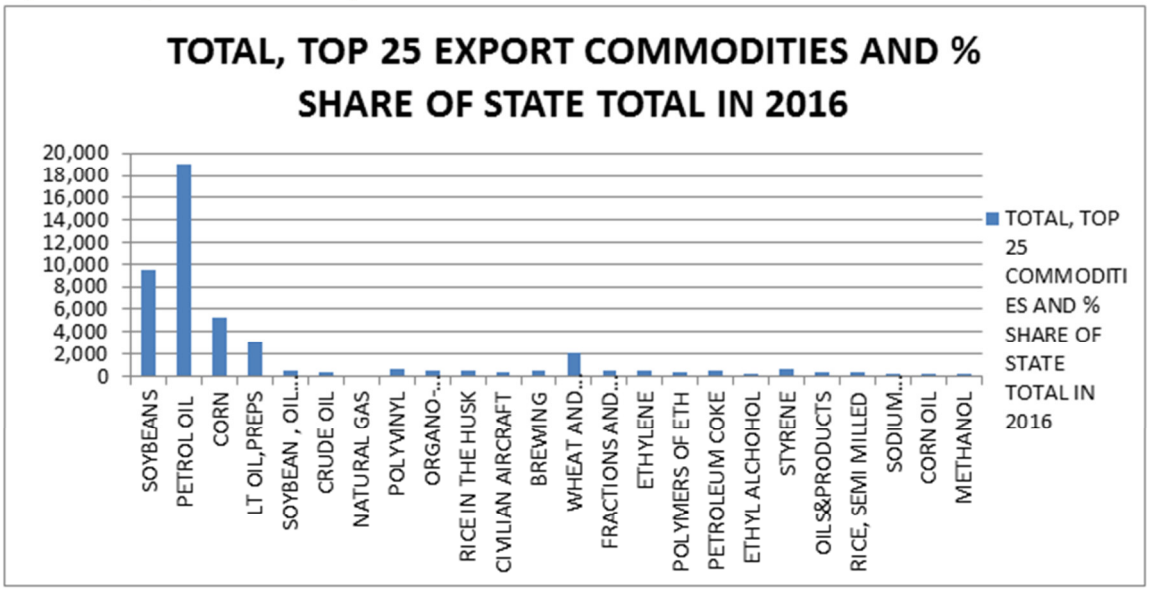


Source of Data: *United States Census Bureau (2017) Survey on State Exports.*

Figure 5 reveals the top 25 Export commodities relating to their percentage contribution to the total export in the State of Louisiana in 2015. In relation to the available data, perhaps, six (6) key commodities emerged as the great contributors to the Louisiana state exportations. Among them include soybeans production, petrol oil production, corn production, soybean oil production, LT oil Preps production and wheat production. The wheat production rose again in 2015.

Indeed, given the data set of 2015, it is obvious that the Louisiana State embarked on many different commodities production, but about 24% of the total production contributes remarkably to the state exportation quota, that is, penetrated to the world international market. However, about 76% of the total production for export has little or no influence on the state exportation quota.

Figure 6: Top 25 Louisiana Export Commodities Ranked in 2016



Source of Data: *United States Census Bureau (2017) Survey on State Exports.*

Figure 6 divulges the top 25 Export commodities regarding their percentage contribution to the total export in the State of Louisiana in 2016. Apparently, the available data, perhaps, reveal five (5) key commodities as the great contributors to the Louisiana state exportations instead of six (6) in 2013 and 2015. Among them include soybeans production, petrol oil production, corn production, LT oil Preps production, and wheat production.

Unfortunately, the soybean oil production drops sharply in 2016.

In fact, given the data set of 2016, it is obvious that Louisiana State embarked on many different commodities production, but about 20% of the total production contributes remarkably to the state exportation quota, that is, penetrated to the world international market. However, about 80% of the total production of export has little or no influence on the state exportation quota.

Analysis of Filter 3: Market Concentration of Louisiana Export Commodities

Figure 7: Market Concentration of Louisiana Export Commodities

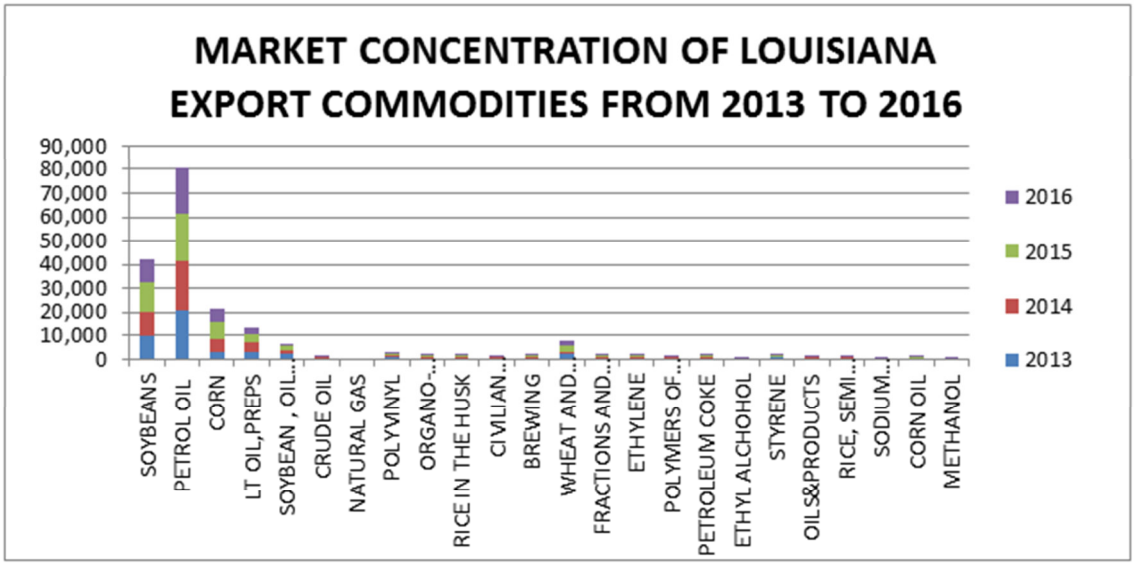
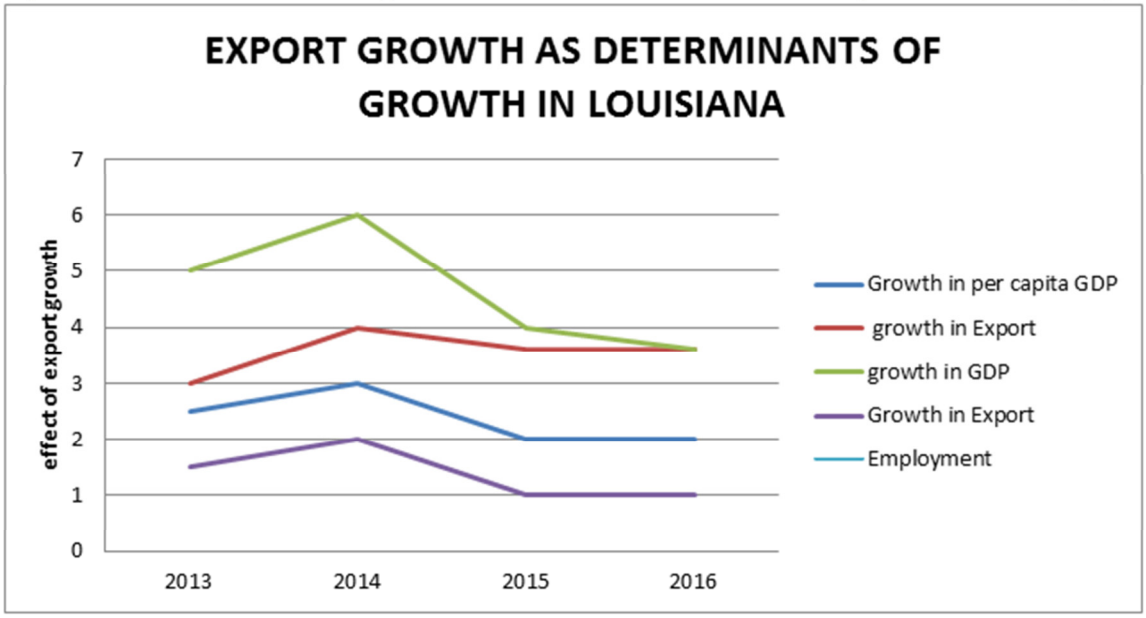


Figure 7 reveals the market concentration of Louisiana Export Commodities regarding the production sectors in the State of Louisiana. Apparently, the available data, perhaps, reveal six (6) key commodities wherein the Louisiana exportation market concentrates. Among them include soybeans production, petrol oil production, corn production, LT oil Preps production, and wheat production. Perhaps, about 20% of the total production contributes remarkably to the state exportation quota that is, penetrated to the world international market. However, about 80% of the total production of export has little or no influence on the state exportation quota as well as market concentration.

Analysis of Filter 4: Export Growth as Determinants of Growth in Louisiana.

Figure 8: Correlation between Export Growth and Growth in GDP, Per Capita GDP, and Employment



Source of Data: *World Bank data source, 2017*

Figure 8 shows the benefit of Louisiana export opportunities regarding the growth in export, growth in GDP, growth in employment and per capita GDP. The time series data available between 2013 and 2016, perhaps exhibited a smooth growth path among all the macroeconomic indicators of growth and development. In relation

to the figure, whenever there is a positive growth in export (i.e. trending upwards) the other indicators such as GDP, per capita GDP and employment also trend upwards.

5.0 CONCLUSION

The EDS model for prioritizing export opportunities is a helpful tool for optimizing export activities and competitiveness of the Louisiana export policy. It identifies suitable export opportunities based on growth potential, absorption capacity and compatibility in relation to the Louisiana economy. The model is thus more flexible and reflects the needs of individual production sectors. The model is calibrated for the specific case of the Louisiana but may serve as guidance for building similar models for other states in the United States since it is pictorially flexible. The study recommend that policymakers should pay much more attention to the other 19 export commodities which has no or little influence on Louisiana exportation in order to increase the revenue of the State.

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