

## Solid Mineral Resources Extraction and Processing Using Innovative Technology in Nigeria

Alex Olanrewaju Adekanmbi, Drew Wolf  
School of Economics and Business Administration,  
Concordia University Irvine, California, US

### ABSTRACT

The competition in the extractive industry is driven mostly by factors of, technology, expertise, infrastructure, availability of funds, government policy, and the demand and supply from the operator and consumer in the market. Over the years, the focus has been on the oil and gas industry that have major foreign companies in partnership with the Federal Government for the oil and gas business. The oil and gas companies, like Shell Petroleum (Anglo-Dutch), Chevron Petroleum (America), Agip (Italy), and Total Energies (France) enjoyed favorable government policies and partnership, thus enabled the companies to invest in modern technologies and expertise in the exploration and production of oil and gas; on the contrary, the modern technologies, expertise, and infrastructure were lacking in the non-oil and gas (sister's extractive) sector, even with the available of viable markets. This is the reason the government this time around, is creating a level playing field for all operators, home and abroad, to come together and compete fairly in the solid mineral because of the immense potential in the sector. The SWOT analysis carried out shows that most of the operators still use poor mining technologies which is causing poor productivity, lots of wastage, and a decrease in the bottom line, including environmental pollution, noise, and dust pollution in the host communities thus generating perennial conflicts between the companies and communities with bad reputations and low trust for most of the mining companies (Fagorite, et al, 2023). The poor infrastructure like rail lines and roads to convey extracted solid minerals cheaply to processing sites was not adequate, and an epileptic supply of power (electricity) forced many industries to depend on diesel fuel to power their machinery (Sasu, 2023). There was an instant of assistance from World Bank to help solve some of the problems in the mining sector, but it was a far cry from what is required to make a meaningful impact (The World Bank, 2017). The resultant cost is passed to the consumers as a high cost of products. It is these problems that Treepiz Technical Services Limited is posed to solve, our strengths lie in the SolidExtech that we are bringing to the industry to change the game for the operators by providing solutions to the general pain points in the sector in terms of increasing solid mineral companies' productivity with fast-pace extraction and processing of the solid minerals and quick turnaround for sale in the market, with increment in the bottom line (profits). That is what greatly differentiated our company from other operators. Keywords: Sustainable Energy Development,

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### INTRODUCTION

#### Industry Analysis

#### Industry Overview

Nigeria has a land area of 923,770 km<sup>2</sup>. Nigeria lies in West Africa with a population

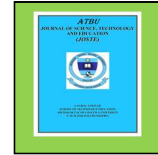
of over 200 million people, the country is bordered by the Gulf of Guinea, Cameroon, Benin, Niger, and Chad with topography ranging from mangrove swamps along the coast to tropical rainforest and savannah to the north

Corresponding author: Alex Olanrewaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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(Filani, 2014). The Federal Ministry of Mines and Steel Development as at last enumerations has found about 40 useful minerals in about 500 locations, spreading across the 36 States and Federal Capital (Fig 1.1). In the time past, the forefathers used raw materials to produce cosmetics for beautification, utensils for cooking, and tools for fighting and hunting. Now, backtracked to the colonial era, according to Filani, (2014), the British administered the country using the revenue derived from the solid mineral resources. However, this changed when the country discovered crude oil in commercial quantity in Oloibiri, in 1953, the oil boom and the revenue from the oil and gas activities took the front seat while activities in solid mineral declined, and so also did the revenue from the sector. As the scenario played out, foreign players (operators) exited the sector, and this paved the way for Artisanal and Medium Scale (AMS) Enterprises and illegal miners to compete in the space (Enact Observer, 2020). It is estimated that 80% of the illegal mining activities in the country are carried out by local populations. These locals, conniving with people in positions of authority, are emboldened and with the support of foreign companies import mercenary forces to the country, to cause mayhem, sacking communities, killing, and maiming innocent victims, kidnapping for ransom, and displacing communities in order to prevent access to the mining sites (Enact Observer, 2020). The other problems caused by this mining activities include degradation of the environment-indiscriminate cutting and clearing of trees and bushes robbing the areas of biodiversity, pollution of the air and underground water, including discharges of harmful substances to the streams, noise and dust pollution, erosion of the mining sites (World Journal of Social Science, 2016).

The extraction of solid mineral resources as raw materials for construction and manufacturing sectors dates way back to Nigeria's independence. The British colonial government carried out an extensive geological survey of both the Northern Protectorate and Southern Protectorate, and findings show both Protectorates were endowed with useful solid mineral resources. The solid minerals are

categorized into (i) Industrial Minerals (such as barite, kaolin, gypsum, feldspar, and limestone) (ii) Energy Minerals (such as bitumen, lignite, coal, and uranium) (iii) Metallic Ore (such as gold, cassiterite, columbite, iron ore, lead-zinc, tin, lithium, and copper) (iv) Construction Minerals (such as granite, gravel, laterite, dolomite, calcite, and sand) (v) Precious Stones (such as sapphire, tourmaline, emerald, topaz, amethyst, garnet, etc (Olagoke, 2023).

By the 1940s, Nigeria had become a major producer of tin, columbite, and coal. The coal was used to power homes and industries while the bulk of it was exported to Great Britain and the activities in the solid mineral sector gave rise to the construction of infrastructural development like roads and rail systems from the mining sites to coaster cities for easy transportation of the extracted raw materials to Great Britain. The same fate of exploration happened to tin, columbite, and other mineral resources extracted in the country (Filani, 2014). The solid mineral sector's contribution to the country's GDP is negligible, as of today, the solid mineral sector contribution to GDP is 0.2% (Fig.1.2). This is a far cry from other African nations like Ghana (24.4%), Botswana (22.4%), South Africa (4.4%), and Kenya (1.3%) contributions to their countries GDP (Fig.1.3). Nigeria's revenues come mostly from the sales of crude oil, others include agricultures, and these are used to support the economy. In terms of oil and gas production, Nigeria is Africa's second-largest oil and gas producer, closely following Libya while Angola took the third position (Oil & Gas Middle East, 2022). Nigeria is the sixth exporter of oil and gas in the world according to the Organization of Petroleum Exporting Country (OPEC). The fluctuation in the price of oil and gas in the international market is the driving force behind economic diversification, hence the Federal Government of Nigeria is using the solid mineral sector as the next source of revenue for the country. To achieve this, the government re-brand the inefficient Ministry of Mines and Steel Development (MMSD) into the Ministry of Solid Mineral Development (MSMD) and embarked on reforms and roadmaps that will ultimately attract the much-needed FDI in the sector and help to push the sector contribution GDP from

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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0.2% to 50% by 2025 (Ministry of Mines and Steel Development, 2022). There are other ambitious targets set by the government, these include (i) the creation of 3 million direct and indirect jobs by 2025 (ii) facilitating the production of coal needed to fire coal-fired power plants that would contribute 30% of the nation's power generation by 2025 (iii) becoming a major regional and global producer of aluminium and steel products with a target of 100,000 tons per year of primary aluminium and 3 million tons per year of steel products by the year 2025 (iv) achieving the enhanced capacity to supply 50% of the skilled manpower required for all segments of the mineral and metals sector (Olagoke, 2023).

Eboh (2023) reported that the new policies and roadmap crafted by the government is hoped to bring the much-needed Foreign Direct Investment (FDI), encouraging both local and international companies to

participate in the solid mineral sector. Subsequently, the National Bureau of Statistics (2023) reported increase in the aggregate production of solid minerals in the country from 2019 – 2020. It is expected that the mining and quarrying sector with the huge potential would help to drive the diversification of the economy with the benefits of job creations, increase skills development, infrastructure development and more revenue for the nation. In 2020, the aggregate production of solid minerals was (64,286,308.01 tons), which grew by 17.95% compared to 2019 with (54,505,048.23 tons), indicating an improvement in the solid mineral production in the country. In the same report, Kogi State, Ogun State, and Cross River State were the top three states with the largest share of production with 12.50 million tons, 12.11 million tons, and 8.90 million tons respectively (National Bureau of Statistics, 2023).



Source: Mining in Nigeria – Ministry of Solid Mineral Development

Fig.1.1- Solid mineral spread and deposit in Nigeria

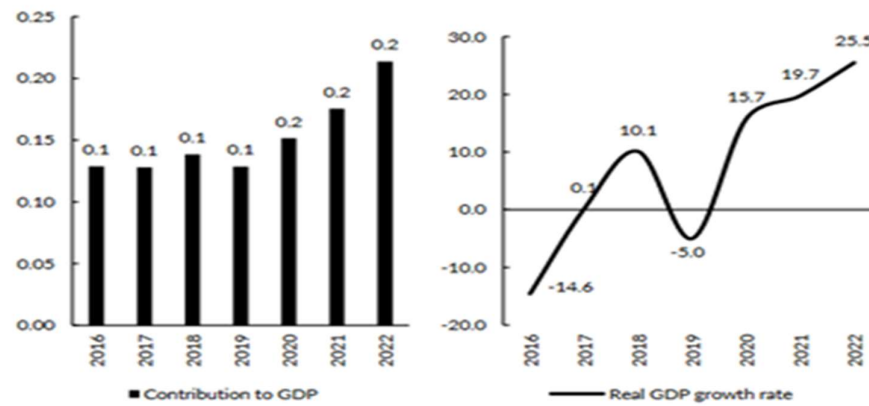
Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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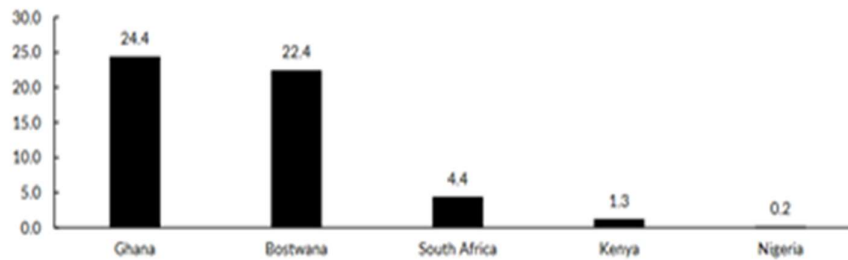
**Mining and Quarrying Sector Contribution to GDP (%) and growth (y/y: %)**



Sources: NBS, Coronation Merchant Bank Research

**Fig. 1.2- Mining and Quarrying Sector Contribution to GDP**

**Mining and Quarrying sector's Contribution to GDP in select African countries (%)**



Sources: Central Statistics Office, Botswana, Ghana Statistical Service, Kenya national bureau of statistics, NBS, Statistics South Africa Coronation Merchant Bank Research

**Fig. 1.3- Mining and Quarrying Sector's Contribution to GDP in Selected African Countries.**

### Statement of Problem

Improper management of land resources creates environmental problems such as land degradation, soil erosion and pollution, as well as serious social and economic tensions. Mineral extraction, production, refining and distribution have immediate impact on the environments and their host communities.

### Objectives of the Study

This work is intended to bring the attention of the government towards solid mineral deposit and to ensure that solid mineral industry becomes the hub of Foreign Direct

Investment (FDI) in the country by providing innovative technologies and services for the extraction and processing of the solid mineral resources for the raw materials needed in the construction and manufacturing industry at home and abroad. Nigeria is rich in both human and material resources, and the large deposits of these minerals give the country the potential to become Africa's largest economy and a major player in the global economy (Filani, 2014).

### LITERATURE REVIEW

#### Marketing and Sales Plan

The company sales objectives shall be focused on these goals (i) increase the

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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awareness of the operators of our brands (ii) maintain customer satisfaction. We hope to utilize the income to expand our brand across the board, locally and abroad. Our model for the projected advertisement and marketing budget will be different from the normal services or products because of the uniqueness of the services in the extractive sector. The company planned to rely on the direct use of marketing consultants through Word-of-mouth (WOM), digital marketing, bulk emailing, and

Newspapers. The digital market shall be both intent-driven searches and for professional audiences, the operators and these campaigns shall be augmented by the direct marketing consultancy.

Below (Table 5.1) is the company's 5-year budget plan summary with the forecasted number of consumers (acreage). Please note that one acreage is 4,459 square metres.

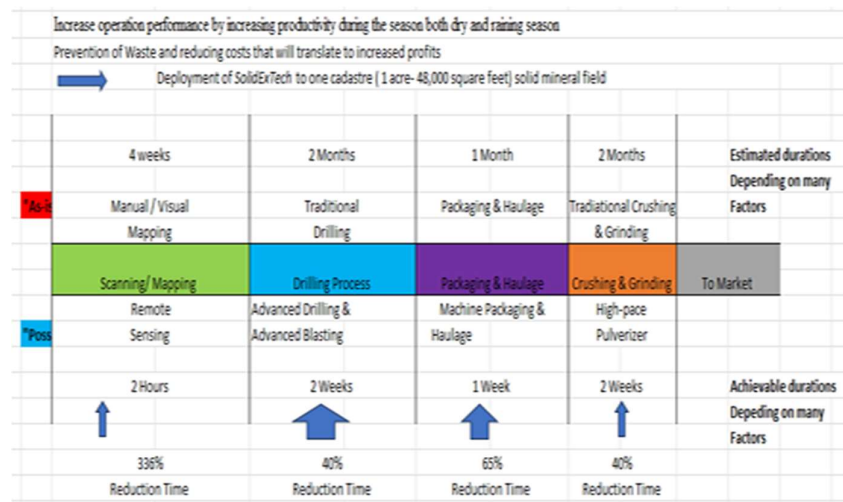
**Table 5.1** 5-year budget plan summary with the forecasted number of consumers

Year	Advertisement and Marketing Budget	Number of Customers	Acreage
Year 1	\$200,000	2	8,918
Year 2	\$150,000	5	22,295
Year 3	\$150,000	8	35,672
Year 4	\$100,000	12	53,508
Year 5	\$100,000	16	71,344

**Main positioning/message**

TTSL's main positioning/ message is the operational efficiency of our *SolidExTech*. This brand will bring shared prosperity to the operators, shareholders, host communities, and nation. To the operators, the innovative technologies for the extraction and processing of solid mineral resources will effectively increase productivity throughout the seasons, reduce waste, fast-track operation, and quick turnover of products to market, and ultimately improve the bottom line (profits). To the host

communities, the technologies can enhance the protection of the environment, elimination of dust pollution, pollution of surface water, and improvement of workers' safety while the country earns more revenues through payment of tax and royalties. Overall, everybody wins, and the environment is preserved for future generations. Below is a quick snapshot of why *SolidExtech* is superior to other traditional methodologies of extraction and processing of solid minerals in Nigeria.



**Fig. 5.2** Comparing Traditional Mining Method Vs Innovative Mining Tech

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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### Sales funnel

The sales and marketing funnel for these services will vary sharply from the known funnel simply because of the uniqueness of the services, hence the sales and marketing budget is divided into short-term, medium-term, and long-term. The first year falls under short-term, both the second year and third year fall under medium-term while the fourth and fifth years fall under long-term. In the first year, Word-of-Mouth (WOM) through the use of marketing consultants would play a major role and this will be supported by the company website/ digital marketing in a ratio of 90:10. The work of the marketing consultants is to spread the word and create awareness about the new services in the industry in the 20 conferences and trade shows planned for the year in Nigeria. The brand messages will focus on profitability, environmental sustainability, and the use of

innovation to improve safety of workers. We are estimating that 3,000 operators especially those 2,100 operators that are currently in the government register will be in attendance. The work of the marketing consultants is to bring these operators to our booth to get first-hand information about the new services in the sector, and we hope a handful of these operators will complete our card for us to call and schedule a follow-up, then a portion of them will be converted to our clients. In the medium-term, which is the second and third years, we shall combine the use of marketing consultants and digital marketing to drive traffic to our website. The plan is to make this in a ratio of 50:50. The long-term which is the fourth and fifth year, website/ digital marketing, telemarketing, and direct marketing consultancy shall be in the ratio 50:40:10 respectively.

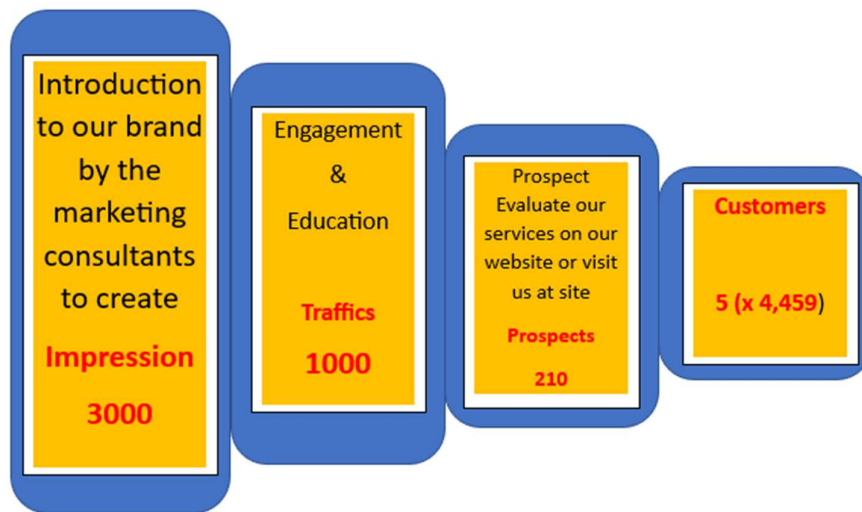


Fig 5.3: Marketing and Sales Funnel for a Typical Year 2

### Annual Advertising Plan

The advertising plan for the solid mineral industry can be likened to that of the oil and gas industries or at best insurance industry. Because of the uniqueness of this industry, once the company breaks into the market, the company will start making headways as shown above. In comparison, the company will use

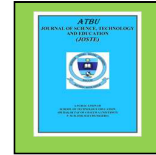
Year 1 to create awareness of the technology among the operators by using marketing consultants. The budget for Year 1 is \$200,000, the budget for Year 2 and Year 3 is \$150,000, and for Year 4 and Year 5 is \$100,000.

According to WebFx (2020). LinkedIn ads for Click Through Rate (CTR) cost between \$5 per 1000 impressions while Google ads cost

Corresponding author: Alex Olarenwaju, Adekanmbi  
 ✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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between \$1,000 to \$10,000 per month with an average Cost-Per-Click (CPC) of \$1 for Google Search Network. Other determining factors include the target audience, industry, and ads

network. The rate for industrial services is \$2.56. We plan to spend the ads budget as shown in the table below.

**Table. 5.4** Annual Advertising Plan for a Typical Year 2

Campaign	Spend	Impression	Conversion Rate	Customers	Acreages
Direct Marketing Consultancy	\$75,000	3000	30%	3	13,377
Google Ads	\$37,500	30,000	21%	1	4,459
LinkedIn Ads	\$37,500	6,000	26%	1	4,459
<b>Total</b>	<b>\$150,000</b>	<b>39,000</b>		<b>5</b>	<b>22,295</b>

**Yearly Key Performance Indicators for Marketing**

Treepiz Technical Services Limited shall monitor an advertising platform using Yearly Key Performance Indicators (KPIs).

These KPIs in the chart below shall be utilized in the company to ensure we reach our yearly goals of customer acquisition and plan for new customers in the subsequent year.

**Table. 5.5** Yearly Key Performance Indicators

Platform	Impression	Traffic	Prospect	Customer	Acreages
Direct Marketing Consultancy	3000	1,000	400	3	13,377
Google Ads	30,000	15,000	5,000	1	4,459
LinkedIn Ads	6,000	3,000	1,000	1	4,459
<b>Total</b>	<b>39,000</b>	<b>19,000</b>	<b>6,400</b>	<b>5</b>	<b>22,295</b>

**Product/ Service Pricing Strategy**

Treepiz Technical Services Limited's service in the solid mineral sector using innovative technologies to mine and process the raw material will no doubt increase productivity, increase profit, and protect the environment and workers, nevertheless, since we are new in the industry, many operators might not take us seriously until we proof our worth to customers (operators) in Year 1, that is the more reason why we have to be circumspect in our pricing model. Below is the breakdown of our pricing model put forward for consideration in this unique service:

- (a) Cost-plus model - This is a situation where there is a markup to the cost of the services or product to cover the initial costs and generate profits.
- (b) Competitor-based model – This considers prices set by the competitors to form the basis of setting appropriate pricing.
- (c) Value-based model – This is the use of perceived values given to customers to set the appropriate pricing. In our new services, we have to conduct more research and get feedback from our customers (operators) after the commencement of the operation.

**Table 5.6** Competitor Pricing Comparison: Standard: Mining 1 Cadastre (1 acre = 4,459 square metre)

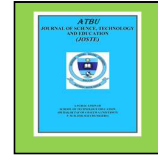
Item	Competitor 1	Competitor 2	TTSL
Price	\$4,000	\$5,000	\$3,000
Frequency	Monthly	Monthly	Monthly

After our analysis, even though, we know theoretically, companies like Rio Tinto

(UK/ Australia) and Newmont Mining (USA) use technologies to differentiate their services from

Corresponding author: Alex Olarenwaju, Adekanmbi  
✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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other operators, we have to test this in Nigeria, hence we are not going to set our pricing on the value-based and not cost-plus. We decided to use a competitor-based pricing model as you can see from Fig.5.6. The reason for this is that our company is not known in the industry, and we have to reduce the price to get recognition since we shall be using the Standard (1 cadastre) measurement like the competitors, which is equivalent to 1 acre = 4,459 square metre (analogous to standard football pitch). We shall peg our pricing to \$3,000 for us to break into the market. If we maintain this price after breaking into the market, we shall generate profits from the second year as more customers (operators) embrace the new technology for the mining operations in the industry.

#### Ideal Customer Profile

The solid mineral deposits are found in all 36 states and the federal capital city but because of our start-up, we shall be concentrating our activities on the western axis of the nation that has an abundance of solid mineral resources. The solid mineral resources that our operators are into include granite, sand, limestone, charcoal, copper, lithium, calcite, bauxite, dolomite, etc. The segmented operators have two main pain points, these are low productivity, low profit, and the challenge of mining in an environmentally sustainable in order to earn the trust of the host communities and other stakeholders. Other considerations include the year the company is founded, we shall be dealing with companies that have been in existence for 10 years and above, also the companies must be active and be in the good book of the government in terms of payment of royalties, and dues and most importantly must have an average annual budget of \$300,000. The company must be an affiliate of the Solid Mineral Association of Nigeria and the Nigeria

Chambers of Trade and Commerce. To aid decision-making, the Chairman or the CEO of the company must be knowledgeable enough to make critical decisions concerning the growth of the company. Nigeria is a pluralistic society, so our services is not restricted to any tribes or religion rather we are in the business of making the world a better place by serving humanity using our technical know-how to bring the gift of the Almighty God from the earth to better humanity.

#### New Customer Acquisition Cost.

Treepiz Technical Services Limited's services are unique, and to bring the changes needed in the sector, the company is introducing innovative technologies to improve productivity, increase profits, and protect the environment as we are experiencing in the oil and gas sector that belongs to the same extractive industry. The Customer Acquisition Cost (CAC) is directly proportional to the campaign's strategies formulated to break into the market. Our Sales, Advertisement, and Marketing (SAM) Budget is constant, and the spending is divided into Short Term (Year 1), Medium Term (Years 2 & 3), and Long Term (Years 4 & 5). The table below shows the consideration in terms of the percentage spent on the use of direct marketing consultancy, digital marketing, and website/ telemarketing.

The research published by Bailyn (2023) on the Average Customer Acquisition Cost (CAC) Industry, B2B Edition shows that for oil and gas, organic CAC is \$710, inorganic CAC is \$1,003 and the combined average CAC is \$1,713. Now, comparing the values got for these same services within the oil and gas industry, shows that our CAC value for chosen Year 2 is low at \$6.7.

Therefore, CAC is calculated by the equation below:

$$\text{CAC} = \frac{\text{Total marketing spends} + \text{Total sales spend.}}{\text{Total \# of new customer (acreage)}}$$



**Table. 5.8** New Customer Acquisition Cost

Year	Adverts/ Marketing Budget	Number of acreages	CAC	Considerations	Duration
1	\$200,000	8,918	\$22.4	Direct Marketing = 100%	Short- Term
2	\$150,000	22,298	\$6.7	Direct Marketing = 50%, Digital Marketing = 50%	Medium Term
3	\$150,000	35,672	\$4.2		
4	\$100,000	53,508	\$1.9	Direct Marketing = 10%, Digital Marketing = 50%, Website/	Long Term
5	\$100,000	71,344	\$1.4	Telemarketing = 40%	

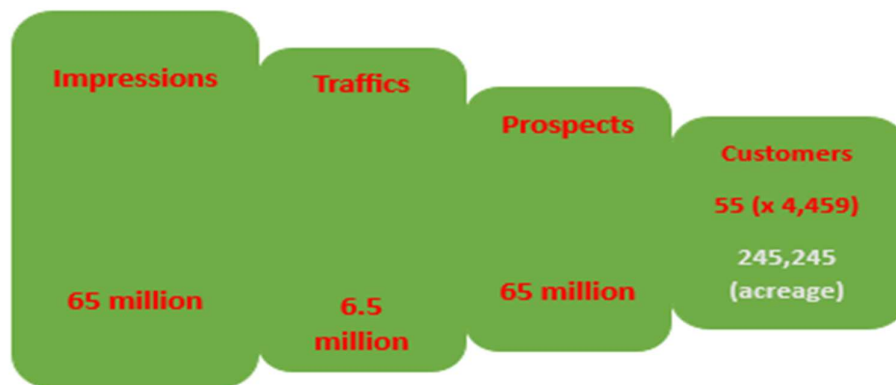
### Contingency

Treepiz Technical Services Limited's service is a capital-intensive business, so the contingency plans that the company has are specific to the prevailing condition. In the first scenario, if there arise unforeseen barriers or circumstances such as COVID-19 that will warrant a complete lockdown and business shutdown, the approach is to seek government intervention in the form of assistance and support for grants, financial support, and tax forgiveness. In the second scenario, when there is a business meltdown in the solid mineral sector, the drilling, blasting, and processing equipment could be diverted into other profitable operations. The construction industry will be the next business venture that could make use of the equipment and guarantee a

return on investment. The last scenario is when customer acquisition proves difficult despite the sales and marketing ads from direct marketing and digital marketing, the company can decide to reduce the price and hope to gather more customers, on the other hand, increase the ads and sales budget use the budget to advertise on print media and bulk emails to create more impressions and hope to convert to customers.

### Sales Funnel

The budget for sales and marketing advertisement will be doubled from \$150,000 to \$240,000 for the Year 2 campaign, the amount representing 0.3% of the annual revenue. Figure 5.9.1 shows how the company planned to create and convert impressions to customers in a typical year.



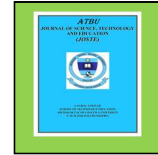
**Fig. 5.9.1-** Marketing and sales funnel for a typical year (contingency)

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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### Annual Advertising Plan

The total advertising budget will increase to \$240,000 for a typical year, which is about 0.3% of our total revenue during a typical Year 2. The breakdown per advertising channel is as follows- Nigeria's Vanguard Newspaper, the most circulated newspaper in the country, paid ads cost \$186,000 and Email Campaign according to Aweber (2023) cost \$54,000. We further show below the breakdown of how we plan to utilize the advertising budget across each platform.

### Paid Advert in Vanguard Newspaper

According to Vanguard Newspaper (2023), the print media produces a total of 108,000 copies of newspapers daily, distributed across Lagos- the nation's economic heartbeat (20,000), Abuja- Federal Capital (12,000), South-West (15,000), South-South (25,000), South-East (15,000), North-Central (18,000), North-East (7,500), and North-West (7,500). The age bracket of the readers is: Age (25-44) is 54%, Age (55 – 64) is 14%, and Age (55 – 64) is 9%. The gender profile shows that male command 61.8% while female has a figure of 38. 2%; the active working population from whom the operators of the solid mining industry

belong in the country is 60.5 million (Sasu, 2023). The plan is to run a page advertisement 3 times in a year during the combined summit of the Solid Mineral Association and Nigerian Chambers of Trade and Commerce in March, July, and November. A paid advert costs \$300 per page, we expect to reach 55.8 million impressions and the lead conversion in paid ads is around 8 percent to 10 percent. We believe this will generate up to new 30 customers (operators) for the company.

### Email Campaign

Research conducted in-country shows that the following platforms can be used to send bulk emails to targeted audiences, Mailchimp, Sandiblu, Constant Contact, and Aweber. In Nigeria, Aweber is more popular and because of that, TTSL will enter contract of sending 25,000 emails and run 15 campaigns in a month for the next 24 months. This will bring the total spend to \$54,000. Aweber (2023) boosted of 3.2 percent conversion rate from the impression to consumer. We hope this campaign will produce 4 million impressions and hope to convert about 25 to customers (operators) in a year.

**Table 5.9.2 Annual Advertising Plan for a Typical Year (Contingency)**

Item	Ads Spend	Impressions	Conversion Rate	Customers	Acreages
Vanguard Newspaper Ads	\$186,000	55.8 million	10%	30	133,770
Email Campaign	\$54,000	4 million	3.2%	25	111,475
<b>Total</b>	<b>\$240,000</b>	<b>59.8 million</b>		<b>55</b>	<b>245,245</b>

### Key Performance Indicators (KPIs)

The company shall monitor and measure the effectiveness of the campaign on the

print media and bulk emails on a yearly basis, this will enable the company to plan next areas of intervention.

**Table 5.6.3 Yearly Key Performance Indication for Marketing (Contingency)**

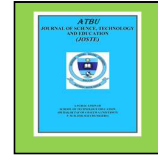
Platform	Impression	Traffic	Prospect	(Customers) Acreages
Vanguard Newspaper	55.8 million	5.8 million	5,800	(30) 133,770
Email Campaigns	4 million	80,000	400	(25) 111,475
<b>Total</b>	<b>49.8 million</b>	<b>5.88 million</b>	<b>6,200</b>	<b>(55) 245,245</b>

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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## Operations

### 3.1 Overview

Treepiz Technical Services Limited will build a strong operating strategy to grow the business over the next 5 years. The

company shall start making profits right from Year 1 up to Year 5. We expect revenue streams as follows based on the customer's acquisition.

**Table 6.1** Revenue Stream in the Years

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Operators / or (acreages)	(2) 8,918	(5) 22,295	(8) 35,672	(12) 53,508	(16) 71,344
Revenue	\$26,755,200	\$66,888,000	\$107,028,000	\$128,433,600	\$160,542,000

### Estimated Revenues for Typical Year 2 and Year 3

Treepiz Technical Services Limited (TTSL) shall sign either a short-term or long-term contract with operators using one (1) acre of field as a standard. We shall give a 10% discount to our set of customers (the operators) that patronize the company in Year 1, because our plan is to use this strategy to break into the market, hence using \$3,000 as the best price for operating on one (1) acre of mining field in Year 1, however, we do not need to change this price for the years until market forces determined otherwise. The estimated revenue is shown in the table above. In Year 1, we expect \$26,755,200 million working on 8,918 acreages or (2 operators). In Year 2, the revenue will jump to \$66,888,000 million for working on 22,295 acreages or (5 operators). In Years 3, 4, and 5, expected revenue and acreages (operators) are \$107,028,000 million; \$128,433,000 million, and \$160,542,000 million for 35,672, 53,508 million, and 71,344 acreages or (operators) respectively.

### Direct Cost (COGS)

Treepiz Technical Services Limited (TTSL) shall offer services to operators, hence, the Cost of Goods Sold (COGS) or SERVICES. These costs are divided into fixed costs and variable costs. The fixed costs remain constant for Year 1 and Year 2 while variable costs are subject to market forces (demand and supply) and this is expected to increase as activities and operations increase generally. The fixed costs include office rents and equipment maintenance yard in Ibadan, Oyo State, Nigeria. Ibadan is chosen because of the serene and calm

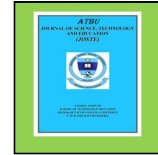
environment, less traffic, fairly good supply of electricity, cheap supply of labor, good road and rail line networks. The yearly rental for the 2-story office building and 8000 square feet maintenance yard in Year 1 and Year 2 will be \$5,000 each while the yearly cost for basic utilities (electricity, internet, water, telephone) will be roughly \$3,000. We envisage an increase in the rents for office and equipment maintenance to increase in Year 3, for this, based on the trend, office rents and utilities will increase to \$7,000 and \$5,000 respectively. Aside from managerial staff, the company will maintain a crew of eighteen (18) field staff that will run back-to-back (B2B), working a minimum of 8 hours a day in Year 1 and Year 2 (short-term contract). There shall be eight (8) Equipment Operators for the (i) Remote Sensing Equipment, (ii) Drilling Equipment, (iii) Blaster Equipment, and (iv) Pulveriser (Processor) Equipment and this is to be supported by eight (8) Operator Assistants. The eight (8) Equipment Operators shall be on a total yearly salary of \$96,000 and the eight (8) Assistant Operator shall also be on a total yearly salary of \$48,000. There shall be two (2) Operation Managers that will be on a total yearly salary of \$28,800, other expenses shall include 2 Administrative staff on a total yearly salary of \$7,200 who shall have responsibilities to support office operations. The yearly office consumables are pegged at \$3,00, however, starting from Year 3 (long-term contract), there shall be 20% increment in staff salary while still maintaining the same number of Operation Managers, Equipment Operators, Assistant Operators, and Office Assistant, hence, we expect their yearly total salary to increase to

Corresponding author: Alex Olarenwaju, Adekanmbi

✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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\$34,560, \$115,200, \$57,600, and \$8,640 respectively.

For the variable costs, the cost of equipment maintenance is \$9,000 in Year 1 and Year 2 (short-term contract), this is because the equipment is new, rugged and built to withstand the pressure of the operations aside from wear and tears; this is increased to \$12,000 for the long-term contracts, i.e., Years 3, 4, and 5.

To calculate the Variable Cost (VC), we calculate for both short-term and long-term contracts under two conditions. The average cost of diesel in Nigeria to power the 3 equipment (driller/ blaster/ pulveriser) in the short-term (3-month) contract is calculated as follows:

250 litre x 8 hours x \$1.2 (diesel price)  
x 30 (days) x 3 (equipment) = \$216,000  
**\$216,000 (diesel cost) + \$9,000 (equipment maintenance) = \$225,000**

If the contract extent to 6 months or more (long-term) with options of renewable in a year, the costs of variable cost is \$225,000 x 12 = \$2,700,000 million  
**\$2,700,000 (diesel cost) + \$12,000 (equipment maintenance) = \$2,712,000**

**Condition A (i): Total COGS for a short-term contract (3 months) = \$225,000 + \$180,000 (staff salary) = \$405,000.**

**Condition A (ii): Total COGS for a long-term contract (6 months or more) is \$2,712,000 + \$216,000 (staff salary) = \$2,928,000 million**

**Condition B: Using Nigeria's supply of electricity. The Cost of electricity for industrial companies is \$0.008 per kilowatt hour, (Sasu, 2013).**

Using this to calculate our variable cost:

Short-term contract: 8 hours x 0.08 x 30 (days)  
x 3 (equipment) = \$57.6

Long-term contract: \$57.6 x 12 = \$691.2

**Condition B (i): Total COGS for a short-term contract (3 months) = \$57.6 + \$180,000 = \$180,058**

**Condition B (ii): Total COGS for a long-term contract (6 months or more) is \$691.2 + \$216,000 = \$216,691**

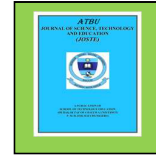
**These analyses have proven that the provision of electricity for mining operations will lower operational costs and increase profit margins for the operators.**

The company plan is to have a mix of power from the use of diesel fuel (traditional method) and government electricity to power the company's operation and the long-term plan is to alternative source of energy (green fuel) to power our mining operations.

#### **Capital Expenditure (Capex)**

Treepiz Technical Services Limited at the beginning of the operations shall make some capital expenditure or procurement to set the base for the commencement of the business. Starting from March 2024, the company shall purchase the core items for the services, these shall include (i) Hydraulic Shover (Excavator) (\$127,389) with a lifespan of 10 years (ii) Rotary Driller (\$38,217) with a lifespan of 10 years (iii) Blaster (\$50,955) with a lifespan of 10 years (iv) Pulveriser (\$63,694) with a life span of 10 years (v) 4 Mining Trucks (\$76,433) with a lifespan of 10 years (vi) Remote Sensor Equipment (\$63,694) with a lifespan of 10 years (vii) 240 KVA Generator (\$19,108) with a lifespan of 5 years (viii) 10 laptops (\$10,000) with a lifespan of 3 years. The company will use \$25,478 for installation.

The company will not purchase any equipment until Year 5, this will be four (4) mining trucks to move raw materials to the processing site. The total cost for the truck is \$519,554, which shall be financed with 75% debt and 25% cash (equity). The accumulated depreciating values for this equipment shall be \$71,246 in Year 1, \$59,372 in Year 2, and \$39,372 in Year 3.



**Table 6.3: Mining Asset**

S/N	EQUIPMENT	DOLLAR (\$)
1	Hydraulic Shover (Excavator)	127,389
2	Rotary Driller	38,217
3	Blaster	50,955
4	Pulveriser	63,694
5	4 Mining Trucks	76,433
6	Remote Sensor Equipment	63,694
7	KVA Generator	19,108
8	Installations	25,478
9	10 laptops	10,000
<b>10</b>	<b>Total</b>	<b>519,554</b>

**Gross, Profits and Operating Margin**

Due to the uniqueness of this business, if we factor in the overhead, the company is expected to grow by 150% from Year 1 to Year 2 and by 60% from Year 2 to Year 3. The plan is to sign a short contract with customers (operators) that will cover Year 1 and Year 2 and a long-term contract that will span through Year 3, 4, and 5. During Year 1 and Year 2, the operators (acreages) shall be 2 (8,918) and 5 (22,295) respectively, the company will be making profits, as the COGs remain \$405,000, However, as from Years 3, 4, and 5 which are long-term contract, the operators (acreages) increases to 8 (35,672), 12 (53,508), and 16 (71,344) respectively, while the COGS will increase to \$2,928,000 million.

In Year 1, the revenue expected is \$26,755,200 million giving a profit margin of \$7,458,288 million at 28%. In Year 2, because the company still maintains short contract COGS, revenue is \$66,888,000 million, and the profit margin shoots up to \$48,715,078 million at 73%. In Year 3, revenue is \$107,028,000 million and the profit margin is \$82,750,243 million at 77%. In Year 4, the revenue increased to \$128,433,600 and the profit margin increased to \$51,373,440 million at 40%, in Year 5, the revenue increased to \$160,542,000 million and the profit margin will be \$64,216,800 million at 40%.

**General Administrative Expenses & Payroll**

The extractive industry generally is a cash cow venture after the initial investment. The company expects to be making a profit as from Year 1. To demonstrate commitment to the company and returns of investment to the

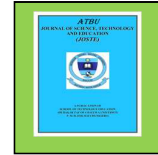
investors, the Founders, Alex Olanrewaju Adekanmbi and Prince Muyiwa Majekondumi will not be on salary nor the 4 Directors in the Year 1 and Year 2 of operations. The plan is to hire marketing consultants during Year 1 to spread the brands because our services are unique, and the sales, advertisements, and marketing (SAM) are phased into short-term, medium-term, and long-term as activities increase.

The payroll shall have the following staff on full salary (i) 8 Equipment Operators (ii) 8 Operator Assistants (iii) 2 Administrative Officers, and (iv) 2 Operations Manager, while the company's Chief Financial Officer (CFO) shall be on part-time salary for Year 1, and this shall be reviewed upward as operations expand and more revenues come into the company. The breakdown of the salary and other expenses for Year 1 are as follows: (i) 8 Equipment Operators \$96,000 (ii) 8 Operator Assistants \$48,000 (iii) 2 Administrative Officers \$7,200 (iv) Operation Manager \$28,800, (v) CFO part-time salary \$30,000. The company will maintain this structure in through Year 2, so that the company can have enough funds to deploy to renewable energy. As from Year 3, we expect an increment in the number of operation staff and a push in their salaries. There shall be 20% increment in staff salary while still maintaining the same number of Operations Manager, Equipment Operators, Assistant Operators, and Office Assistant, hence, we expect their yearly total salary to increase to \$34,560, \$115,200, \$57,600, and \$8,640 respectively. These other Management staff shall be on full salary- (i) CFO salary increase to \$50,000 (ii) 4 Directors salary \$240,000 (iii)

Corresponding author: Alex Olarenwaju, Adekanmbi  
✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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Chairman/ President salary \$80,000 (iv) Vice-Chairman/ CTO salary \$75,000.

## CONCLUSION

After the 5 years of business, the founders do not intend to sell the company, however, the idea of merging with major operators to prospect and mine solid minerals all over Nigeria and abroad is more preferred. As founders, we would like to operate a company that is a delight to all stakeholders- the investors, community, and government; most importantly continue to add value to investors' shares.

If the company were to sell, the rate of return for the investors will be roughly 177.7%. This percentage shows the net gains of their initial investment into the company after 5 years. Analysing this shows that their initial investment would have increases exponentially to \$101,627,675 million as profit with the net proceed at 17,667% ROI for 48% ownership while the founders are expected to net \$119,096,648 million as profit at 85,913% ROI for 52% ownership. This showed ultimately that the terminal value as well as the rate of return shows a profitable component of investing in our company. Our investor(s) can expect to receive proceed in the same period in which accurate financial statements are jointly produced and in the same quarters if the company is sold. Nevertheless, the founders are willing and ready to find negotiation that is in alignment with investor values, and realization of company's vision and goals. This is given the founder's willingness to negotiate, the ROI for all is subject to change.

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Corresponding author: Alex Olarenwaju, Adekanmbi  
✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

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Corresponding author: Alex Olarenwaju, Adekanmbi  
✉ [alexadekanmbi@gmail.com](mailto:alexadekanmbi@gmail.com)

School of Economics and Business Administration, Concordia University Irvine, California, US.

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