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A Comparative Analysis of the Export Competitiveness of Mineral Industries in Sierra Leone and Guinea in the US Market

[*1]Edmond Kamanda, [2]Peter Umaru Kamara, [3]Aruna Bakarr, [4]Abdulai Bobson Turay

[1]School of Economics, Wuhan University of Technology, Wuhan 430070, P. R. China

[1,2,3]School of Social Sciences, University of Management and Technology, Freetown, Sierra Leone

[4]Faculty of Social Sciences, Ernest Bai Koroma University of Science and Technology, Magburoka, Sierra Leone

*Corresponding E-mail: edmondkamanda@gmail.com

Abstract **- This study is conducted to assess the competitiveness of the mineral industries of Sierra Leone and Guinea. The shift-share analysis and the industry concentration ratio were applied to identify the sectors that have effectiveness benefits in the mineral sectors of the review countries. The United States market was used as the base of the research upon which the results were analyzed. The total minerals exports of the two nations were categorized into five (5) groups grounded on the Standard International Trade Classification (SITC2-3). The pertinent categories as (1) The Iron and Ferro-Alloy Metals (Fe), (2) the Non-ferrous Metals (NFM), (3) the Industrial Minerals (IM), (4) the Precious Metals (PM), and (5) the Mineral Fuel (MF). For the ease of analysis, the study period was divided into two separate terminal periods of 2009-2013 and 2014-2018, captivating into considering the export data runs for a decade. Precisely, in Sierra Leone, the NFM, PM, and IM industries all show positive correlation values, while the Fe industry, on the other hand, indicates a negative correlation value. The findings further suggest that the NFM industry was the most competitive/effectiveness, while the Fe industry was the least competitive/effectiveness. For Guinea, the NFM, IM, and MF industries all indicated the positive correlation values, while the PM industry shows a negative correlation value. The NFM industry was the highest performer. Therefore, the most competitive/effectiveness industry. Generally, the most competitive/effectiveness in the US market was Guinea. The paper concludes with recommendations.**

Keywords: Competitiveness, Shift-Share, Net Shift, Export Growth, Concentration ratio.

1. INTRODUCTION

Globalization is a process of unifying the diverse world economies under one umbrella to facilitate freer trade, aiming for overall growth and welfare. Sierra Leone and Guinea to be part of globalization, and it enabled the countries to face competition in the international market [1]. The peculiarities linked to the mineral sectors unable the policymakers from liberalizing the mineral sectors equitable to that of other industries. Today, the countries in question are directed not only to economic developments of the states, however, in areas concerning agriculture, governance, industrializations, mineral resources, and security, peace, management, among many others, all moving towards poverty alleviations within the respective countries, as well as improving the living standards of their citizens. However, before the outbreak of the Ebola epidemic within the sub-region in early 2014, the two countries continued to record robust economic performance.

Economic accomplishments in the sub-region continue to increase notably. Before the Ebola outbreak, Sierra Leone and Guinea recorded 11.3% and 4.5% growth rates for Gross Domestic Products (GDP), respectively [1]. The per capita incomes of these nations continue to increase, and several multinational companies continue to flock into the mineral sectors of these nations. According to World Bank statistics in 2013, the GDP of Guinea was $ 6.1 billion US dollars per capita income of 460 dollars. Likewise, for Sierra Leone, it was 4 billion dollars with a gross per capita income of 660 dollars. The upward trend in the economic performance of these countries is attributed mainly to the boom in the mineral sectors. The sub-region continues to experience a remarkable influx of mining companies from the global powers, including PR China, the United States, India, Australia, and the European Union (EU), resulting to in increasing explorations and mining activities in the sub-region.

The significance of exports as a given economy's growth factor depends on its volume, structure, and trend, which is related to studying a country's export performance and competitiveness. Export competitiveness is understood primarily as a country's ability to sell commodities in foreign markets at the price and quality compared to the competition

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while achieving the foreign-trade balance. Export competitiveness comprises different aspects of export performances, including trend, structure, diversification, and quality of exports.

The study compares the export effectiveness of the mineral industries of the Sierra Leone and Guinea. The mineral industries of these nations yield substantial chunks of their economies, and therefore a vital sector for economic development. As they are involved in the mining and exportations of related mineral merchandises, including copper, gold, iron ore, diamonds, bauxites, rutile, and other mineral resources. It prompts a tendency for export competition between them. The study, therefore, seeks to provide a comparative analysis of the export competitiveness/effectiveness of the mineral industries using the shift-share methodology and the Revealed Comparative Advantage (RCA) index using the Industry concentration Ratio Analysis.

The competitiveness yearbook revealed, according to the world competitiveness yearbook, that competitiveness is when a country can create and preserve an environment or a platform capable of supporting additional value creation for its enterprises, thereby creating prosperity for its citizens. Competitiveness is the ability of a region or a country to export more in value-added terms than its imports [2]. Competitiveness refers to productivity, which encompasses tangible and intangible (image of the country/company, brand equity) factors [3]. Export competitiveness, therefore, is when a country can create and sell goods and services beyond its borders at the right time, and at the right place, as well as at the right price, at the right quality that improves its long-term competitiveness, thereby yielding economic prosperity for its peoples.

Following the introductory section, the rest of the paper organized as Section two provides the theoretical and empirical literature that focuses on competitiveness. In contrast, section three presents the data and methodology of the study. Chapter four provides an analysis of empirical results and discussion, and part five offers a conclusion and policy recommendation.

II. RELATED LITERATURE

The industry is one of the main branches of manufacturing. It highly determines the economic power-force, employment, and social welfare of the nation. It is precisely imperative to reveal the tendencies of industrial changes and the strongest and weakest industries. In the scientific literature, the issues of Mineral industrial structure are closely related to the characteristics of competitiveness, which are becoming progressively topical evaluating the industrial state. Recently, the number of scientific studies to assess the competitiveness of a nation, industry, or sector increasing. According to some scientists [4][5][6], competitiveness is determined by diverse factors assessing them aspects, since a nation's development, political and geographic position, and other factors. Competitiveness is a tricky category – that is why it is not measured merely or defined in a few parameters [5].

Both the concept of competitiveness and competitiveness evaluation is characterized by multidimensional. Depending on the determination of the research, different indexes are used in the assessment of competitiveness. The scientific literature offers [7][8][6] that intends to increase the competitiveness of a nation/sector, it is necessary to increase export. The export is considered to be one of the main indexes of international competitiveness.

The values of selected indexes for the evaluation of industrial competitiveness enable not only to evaluate the current situation in the sector and carry out the comparative analysis of industrial sectors and plan target measures to strengthen the competitive advantage of a particular industry. The issue arises with the need to choose the indicator most accurately reflecting the current situation in the sector.

The authors believe that the RCA index is the most suitable for the research of this kind. According to Wu & Lin (2008) [9], *Nicolić et al.* (2011) [10], *Kuldilok et al.* (2013) [11], RCA and its modifications have these advantages: "easy to calculate, widest used method, used to underline economic efficiency of industry, reveal country's weak and strong export sectors, provide arguments necessary for the creation of public policies, the basic logic is to evaluate country's export specialization related to some reference group."

Other authors [10] [11] highlight some disadvantages of the indexes such as: "asymmetric, do not provide a detailed explanation of the reasons for changes in levels of competitiveness. *Al-Mamun et al.* (2015) [12] applied the shift-share analysis to evaluate the export growth in Malaysia's electrical and electronic merchandises. The examination was carried out by selecting fifteen (15) countries as the reference economies from 2006-2008 and 2009-2011.

Through the application of the shift-share technique and the continuous market- share concurrently, the study further showed that the general export market has increased because of the computational value, except for the US, Japan, and Thailand. Singapore and Cambodia appeared with the highest and lowest growth rate, respectively.

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III. METHODOLOGY

3.1 Determining the level of revealed competitiveness

Understanding the performance of the mining and mineral industries in the selected case studies, the Revealed Comparative Advantage (RCA) index and the shift-share analysis were calculated. The RCA index developed by *Balassa* (1965) [13] measures the revealed comparative advantage (or revealed competitiveness) of countries at the product level using trade data. The RCA approach assumes that if a country has a relatively good export performance for a product, it also has a comparative advantage in producing that specific product (however, the RCA is a revealed measure and does not show the source of comparative advantage). Consequently, we employ the shift-share analysis and the concentration ratio for the computation.

3.2 Methods of Data Analysis

The data from the US Census Bureau Foreign Trade Statistics for the two nations were used to study the export competitiveness of the mineral industries in Sierra Leone and Guinea. Also, the data of the two countries centered on the validity, clarity, and continuity of their archives.

The data used in the study covers 2012-2018. The method used to perform the analysis was first by applying the Shift Share Methodology. The shift-share research estimates how competitive each of the two countries in the United States markets was as the largest single market throughout 2012-2018. However, it will be time-consuming and daunting in looking at each of the minerals exported by each of the two nations individually or exclusively. The total exports of these nations were therefore classified into five (5) categories based on the Standard International Trade Classification (SITC 2-3) groupings.

The various groups are as follows: (1) iron and the ferroalloy metals (Fe) comprising; nickel, iron, steelmaking resources, (2) non-ferrous metals (NFM) including aluminum, bauxite, copper, sulfur, (3) industrial minerals (IM),such as diamonds, (4) precious metals (PM) including gold, platinum, silver and (5) mineral fuels (MF) such as crude oil, crude petroleum, uranium, and natural gas. Also, for shift-share analysis, the study period was divided into two separate terminal periods of 2009-2013 and 2014-2018, considering the export data runs for ten (10) years.

Moreover, to arrive at a conclusion for which country is competitive and in which industrial category was said the competitive country relative to the other countries, several shift-share calculations were made based on a decade's data for which our study covers.

IV. DATA ANALYSIS AND PRESENTATION

We start with the analysis of the shift-share. In analyzing the results of the shift-share computations, it is essential to note that the minerals with the highest Actual Change (AC) for Sierra Leone and Guinea are the minerals in which the respective countries have a competitive edge relative to the other categories. A positive net shift for any group (SITC 2-3) indicates or shows that there was a definite shift in the market for that mineral. In contrast, a negative change suggests that there was a negative shift in the market for mineral.

Sierra Leone

Based on the calculated net-shift and net-shift percentage figures (Table 1) for Sierra Leone, regarding the exports of iron and Fe, NFM, PM, the IM, and MF, the NFM industry, the precious metals industry, and the IM industries all show positive correlation values of 154.29%, 11.43%, and 57.14% respectively. The iron and ferroalloy industry showed a negative correlation value of (-22.86%).The NFM industry registered the uppermost percentage of net-shift, followed by the IM industry. This most upper net shift for the NFM industry indicates that the NFM is outperforming the other sectors in terms of exports of minerals by the various areas to the US market. The NFM industry among all the four mineral export industries of Sierra Leone. Therefore, the entire competitive industry in the United States market. The shift-share computational results, however, did not tell us or show us why the NFM industry is the most competitive. However, it only indicates or reveals the competitiveness of the sector compared to the iron and Fe, the IM, and PM industries. The shift-share technique does not tell us what made the industry (non-ferrous metals) the most competitive.

The shift-share technique is, therefore, helpful in identifying investment areas within an industry. Alternatively, in sectors so that those charges with the responsibility of governance or those responsible for managing the affairs of such sector could aid the industry remains to do outstandingly, or match-up with other high performing industries. Nevertheless, for the NFM industry as the most top performer for the net-shift figure calculated from (Table 1), it is the IM industry.

The IM industry was the second big performer, in order words, the second most competitive sector among the four mineral export industry categories, though far from matching-up with the NFM centered on the calculated net shift. Furthermore, the negative correlation value for the iron and the ferroalloy metals (Fe) indicates or indicated that there is a negative shift in the market for iron and Fe in the United States market.

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Table 1: Correlation table of the minerals for Sierra Leone in the US market (in the M$ US)

Minerals (SITC 2-3)	Initial period	Terminal period	Actual change	Expected value	Expected change	Net shift	% of net shift
Iron and Ferro-Alloy	32	79	47	79.04	47.04	-0.04	-22.86%
Non-Ferrous Metals	92	1.19	-90.81	0.92	-91.08	0.27	154.29%
Precious Metals	5.04	4.40	-0.64	4.38	-0.66	0.02	11.43%
Industrial Minerals	22	32	10	31.90	9.90	0.1	57.14%
Mineral Fuels	…..	…..	…..	…..	…..	…..	…..

The iron and Fe industry, in this case, is not performing well or less competitive as compared to the NFM. The PM and the IM industries in the United States market, all of which showed positive correlations. Hence the positive shifts in their respective mineral industries exports to the United States market.

According to the correlation table, the iron and ferroalloy industry of the country was booming in terms of the actual change values determined. However, the shift-share results for this industry revealed or showed a negative net shift. A particular sector or a set of commerce may be booming, but the shift-share results ended up showing a negative net change for that industry. For instance, let say a particular country may be experiencing a decline at the national level, but the shift-share consequence, on the other hand, shows or comes up with a positive value.

However, it shows that the factors responsible for the decline in national development have little or no connection to such a boom. Also, the industry may be declining, but the results of the share effect show a positive net-shift for that industry. However, there is a hidden prospect in that industry requiring a thorough and careful investigation to identify and solve such issues.

Generally, the NFM industry was the highest performer among all the four industrial categories-iron and Fe, NFM, PM, and the IM industries. In other words, the NFM industry is the industry that registered the highest net-shift value over a decade from 2005- 2014 under review. Followed by the NFM industry in terms of registering the highest net-shift value was the IM industry registering the second-highest net-shift value after the NFM industry? Followed by the IM industry is the PM industry. All these three industries- the NFM industry, the IM industry, and the PM industry registered positive net-shifts values. Therefore favorable growth in their respective sector, though the PM industry was not that extremely booming. The worst performer, in other words, the industry that performs poorly in the United States market in terms of the net-shift value, was the iron and Fe industry. The iron and the ferroalloy industry is the only industry among the five minerals taxonomies industry that showed a negative net shift value. The reason for this poor performance was, however, not reveals centered on the limitations of the shift-share technique. As the shift-share computational results, however, did not tell us or show us why the iron and Fe industry was not competitive. Instead, the shift-share analysis reveals only the competitiveness of the sector as compared to the other industries NFM industry, IM industry, and the PM industry, respectively.

Advancing reasons as to why this industry was the least competitive or the worst performer amongst other export minerals industries in the United States market was the work of industry experts, as they are the ones that read the developments of indigenous industries and bring out the factors that swift or impede the performance of industries in a given country.

Using the Concentration Ratio for Sierra Leone

We compute for the industry concentration ratio and the market share of each industry, as shown in Tables 2 and 3 for Sierra Leone. The sum of the market share for the four industries is denoted as.

$$\frac{E_1+E_2+E_3+E_4}{Total\ \ industry\ \ \ export} \qquad (1)$$

Where T_N = total industry export.The closer the value is to zero, the less concentrated the industry.

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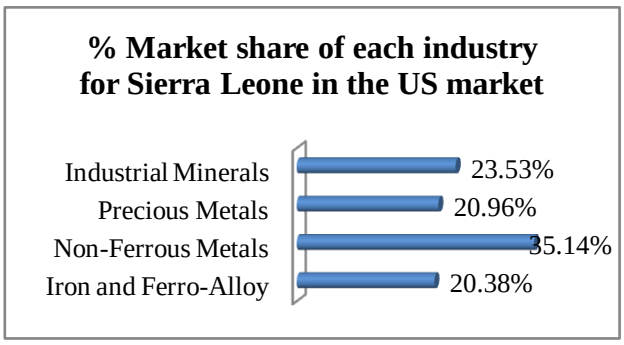
Table 2: Results for Sierra Leone

Iron and Ferro-Alloy	Export Value	Non-Ferrous Metals	Export Value	Precious Metals	Export Value	Industrial Minerals	Export Value
2012	113	2012	217	2012	125	2012	174
2013	127	2013	235	2013	143	2013	155
2014	65	2014	54	2014	56	2014	47
2015	64	2015	72	2015	53	2015	58
2016	58	2016	63	2016	55	2016	42
2017	135	2017	315	2017	147	2017	176
2018	142	2018	258	2018	145	2018	161
Total	**704**	**Total**	**1,214**	**Total**	**724**	**Total**	**813**

Table 3: Results for Sierra Leone

Industry	Export Value	Market Share in the US.
Iron and Ferro-Alloy	704	20.38%
Non-Ferrous Metals	1,214	35.14%
Precious Metals	724	20.96%
Industrial Minerals	813	23.53%
Total	**3,455**	**100.00%**



Guinea

However, in the case of Guinea (Table 4), the NFM industry, the IM industry, and the MF production show positive correlation values of 69.57%, 30.43%, and 1.45%, respectively. In contrast, the PM industry showed or revealed a negative correlation value of (- 2.90%). The iron and ferroalloy metals (Fe) industry, however, remained almost unchanged, and therefore no shift within the ten years of 2005-2014 as the study context shows how the data runs. The NFM industry registered the highest percentage of net-shift, with a net shift percentage of 69.57%. Followed by the NFM industry is the IM industry, with a net-shift percentage of 30.43%. This highest net-shift percentage for the NFM industry of Guinea indicated that the NFM industry of the mineral sector in Guinea performed better than the other areas in terms of mineral exports in the US market. The NFM industry among all the five mineral exporting industries.

Therefore, the entire competitive industry in the mineral sector of the country.

Table 4: Correlation table of the minerals for Guinea in the US market (in the M$ US)

Minerals (SITC 2-3)	Initial period	Terminal period	Actual change	Expected value	Expected change	Net shift	% of net shift
Iron and Ferro-Alloy	0.0245	0.0245	…..	0.0245	…..	…..	…..
Non-Ferrous Metals	346	388	42	387.52	41.52	0.48	69.57%
Precious Metals	7.01	7.76	0.75	7.78	0.77	-0.02	-2.90%
Industrial Minerals	42.77	7.05	-35.72	6.84	-35.93	0.21	30.43%
Mineral Fuels	31.00	0.042	-30.96	0.031	-30.97	0.01	1.45%

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The shift-share computational results, however, did not show us why the NFM industry, in this case, is the most competitive industry. Instead, it is only showed or revealed the competitiveness of the sector (the non-ferrous metals), as compared to the iron and Fe industry, PM industry, IM industry, and the MF industry.

However, this can be attributed to several factors, some of which may likely be a result of increased production of non-ferrous metals for the country or probably lesser export duties in the NFM industry of the United States market. For instance, the productions of alumina in the country increased significantly by 13% in 2010, as compared to the growth percentage in 2009, was by 12%. There was a production of 597,000 metric tons of alumina in 2010, compared to a 530,000 metric tons increase in 2009. Also, several significant changes took place in the mineral sector in that year, with the Anglo Aluminum Corp., a Canadian multinational corporation safeguarding bauxite production and exploration license in the year for the exploration of 406 square kilometers, and 130 square-kilometer projects for two primary bauxite manufacturing region in the country. This increase production, coupled with other favorable situations, may likely among the causes for the highest net-shift percentage of the non-ferrous metals exports to the United States by Guinea.

Conversely, coming next to the NFM industry as the highest performer in terms of the net-shift figure calculated from (Table 4) is the IM industry. The IM industry of the mineral sector of Guinea was the second big performer. In order words, the second most competitive sector within the five mineral export industries in the country. According to the Kimberley Process Rough Diamond Statistics in Guinea (2008), diamond production increased from 474,000 carats in 2006 to 1,019 thousand carats in 2007. In November of 2007, the West African Diamonds Plc, formerly called the African Diamonds, promulgated the recovery of four (4) big diamonds, all from 3.8 to 9.2 carats, centered on the property of all as a result of the sampling. These and other features may be the reason for the positive shift in the market of the IM industry. Moreover, the PM industry, on the other hand, registered a negative net-shift value. Only the PM industry documented a negative net-shift value amongst the various mineral industries of Guinea. The negative correlation value for the PM industry indicates that there was a negative shift in the markets for PM in the United States market. The PM industry, in this case, was less competitive in terms of export to the United States market as compared to the other sectors. However, it can be accredited for numerous reasons. Gold production in the country decreased by 16% for the years under review. All production of gold apart from the artisanal level decreased from 18,091kg in 2009 to 15,217 kg. Also, a 2012 result indicated a low processing volume of gold. The suspension in some of the mines due to riots in the country, among others, saw all the three major active gold mine- Lefa, Kiniero, and Siguiri experienced a dropped in the volume of gold produced in the country. The production of gold decreased by 12.3% and 12.8% in the Lefa and Kiniero mines, respectively. While Siguiri mine, there was a little dropped in the quantity of gold produced, seeing it moving from 9113 kg to 9020 kg.

For the mineral fuels industry, there was a definite shift in the market through the change was not that high as compared to the non-ferrous metals industry and the industrial minerals industry. However, it does not produce petroleum fuels, either crude oil or gas, in the early years for the study data. Guinea, however, depends on imports for petroleum fuels and other natural gases. The only mineral fuels commodity produced is uranium. The production of uranium is new, and the volume produced in the country is not substantial for competitive exports. The MF industry, in this case, was less competitive as compared to the NFM industry and the IM industry, all of which show positive correlations values. Hence the positive shifts in their respective mineral industries with regards to exports of minerals to the United States market.

Overall, among all the five mineral industries iron and Fe, NFM, PM, IM, MF, and the non-ferrous metals industry was the highest performer; in other words, the NFM industry registered the highest net shift value over a decade from 2012-2018 under review. Followed by the NFM industry in terms of registering the highest net shift value was the IM industry registering the second-highest net shift value after the NFM industry. Followed by the IM industry in terms of competitiveness is the MF industry. Only the PM industry registered negatives net-shift value. The negative net shift value for the PM trade shows that the PM industry performed poorly as compared to the other sectors- the NFM, the IM, and the MF industries. The reason or reasons for the terrible performance was, however, not revealed based on the limitations of the shift-share technique. The shift-share results, however, did not tell us or show us why this industry was less efficient as compared to the other sectors.

Using the Concentration Ratio for Guinea

We compute for the industry concentration ratio and the market share of each industry, as shown in Tables5 and 6 for Guinea. The sum of the market share for the four industries is denoted as.

$$\frac{E_1+E_2+E_3+E_4}{Total\ \ industry\ \ \ export} \qquad (2)$$

Where T_N= total industry export, the closer the value is to zero, the less concentrated the industry.

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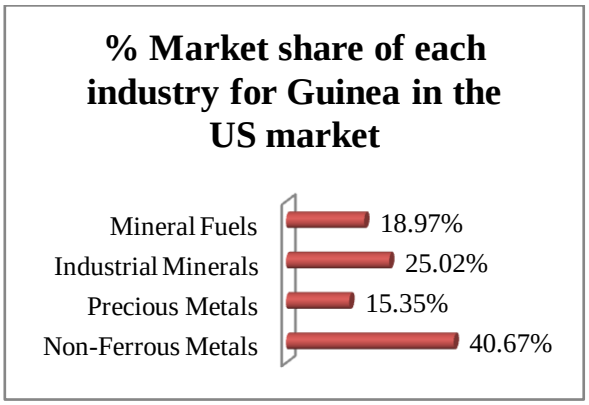
Table 5: Results for Guinea

Non-Ferrous Metals	Export Value	Precious Metals	Export Value	Industrial Minerals	Export Value	Mineral Fuels	Export Value
2012	342	2012	118	2012	214	2012	173
2013	351	2013	121	2013	206	2013	181
2014	217	2014	82	2014	152	2014	97
2015	222	2015	94	2015	117	2015	103
2016	231	2016	107	2016	123	2016	111
2017	304	2017	119	2017	217	2017	131
2018	355	2018	122	2018	215	2018	147
Total	**2,022**	**Total**	**763**	**Total**	**1,244**	**Total**	**943**

Table 6: Results for Guinea

Industry	Export Value	Market Share
Non-Ferrous Metals	2,022	40.67%
Precious Metals	763	15.35%
Industrial Minerals	1,244	25.02%
Mineral Fuels	943	18.97%
Total	**4972**	**100.00%**



V. CONCLUSION AND RECOMMENDATIONS

This study provides a comparative study on the export competitiveness of the mineral industries of Sierra Leone and Guinea. The shift-share analysis and the industry concentration ratio analysis were used to identify sectors with comparative advantages in the mineral sectors. For shift-share analysis, the study period was divided into two separate terminal periods of 2009-2013 and 2014-2018, taking into consideration the export data for one decade.

According to the findings, the most competitive industry for Sierra Leone's mineral sector was the NFM industry. Followed by this industry is the IM industry, which is the second most competitive mineral industry in the country. The weakest performer in terms of competitiveness in the US market was the iron and Fe industry. These industries (non-ferrous metals and the industrial mineral) have high export capacities for the country. Therefore, by concentrating on these industries, the country would be able to effectively and proficiently produce these minerals in enormous quantities for exports to the US markets as well as other markets other than the US at a competitive amount. Also, the first step of benefitting from mineral resources is mineral explorations. Through mineral explorations, the concentrations of minerals for mining purposes are recognized. Therefore, much more practical to embark on increase mineral explorations as it will result in a worthy investment should the mineral concentrations are revealed.

With regards to the Iron and Fe industry, which is the only industry that registered a negative net shift value? This industry may have some hidden unique factors that, when probing well and concluding, would responsible for not being competitive. It may translate to increase productivity in this industry as well as enhances its export competitiveness.

For Guinea, the NFM production was the highest performer. Both the IM industry and the MF industry also performed relatively well. The PM industry was the only industry that was not competitive compared to others.

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The reason(s) for the poor performance of this industry relative to the other sectors was, however, not revealed centered on the limitations of the shift-share technique. Therefore, it is noted that the PM industry is probe well and conclude as to why this industry is inefficient as compared to the others. This industry may have some hidden unique factors that, when probing well and come up with a conclusion as to what is responsible, may translate to increase productivity in this industry and hence stimulates its competitiveness.

However, as it is virtually the most competitive country of the two countries in the US market, increase labor productivity, including government investment in physical capital, human capital, and new technology, will continue to improve the competitiveness of the country's various mineral industries relative to Sierra Leone.

It is recommended that the country embarks on surveys of skills that need to be benchmarked against the other competitor and Guinea to outcompete or match up with Guinea. Through these skills, gaps in the potential areas of comparative gain of these countries are identified.

The increase in labor productivity for the various mineral industries subsequently increases a country's mineral export. Through the government initiative to invest in physical capital, human capital, and new technology, it is evident that the mineral sectors will become competitive as well. The introduction of new technology, with the skills needed to function, will increase the productivity of the various mineral industries. For instance, the introduction of a new diamond treatment plant of 180t/h by OCTEA in the IM industry of Sierra Leone in 2012 increased productivity. It hence increased the export of diamonds by the state.

REFERENCES

[1] Mano River Union, (2015). Mano River Union Post-Ebola Socio-economic Recovery.

[2] Atkinson, R.D. (2013). Competitiveness, Innovation, and Productivity: Clearing up the Confusion. *The Information Technology and Innovation Foundation.*

[3] Verma, S. (2002). Export Competitiveness of Indian Textile and Garment Industry. *Indian Council for Research on International Economic Relations. Working Paper No.94.*

[4] Valodkiene, G., &Snieska, V. (2012). International competitiveness and its determinant factors during the period of economic recession. *Economics and Management*, 17(2), 602–608.

[5] Liucvaitiene, A., &Paleckis, K. (2011). Theoretical models of the formation and evaluation of modern business competitiveness and the opportunities of their application. *Contemporary issues in business, management and education'2011,* 195–210.

[6] Meiliene, E., &Snieska, V. (2010). Factors of Lithuanian industrial Competitiveness in Export Policy Provisions. *Public policy and administration*, 31, 119–132.

[7] Saboniene, A.(2009). Lithuanian Export Competitiveness: Comparison with the other Baltic States. *Inzinerine Ekonomika-Engineering Economics,* 2, 49–57.

[8] Prasad, S. (2000). Determinants of Exports in Fiji, Reserve Bank of Fiji, *Working Paper.* Available from: http://www.reservebank.gov.fj/docs/wp2000-04.pdf

[9] Wu, Y. Ch. J., &Lin, Ch. W. (2008). National port competitiveness: implications for India. *Management Decision*, 46(10), 1482–1507.

[10] Nikolić, A., Bajramovic, S., Ognjenovic, D., Lalic, D., & Uzunovic, M. (2011). SEE trade liberalization – a new opportunity for B&H agribusiness? *British Food Journal*, 113(1), 78–95.

[11] Kuldilok, K. S., Dawson, P. J., & Lingard, J. (2013). The export competitiveness of the tuna industry in Thailand. *British Food Journal*, 15(3), 328–341.

[12] Al-Mamun, A., Rahman, M.K., Taufiq, M., and Muzzammir, 2015. A Shift Share Analysis of Electrical and Electronic Products: An Overview and Assessment of Export Growth of Malaysia. *Journal of Asian Social Science* Vol.11 (10), 330- 338.

[13] Balassa, B. (1965), "Trade liberalization and revealed comparative advantage," *The Manchester School of Economic and Social Studies,* 33(1), 99-123.

AUTHORS BIOGRAPHY

Edmond Kamanda is a Ph.D. Scholar at the School of Economics, Wuhan University of Technology, P.R.China. He is also a lecturer at the University of Management and Technology (UNIMTECH), Freetown – Sierra Leone.

Dr. Peter Umaru Kamara is the Ag. Dean, School of Social Sciences at the University of Management and Technology (UNIMTECH), Freetown – Sierra Leone. He is also the Director of Internal Audit.

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Aruna Bakarr is the Director of Finance at the University of Management and Technology (UNIMTECH), Freetown – Sierra Leone. He also lectures at UNIMTECH.

Abdulai Bobson Turay lectures at the School of Social Sciences at the Ernest Bai Koroma University of Science and Technology (EBKUST), Makeni – Sierra Leone.

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