

Strategic Mind-mapping Approach for Sustainable Business Practices with reference to the Aluminium Smelters in the Middle East and GCC

Mr. Alain Arida, CEO. Gulf Market International, Bahrain
Research Scholar, California Public University, USA, Email-alain.arida@gmail.com

ABSTRACT

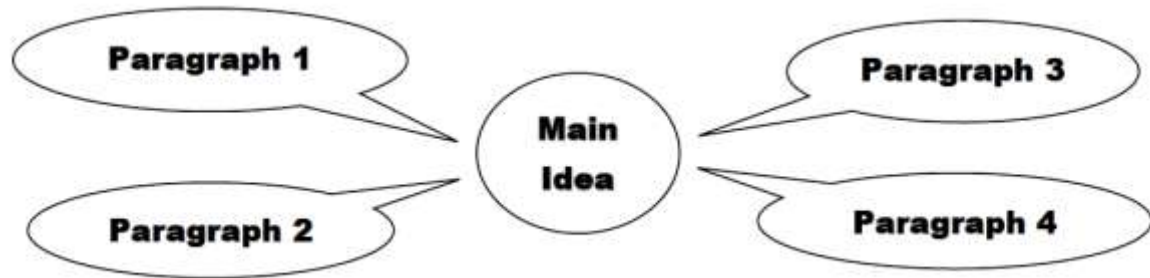
The study uses mind-mapping approach to analyse and understand the prospects of business practices for the sustainable operation of Aluminium smelting industries in the GCC and middle-east. The study also recommends some strategy change towards higher profitability and long-term viability of the Aluminium smelters. The structural underpinning of the mind-map is based on the annual report of the Gulf Cooperation Council (GCC) and the article of Kearney research. It is understood that there is an inadequacy of skilled labour in the Aluminium sector of GCC countries. Almost 40% of industry participants face shortage of skilled labour. It is highly necessary for the Gulf countries to develop a local skill base to reduce the cost of outsourced labour. The access to raw material, especially bauxite, has been tough in recent days because of the cartelization of the mining companies and increased bargaining. An immediate step needs to be taken by the Aluminium smelters to gain easy access to the bauxite through acquisitions or long-term deal. GCC industries have a competitive advantage over the competitors from the rest of the world in terms of cheaper electricity cost. Being the Crude Oil heaven of the world, GCC countries have almost 1/3rd of refining and production costs. The GCC smelters has adopted sustainable approach of Aluminium production to cause minimal impact on the environment. EGA report says that GHG gas emission was 38% lower than the industry average in September 2020. In terms of market scenario, the primary consumer of Aluminium sheet, bars are Construction and Automobile sectors. Together they constitute almost 85% of the consumption of the products of GCC smelters. Also, Aluminium has a high usage in secondary market and the Aluminium scrap industry has grown in the middle-east sideways. The strategies to improve the business involve the cost-cutting approach in terms of doing away with costly steps such as cooling, re-melting has proven a viable solution for the smelters in this region. Restructuring the marketing and operating strategy can cut down supply cost by 8-12% and the inventory cost by 25-35%. It is noted that higher economic and business profit can be accrued from shifting towards the downstream value chain involving extruding, casting and transformation activities. Additional scope of cooperation can be given as co-sourcing the raw materials and factory spares, collaborative logistic and warehousing ventures, mutual transfer of industry practices.

Keywords: Aluminium smelting, Mind-mapping, Scraping, GCC, non-oil industries, competitive advantage, Recycling & Re-usage.

INTRODUCTION

Mind-mapping practices in Business:

Mind mapping is a brainstorming technique to analyse a problem and generate new ideas. It is basically a pictorial depiction of some process, mechanism, and thoughts. It comes handy in solving business problems by structuring the problems in a map, connecting with their causes, breakouts, and remedies. In business, a mind map is used in different stages; may it be the starting of a new venture or assessing an existing setup. It generally corresponds to a central theme in mind and all the associated factors surrounding the themes that are linked in a structural format to have some insight.



The above diagram depicts a basic mind-mapping model, where the main idea is the main theme corresponding to which a thinking or problem-solving initiates. What should be included in the paragraphs are those substantiating the main idea. The information that are contained in the paragraph must be related to the central theme of the study.

Aluminium Smelting:

Aluminium smelting is a mechanism of extraction of aluminium from its mineral form, which is usually obtained as oxide and alumina in the earth's crust. And this Alumina is derived from the bauxite through the Bayer process. Aluminium smelting is an electrolytic process, requiring a large quantity of electricity which generates a very high temperature needed for the electrolysis process. The process also corresponds to a sizable emission of greenhouse gases and thereby having a detrimental effect on the environment.

Aluminum cost structure



Sources: International Energy Agency; CRU Aluminium Cost Service; Rio Tinto Alcan; CRU; Alcoa; A.T. Kearney analysis

Aluminium Smelting in Middle-East and GCC:

At the beginning of the 21st century, GCC countries begin contemplating diversifying their economic activities to reduce dependence on crude oil production. Aluminium smelting has come out to be one of the major alternatives to their traditional well-known business. Gulf countries are experiencing a competitive advantage in aluminium production due to their cheap source of energy and availability of labour.

Over the past decade, the Middle East, especially the GCC countries have emerged as the leading aluminium producer. Their share of aluminium production has risen to 9.1% in the year 2019 as compared to the 1.6% as of 2010. United Arab Emirates has secured the top position in aluminium production among the GCC members. The share of UAE was almost

45% of total production accounted for by the GCC member countries in 2019. About from UAE, Saudi Arabia and Qatar also contribute a significant proportion to the aluminium smelting in the Middle East. As per the experts, the aluminium industry in the Gulf region is expected to garner an accumulated investment of \$40 billion by 2020 aimed at giving a great push towards diversification of the industrial base in the GCC member countries.

REVIEW OF LITERATURE

Looney (1994: 25) assessed the period 1973-93 and found that the manufacturing industries performed poorly in the GCC countries in comparison to other non-oil countries in the middle east region as well as the service sectors in the GCC regions. He highlighted some structural backlogs in the industrial policy formulation and implementation that prevented the manufacturing from growing up.

Beblawi (2011: 186) opined that the oil-industries are large scale, capital-intensive and mostly state-owned. On the other hand, the non-oil industries, mainly steel, cement, aluminium industries are small scale, labour-intensive and mainly private owned. He viewed that the oil industries have a less chance of survival in the post-oil era. So, a greater focus should be given on the non-oil industries which have a greater chance of survival in the post-oil era.

Seznec (2011b: 2–3) propounded that the development of non-crude oil industry in the gulf region dates back to 1970s. However, the story was different from the most budding industries all over the world. GCC countries were unable to opt for import substitution policy by applying import tariff on foreign products. Since, they already had a well-established business relation with their foreign partners in terms of crude oil trade, a tariff could hamper the relation. That's why GCC industries grew in the face of competition from the very beginning with the help of skilled foreign labour.

Shochat (2008: 11–12) stated that the attempt to diversify industries did not take effect till 1990s, as there was a lack of structural change. GCC industries populated by higher share of public sector, less private and overseas investment, lack of skilled workforce and a confined market base. The story took a turn from 2008-09 post economic reform measures, which paved the way for diversification in the GCC region.

Hvidt (2011a: 102) focused on the structural reforms that have actually taken place before 2008. He has revealed that only except Qatar and Kuwait, other GCC countries have already been implementing reform initiatives. However, he expressed the concern that the long domination of public sector in Gulf industries is not to be replaced with the private sector so easily and a substantial effort is needed in this direction.

RESEARCH GAP

The studies so far conducted have focused mainly on the overall growth and development stories of the Gulf countries propelled by their abundance of natural resources, especially the crude oil. The Aluminium smelting industries as a viable alternative towards their economic prosperity has not much been discussed. Also, the sustainability of the demand-supply framework supported by a strong business tactics is something worth noting for.

SIGNIFICANCE OF THE STUDY

Aluminium is the second most abundant element on the earth surface after the oxygen. It also has a diversified application in modern industries, making it an indispensable material in today's world. Along with other major world producers, gulf countries also hold a sizable proportion of aluminium production. That's why, a sustainable operation of GCC Aluminium smelting is much needed not only for their very existence, but also for

preventing a global supply chain disruption. This study checks the viability of the strategies adopted by the Gulf Aluminium smelters for a healthy operation.

OBJECTIVES OF THE STUDY

1. To analyse the operation and business pattern of GCC Aluminium smelters through a Mind-map.
2. To investigate whether the business practices can sustain the operation of Aluminium industries in the gulf countries.
3. To recommend some strategy change towards higher profitability and long-term viability of the smelters.

RESEARCH APPROACH

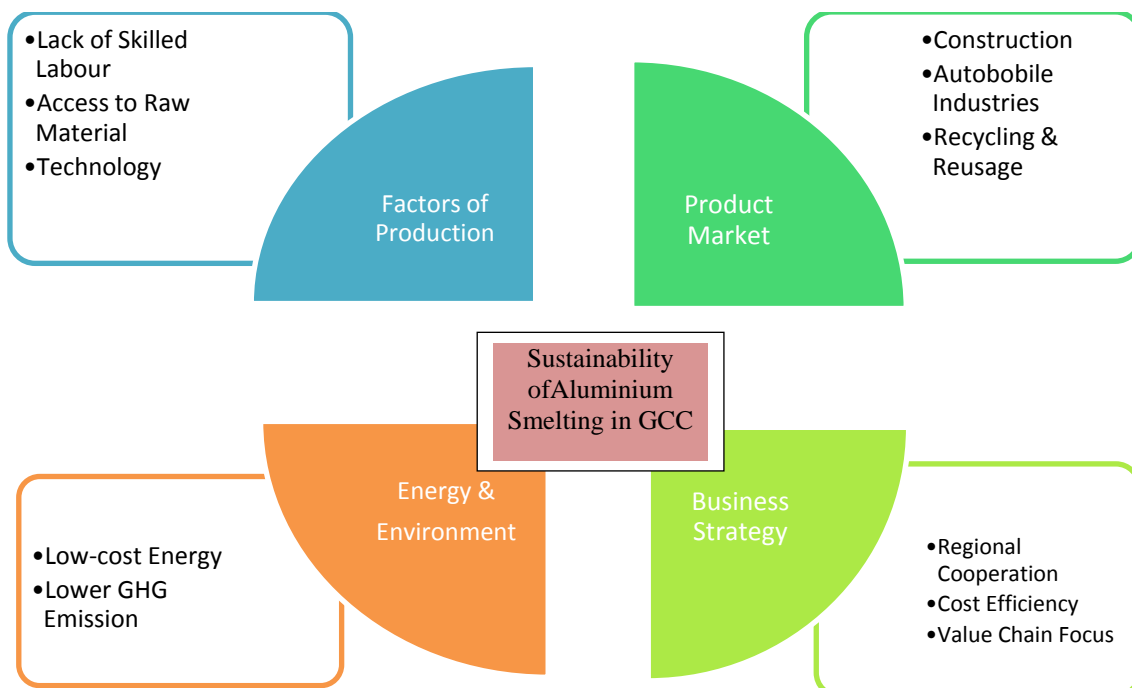
The study takes the help of a scientific charting approach called the mind map to explain the different dimensions of operation of Aluminium smelters in GCC countries. The structural underpinning of the mind-map is based on the annual report of the Gulf Cooperation Council (GCC) and the article of Kearney research.

The Mind-map has 4 broad categories with respective sub-categories. The 4 broad category heads are as such

- **Factors of Production-** Nature of Inputs to the Aluminium smelters.
- **Energy & Environment-** The cost-effectiveness of the Energy in use and the impact of its operation on the environment.
- **Market for the Products-** The consumer base of the primary and secondary products
- **Business Strategy-** Strategies to conduct and improve the business.

After analysing each category, the study seeks to look into the actualization of the main theme, i.e. the nature of sustainability of business practices of Aluminium smelting in GCC countries.

ANALYSIS& INTERPRETATIONS



The mind map depicted above is further elaborate in the following section.

Factors of Production:

There is an inadequacy of skilled labour in the Aluminium sector of GCC countries. As per a recent assessment, almost 40% of industry participants face shortage of skilled labour. This gap is filled with outsourcing skilled labour at a higher cost.

The access to raw material, especially bauxite, has been tough in recent days because of the cartelization of the mining companies and increased bargaining. An immediate step needs to be taken by the Aluminium smelters to gain easy access to the bauxite through acquisitions or long-term deal. As per a study, optimized procurement of productive inputs through higher cooperation with the miners can contribute to 15% cost-cutting for the industry.

The Aluminium industry in GCC countries have recently deployed some state-of-the-art technologies that has increased their productive capacity and has reduced the production cost in terms of lesser consumption of raw materials. To be noted among others are Dubai's DX+ Technology, High-amperage-cells technology of Ma'aden etc.

Energy & Environment:

GCC industries have a competitive advantage over the competitors from the rest of the world in terms of cheaper electricity cost. Being the Crude Oil heaven of the world, GCC countries have almost 1/3rd of refining and production costs, which contributes to the cheap energy availability for the GCC Aluminium smelters.

The GCC smelters has adopted sustainable approach of Aluminium production to cause minimal impact on the environment. EGA report says that GHG gas emission was 38% lower than the industry average in September 2020. Such data is a lucrative for the environment-friendly automakers all over the world.

Market for the Products:

The primary consumer of Aluminium sheet, bars are Construction and Automobile sectors. Together they constitute almost 85% of the consumption of the products of GCC smelters. The construction activities encompass various residential, port and industrial projects in countries such as Saudi Arabia, UAE, Qatar. The European automakers like BMW account for the primary users of the Middle-East Aluminium. China and Europe have traditionally been the largest consumer base for the gulf countries. The aluminium extrusion market is expected to have a growth rate of 3.1% over 2020 to 2027.

Aluminium has a high usage in secondary market and the Aluminium scrap industry has grown in the middle-east sideways. Sharif Metals Group is a prominent group in the GCC belt to use the aluminium scraps to recycle and reuse in the production process for the development of marketable products.

Business Strategy:

The focus of the GCC smelters have been on the cost effectiveness and a detailed review technology, logistics and capital expenditure substantiate the same. Given the increased competition, the cost-cutting approach in terms of doing away with costly steps such as cooling, re-melting has proven a viable solution for the smelters in this region. Restructuring the marketing and operating strategy can cut down supply cost by 8-12% and the inventory cost by 25-35%

The emphasis of GCC countries has all along been on the upstream value chain such as mining, refining and smelting. However, higher economic and business profit can be accrued from shifting towards the downstream value chain involving extruding, casting and transformation activities.

GCC itself acts as a body of cooperation among the aluminium producing countries in the middle-east. It enables the member countries to grow their industries from mutual exchange of resources and technical know-how.

Linking the branches of the Mind-map for a Sustainable Business Practices:

Now after discussing different aspects of the Aluminium smelting in Middle-east and GCC, we are interested to look into the sustainability of business practices of the concerned industry in terms of the 3 dimensions of sustainability.



- **Economic Sustainability**-In the presence of cheap energy availability, the aluminium smelting industries have a viable driver for a long term. Though there are some issues with the affluence of raw materials, the cutting-edge technologies implemented by the GCC companies have been a saviour since it has reduced the raw material consumption to a greater extent. Availability of the skilled labour has all along been an issue for the GCC countries. This is indeed a matter of concern for the human resources sustainability. From the demand side, a persistent requirement of GCC aluminium in the construction sectors in China and GCC regions and the automobile sectors in Europe assure the long-term sustainability of Aluminium smelting industries in this region. Also, sufficient foreign investment and private ownership indicate a prolonged viability of the same. So, in overall the business practices in the gulf aluminium smelting industries seem economically sustainable. However, there are some needs to be taken care of will be discussed in the suggestion section.
- **Social Sustainability**-From the well acknowledged uncertainty of oil-based industries in near future, the GCC socio-political sentiment has been leaning towards diversifying their industries away from the oil-based to the non-oil-based segments. The entrepreneurial and state push towards the Aluminium smelting businesses provide a strong hold in the upcoming years. This industry also poses an equal opportunity to both oil-rich and non-oil countries in the middle east region.
- **Environmental Sustainability**- Although Aluminium smelting is a high carbon-emitting industry, the technologies and operational aspects of GCC smelters have caused a 38% lesser GHG-emissions, pointing out the environmentally sustainable operation of aluminium smelting in the GCC regions.

CONCLUSION

We have leveraged the mind-map in our study to analyse the operative aspects of GCC Aluminium smelters. The analysis has inferred a sustainable operation of Aluminium Industries in the Middle-East and the Gulf Region, which has a strong potential to be a prominent alternative to the oil-based industries in the near future. The economies of scale, socio-political sentiment and the environmental consideration made it a viable industry to secure a place in the global market. From a traditional edge on cheap energy availability to a technology-driven economic efficiency supported by a strong market base advocate for the sustainable pathways of the GCC smelters over the time horizon.

SUGGESTIONS

The analysis of the business practices of the GCC Aluminium smelters suggest some measures to strengthen their sustenance further. These measures are

- To address the skilled labour issue, localising a skill base and a higher usage of capital-intensive techniques can provide a sustainability in the operation of GCC aluminium smelting.
- Given the chance of self-sufficiency in Aluminium production of a large customer like China, GCC smelters should look forward to new markets to reduce the risk of a fall in demand.
- The viable strategies in the face of Global competition for the GCC producers are to exploit the scale economies and cartelization.
- Additional scope of cooperation can be given as co-sourcing the raw materials and factory spares, collaborative logistic and warehousing ventures, mutual transfer of industry practices as well as scrap recycling and reusage for higher economic efficiency.

REFERENCES

- Hvidt, M., 2011a. Economic and Institutional Reforms in the Arab Gulf Countries. *MiddleEast Journal*, 65 (1), pp. 85–102.
- Hvidt, M., 2011b. Economic Reforms in the Arab Gulf Countries: Lip Service or Actual Implementation?, in M. Legrenzi and B. Momani (eds.), *Shifting Geo-Economic Power of the Gulf: Oil, Finance and Institutions*. Farnham: Ashgate, pp. 39–54.
- Seznec, J.-F., 2011b. Introduction. In J.-F. Seznec and M. Kirk (eds.), *Industrialization in the Gulf: A Socioeconomic Revolution*. London: Center for Contemporary Arab Studies, Georgetown University/Routledge, pp. 1–14.
- Shochat, S., 2008. *The Gulf Cooperation Council Economies. Diversification and Reform: An Introduction*. London: London School of Economics, Kuwait Programme on Development, Governance and Globalisation in the Gulf States.
- Richards, A. and J. Waterbury, 2008. *A Political Economy of the Middle East*. Boulder, CO: Westview Press.
- Legrenzi, M., 2008. Did the GCC Make a Difference? Institutional Realities and (Un)Intended Consequences, in C. Harders and M. Legrenzi (eds.), *Beyond Regionalism? Regional Cooperation, Regionalism and Regionalization in the Middle East*. Aldershot: Ashgate, pp. 107–24.
- Kubursi, A. A., 1984. *Oil, Industrialization and Development in the Arab Gulf States*. London: Croom Helm.
- Davidson, C. M., 2005. *The United Arab Emirates: A Study in Survival*. Boulder, CO: Lynne Rienner.
- Looney, R. E., 1994. *Industrial Development and Diversification of the Arabian Gulf Economies*. Greenwich, CT: JAI Press.
- Beblawi, H. El, 2011. Gulf industrialization in perspective. In J.-F. Seznec and M. Kirk (Eds.), *Industrialization in the Gulf: A Socioeconomic Revolution*. London: Center for Contemporary Arab Studies, Georgetown University/Routledge, pp. 185–97.