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# A STUDY ON PARAMETERS INFLUENCING REVENUE MAXIMIZATION THROUGH SALES OF COAL CHEMICALS AT BHILAI STEEL PLANT

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# **ABSTRACT**

Coal has been recognized as the most important source of energy for electricity generation and as the source of organic chemical feedstock in the 21st century. Coal chemicals have unique properties making them essential in many daily life applications: railways infrastructure, construction, health protection and fuel efficiency. Steel industries rely on these coal chemicals to produce steel, aluminium, carbon black, resins, electrodes and more. Bhilai Steel Plant is the only Steel producing Organization with its own Coal Mines. Coal chemicals are high risk products as in they are dangerous and have to sell as soon as possible. Most of the coal chemical products are highly inflammable. Therefore, it is imperative to sell these products efficiently and quickly. The study was conducted to understand the entire process of sales of coal chemicals at Bhilai steel plant and analyse the challenges faced by the firm during the process.

The data was collected by personal observation and interviews with authorities and relevant officials. It was observed that, knowing how to use search engine optimization for the promotion of products and services can prove to be a very helpful method of increasing revenues. Using the internet can be a very effective way for strengthening customer relationships, advertising and promotions and for attracting new customers. It was suggested to understand the demand and consumption of Bhilai steel plant and to treat both as independent entities, and to bring about innovation accordingly to meet demand.

Key Words: Coal chemicals, Profit maximisation, Steel authority of India, Bhilai Steel Plant.

# 1. INTRODUCTION

The Iron and Steel industry are one of the most important industries in India. During 2014 and through 2016, India was the third largest producer of raw steel and the largest producer of sponge iron in the world. The industry produced 91.46 million tons of total finished steel and 9.7 million tons of raw iron. Most iron and steel in India are produced from iron ore. The Indian Ministry of Steel is concerned with: the coordination and planning of the growth and development of the iron and steel industry in the country, both in the public and private sectors; formulation of policies with respect to production, pricing, distribution, import and export of iron and steel, ferro alloys and refractories; and the development of input industries relating to iron ore, manganese ore, chrome ore and refractories etc., required mainly by the steel industry. Most of the public sector undertakings market their steel through the Steel Authority of India (SAIL). The Indian steel industry was delicensed and de-controlled in 1991 & 1992 respectively. The current steel plants in India are more than 50. Jindal Steel and Power Limited, Tata Steel Limited, Visvesvaraya Iron and Steel Plant to name a few.

The National steel policy – 2005 has the long-term goal of having a modern and efficient steel industry of world standards in India. The focus is to achieve global competitiveness not only in terms of cost, quality, and product-mix but also in terms of global benchmarks of efficiency and

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productivity. The policy has also proposed the idea of gas-based steel plants and use of electric furnaces in order to bring down the use of coking coal in blast furnaces. The policy targets to achieve production of 300 million tonnes by 2030-31. In this role, the Government has released the National Steel Policy 2017, which has laid down the broad roadmap for encouraging long term growth for the Indian steel industry, both on demand and supply sides, by 2030-31.

Bhilai Steel Plant, the eleven times winner of Prime Minister's Trophy for Best Integrated Steel Plant in the country, is India's sole producer & supplier of world class rails for Indian Railways including 260-metre-long rails, and a major producer of large variety of wide and heavy steel plates and structural steel. With an annual production capacity of 3.153 MT of saleable steel, the plant also specializes in other products such as wire rods and merchant products. The entire range of TMT products (Bars & Rods) produced by the Plant is of earthquake-resistant grade and superior quality. The plant also produces heavy structural including channels and beams. Since, BSP is accredited with ISO 9001:2000 Quality Management System Standard, all saleable products of Plant come under the ISO umbrella. The Plant's HR Department is also certified with ISO 9001:2000 OMS Standard. ISO:14001 has been awarded for Environment Management System in the Plant, Township and Dalli Mines. The Plant is accredited with SA: 8000 certifications for social accountability and the OHSAS-18001 certification for Occupational Health & Safety. BSP has received Integrated Management System (IMS) Certificate by a single certifying agency (M/s DNV), integrating QMS, EMS, OHSAS & SAMS - becoming the first SAIL unit and among few corporate houses in India to achieve this unique distinction. Among the long list of national awards, it has won, Bhilai has bagged the CII-ITC Sustainability award for three consecutive years. BSP won 1st prize in National Energy Conservation Award 2013 in Integrated Steel Sector in recognition of major energy saving initiatives in 2011-12 and '12-13. The Plant again won this award for Year 2014 for achieving a 5% saving in thermal energy consumption and savings of 2% in electrical energy consumption over the previous year.

In terms of Customer Relationship Management, Bhilai steel plant (BSP) obtains feedback from its customers using a feedback form that is available on their site. Feedbacks and suggestions given by the customers are taken seriously at Bhilai steel plant and improvements are made accordingly. All major production units and marketable products in Bhilai Steel Plant are covered under ISO 9001:2000 Quality Management System. This is achieved as a result of unrelenting attention and meticulous procedures at every stage of the process and upgrading of testing methods and equipment. Right from selection of input material for steelmaking, the process parameters are kept under close control. Intensive checking of all quality parameters continues throughout the subsequent operations of casting, reheating and rolling. Express analysis with the help of sophisticated, direct-reading spectrograph and gas analyser ensures a narrow range of chemical composition. Intensive metallographic investigation with modern instruments like Scanning Electron Microscope, Image Analyser and Micro Hardness Tester is carried out to assess the quality of the product.

BSP focuses on Human Resource Development through training need assessment on a continuing process. About 19,000 employees are imparted training every year. The focus is on need-based innovative programmes, such as Action Collaboration. It further provides platform for multi-skilling. In regards to sales centre at BSP, Extensive customer contact along with product and segment specialisation, close monitoring of order servicing and feedback analysis through a Customer Satisfaction Index are established norms at Central Marketing Organisation (CMO). The customer-friendly approach of CMO is backed by practical after-sales service. Through the process of Key Account Management, CMO provides single- window service to key customers across the country for every business transaction from enquiry to order booking, order tracking to delivery, and even consultancy and after-sales service. Marketing and Business Planning Section is present in every unit

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of SAIL. Marketing of primary products is handled by CMO (Central Marketing Organization). CMO with the help of BSO (Branch Sales Office), RSO (Regional sales office), Warehouses and Various Dealers recieves the orders from the customers and according to their order, the products if available, are dispatched and delivered to the customers.

While the marketing of secondary products are handled directly by M&BP (Marketing and Business Planning) units of each plant. The customers order directly to the M&BP section of each plant and then according to their order the product is delivered to them. The secondary products are also sold by auctions in this the highest bider gets the product. After receiving orders from customers, the products are inspected for whether the product can be manufactured or not, if the product is available or not, how much quantity is available, whether the products are of good quality or not, whether the product is of mentioned dimension or not, etc. This inspection is done by Plant enquiry committee whose members are from various sections like M&BP (Marketing and Business Planing), PPC (Planing and Production Control), respective mill in which the product is to be manufactured, SMS (Steel Melting Shop) & RSS.

This paper aims to understand the effect of different parameters like advertisement & promotions, coal chemical industry, employee motivation, innovation, production and consumption etc on revenue generated through sales of coal chemicals in Bhilai steel plant

# 2. REVIEW OF LITERATURE

Several research papers were reviewed to get better insights of the coal chemical industry, employee motivation, the B2B market, revenue maximization.

Lahiri (2007) 'Land is often used without the consent of the indigenous people. Mining companies should act as if consent to gain access to land is required even when the law of the land does not require this. In making decisions, the cultural circumstances of the local people and loss of access to common resources should be kept in mind. Where resettlement takes place, companies need to ensure that living standards are not diminished, that community and social ties are preserved, and that they provide fair compensation for loss of assets and economic opportunity. Responsibility for ensuring the long-term well-being of resettled communities needs to be defined and monitored'. The article talks about the liberalisation of mining laws in our country to attract investors and improve the mining scenario in India. As compared to other countries like Australia, brazil, Chile etc the mining laws in our country are not as liberal. This has caused investors to lose interest. According to a survey conducted by the World Bank in 2001 (cited in Planning Commission, 2006), 'Mining Sector Reforms and Investment—A Global Survey', India was found to have one of the lowest scores on various parameters of interest.

The paper "A supply chain-based assessment of water issues in the coal industry in China" provides quantitative information about water withdrawal, consumption, waste water recycling and treatment and pollution from coal mining, preparation, to final conversion for China's power generation and coal-to-chemical industry. Water issues are becoming increasingly severe constraints for coal development in China, especially in North and West China, where water is more scarce and ecological systems are more vulnerable than other regions.

Harvey et.al (2001) shed light on the concept of production and consumption and their dependency on different factors. Consumption varies with micro and macro factors like markets, prices, production etc..., Consumption is dynamic concept that varies with variable factors. existing studies demonstrate that consumption routines can change over time for certain goods and at different rates for different social groups. The article gives a clear distinction between consumption and demand. There are not the same things. Consumption is a distinctive process of transformation,

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alongside and in relation to, that of exchange. Firms, marketing, distribution, retail, processes of market competition and product innovation configure the range of options available to social group.

Innovation in a process that inspired and affected by various factors. Innovation currently lies in design and delivery of services, rather than manufactured goods, and it deserves greater attention. Ottosson and Kindström (2002) argue in a study of the bulk chemical industry that an increased focus on relationship management in the supply chain and extending the offering into associated services could indeed be viable routes to competitive advantage in a commoditized environment such as the steel industry. Similarly, Skarp&Gadde (2008) have argued that the interdependences between sellers and buyers must be treated as the cornerstones of such firms' strategies if they are to succeed in creating value and upgrading their offerings'. An important limitation of the study is that it focused on a single industry. As a logical extension of this research, investigation of the mix in other industries and sectors should yield results with interesting implications for future research. Other mature industries such as energy, pulp and paper, and chemicals are all, like the steel industry, characterized by relatively homogenous bulk-oriented products and by strategic challenges regarding growth, earnings, and profitability. Hence, extending future research to these industries may add additional insights capable of either confirming or modifying the findings of this study.

Street et.al talk about a methodology to assess the WtS curve for the long-term forward trading for two types of risk aversive attitudes: expected utility maximisers and CVaR based maximiser agents. A PLUF form was adopted for the former and a breath discussion for the Genco preference build throughout the most relevant financial company's parameters was provided. A PDUF representation for the CVaR coherent risk measure, widely used in risk management applications, was established in order to compare and point out differences between both approaches in a single basis. Xiaohui Hu (2017) talks about the dynamism of the coal mining industry and the coal chemical industry in an old industrial region of China, with a particular focus on the mechanism of new path creation and its relatedness to the old path during the past decade. It reveals that the restructuring of the coal mining industry can be characterized by an adaptation process involving old path continuity and expansion. The heterogeneous structure of firms, local GDP oriented institutions and national policies jointly and interactively created stubborn old path dependency that fundamentally hinders the transformability of the coal industry.

A case study byNeda GorjianJolfaei Mohammad HaghighiNimaGorjian says that, in order to be one of the successful suppliers in competitive national and international markets, it is required to understand the four marketing mix elements (i.e. product, price, place and promotion) which impact on the sale rate and producer success in the competitive market. Nowadays, countries with the mono product economy based on petroleum explore to move away from this type of economy to the steadier one. Iran is one of these countries that attempts to invest and develop in other mineral industries such as the steel manufacturing for both national demands and international markets.

Pankaj M Madhani (2015) mentioned that demand chain management when customer values are linked with effective flow of products gives the firm a major competitive advantage. Proper collaboration between the sales department and the marketing department makes the demand chain management much more effective. Kaplan and Sawhney (2000) the idea of internet being the new marketplace for B2B is discussed. The article gives a clear classification between different e-hubs which helps businesses understand the market better and strategies accordingly.

According to Elshurafa et.al technology can be used for our advantage. Using .NET technology, and based on the real-time database and relational database, the process management system is developed, which includes process scheduling, quality supervision, measurement, technique and

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procedure management and report system. The process management system can be successfully applied in coal chemical industry. Walker (2004) customer relationship management is discussed in context of business to business relationships. The paper addresses the issue of high failure rate of CRM implementation in the US and European countries. The typology discussed in the paper talks about the financial, structural and social bonds of a firm. The organizations seek to resolve the issue of the conflicts in the middle (Kambil et al. 1999) description of mixed-mode governance structures as the conflicted middle using the concept of all-in-one-markets.

Zeithammer (2006)in his paper talks about, when details of some future offerings are already common knowledge, as near-future offerings are on eBay, the bidders base their bids on the available information. Seemingly independent auctions become linked through the demand-side strategies. When rational, forward-looking bidders participate in a sequence of auctions for substitutes, they reduce their bids in anticipation of future auctions offering the same products. The large amount of money companies spends to target and pursue leads in the B2B world. \$15 million to \$25 million has been spent over a five-year period for a crazy amount of tech. And the author proposes something even more radical (Ray Wang 2018).

Sang Jianxin (2019) in the article talks about the huge potential in new coal chemicals like carbon fibre and needle coke. These are coal chemicals that are still untapped. The issue of overcapacity of coal chemical companies in china is also discussed in the article. The sustainable development of economy of china. Coal chemical industry will be opting for coal gasification polygene ration (Li Fenming 2014). As china is a country with abundance of coal, the production of various coal products is high which leads to carbon emission. The tax is to keep the carbon emission and the coal industry under control (Zhu Weia and Zhu Qiujun 2017).

Hiroki Murakami (2017) discusses matters like demand creation in the face of demand saturation. By defining the parameter of birth rate of a new product as the probability that a new product is derived from an existing one and identifying the time path of this parameter with the firm's R&D plan, he derives the optimal R&D plan and examine the growth rate of the firm's expected total revenue along this optimal plan. "Modern coal chemical industry understands bottlenecks, cope with challenges" an article that talks about lack of technical codes and standards, economics and technical risks, constraints of resources and environmental factors, lack of technical talent in the coal chemical industry in china. It also discusses the performance of various coal chemical products. Coal-to-liquid projects face low oil prices and high taxes, and also have to deal with the emergence of non-oilfuelled vehicles. It is clearly defined in "Made in China 2025", issued by the State Council that energy-saving and new-energy vehicles will be given development priority. Electric vehicles and fuel cell vehicles are the development orientation. The oil fuelled vehicle sector is already targeted for capacity reduction. Replacement of oil-fueled vehicles will put coal-to-liquid projects into fierce market competition. Some products of coal-to-liquid enterprises should therefore be targeted for use in making downstream chemicals with high added value. Some products that are not suitable for use in making chemicals should be targeted for use in making downstream oil products with high added

According to C. J. Hawkins (1970) view it is not necessary for revenue maximisers to produce more output or advertise more than profit maximisers. Revenue maximisers have the option of producing less output, with higher price and more advertisement. However, it is stressed that this works for single product firm. Revenue maximization leads in general to the same results as profit maximization for multi-product firms. Mohsen (2018) talks about, the main proposition of social capital is that social networks (personal communications) are developed over time, underlie trust and cooperation and include actual and potential valuable resources which contribute to social relations. In fact, social capital leads people to unite, makes them work together successfully and establishes cooperation-based working relations and facilitating working practices. Therefore, increase in social

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capital increases organizational innovation and empowers employees, because it leads to cohesion of employees and managers and creates value-added by facilitating successful collective activities.

Laura Empson (2019) says Leadership dynamics are constantly in flux as the equilibrium is destabilized and restabilized. Sometimes one individual may step forward and assume leadership, and colleagues will allow him or her to do so. At other times that individual may step back and become a good follower, even if he or she is nominally in charge. So collective leadership is not something that is done to followers but is a process done with colleagues. The leadership team of a professional service firm in effect includes all the partners; in some firm's collective leadership requires input and support from many hundreds of individuals. When you're a managing or senior partner, your peers may look to you to be their heroic leader, and you may be tempted to take up that mantle. But you need to keep reflecting the leadership challenge back onto them— to keep reminding them and yourself that leadership is a collective activity. If it feels lonely at the top, that's probably because you're not doing it right.

Sweden demonstrates that a relatively brief, team-based intervention program may be effective in creating need support among team members such that team members feel more satisfied in their basic needs and report more increased autonomous motivation, compared to participants in the control group. This study underlines the importance of need satisfaction for the success of work motivation programs. It is among the few to provide experimental evidence and to allow for causal conclusions on the antecedents need supportive intervention of need satisfaction and autonomous motivation at work. Specifically, we put the role of team members to the fore as an increasingly important driver of employee motivation, and pointed out that motivation is a multilevel construct with relevance at the intra- and inter-individual level, as well as at the level of the team (Tomas Jungert 2018). "Search Engine Optimization (SEO) as a Dynamic Online Promotion Technique: The Implications of Activity Theory for Promotion Managers" says that organizations have a good chance of improving sales and revenue by using internet marketing. Search engine optimization is a great channel for promotions and can prove to be very helpful for the growth of a company.

# 3. PROBLEM STATEMENT

To the understand the effect of different parameters like advertisement & promotions, coal chemical industry, employee motivation, innovation, production and consumption etc on revenue generated through sales of coal chemicals in Bhilai steel plant.

# 3.1 SCOPE

To understand the entire process of sales of coal chemicals at Bhilai steel plant and analyse the challenges faced by the firm during the process. Different ways of modification of the process can be suggested once the challenges are identified.

#### 3.2 OBJECTIVE

- To understand the concept of lead generation and demand creation by means of advertisements and promotions.
- To increase Employee motivation for better functioning.
- To analyse and solve the storage issue of coal chemicals at bhilaisteel plant.
- To Analyse methods to revenue maximization of coal chemicals at bhilaisteel plant

# 3.3 METHODOLOGY

The research methodology adopted for this study is

- Personal and close observation of different processes in Bhilai steel plant.
- Personal interviews with authorities and relevant officials such as Marketing and Production department.
- Thorough analysis of documents provided (like auction files, process of allotment of slots etc).

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• Gathering information by reading and examining numerous relevant research papers

# 4. DISCUSSION

An increasing number of B2B buyers are doing their research online before engaging with brands or making purchasing decisions. In fact, 73% of global traffic to B2B company sites originates from search engines and most researchers rarely go past the first page of Google. Getting found on search engines has become paramount if you want to get exposure to potential customers when they're at the early stage of their decision-making process, during which you'd have more opportunities to build trust and educate them on your products or services. In the research paper "Search Engine Optimization (SEO) as a Dynamic Online Promotion Technique: The Implications of Activity Theory for Promotion Managers" the author says that effective search engine optimization can give a major boost to a company's sales and revenue. Therefore, knowing how to use search engine optimization for the promotion of products and services can prove to be a very helpful method of increasing revenues.

Maintaining a good relationship with the customers is always a good way to increasing sales and boosting revenues. It is no different in the business-to-business world. In the research paper "Customer Relationship Building on the Internet in B2B Marketing: A Proposed Typology" authors L. Jean Harrison-Walker and Sue E. Neeley talk about maintaining customer relationship in B2B using the internet. The paper gives CRM strategies for different levels of buying stages and the desired level of customer relationship. These strategies can be used by companies to strengthen customer relationships in B2B.

METAL junction is the organisation responsible for generating leads and getting customers for the secondary products of Bhilai steel plant. Using the internet can be a very effective way for strengthening customer relationships, advertising and promotions and for attracting new customers.

Bhilai steel plant has a demand of 15 tonne (approx.), however they are only able to supply 11-12 tonnes. Which means that Bhilai steel plant is not meeting the demand. According to Mark Harvey et.al. How people go about consumption both configures the process of innovation and is configured by the process of production. In context of innovation the authors advocate paying attention to routine activities and bringing about change in everyday practices rather than making big technological changes. Understanding consumption behaviour as governed by routines and social mechanisms is essential to understanding the evolution of demand. First, there are changes in patterns of consumption that emerge through macro-social shifts (changing relationships between different social groups, demographic shifts such as the ageing population). Second, there are changes in the structure of consumption brought about by shift in the structure of production and Third, there are changes to practices of consumption arising from the introduction of new goods and services. These shifts are understood within a framework that sees consumption as stratified, relational and other than utility maximising. The relationship between these levels is seen as crucial for understanding the innovation and consumption of new goods and services. Therefore, my suggestion would be to understand the demand and consumption of Bhilai steel plant and to treat both as independent entities, and to bring about innovation accordingly to meet demand.

Jungert et.al. Say that need satisfaction is an important factor in employee motivation. Employee motivation is extremely important for any department or organisation to run successfully. Having team building exercises and activities that promote team work can prove to be extremely helpful for Bhilai Steel Plant to keep the spirits of their employees up and to keep them motivated to give their best.

# 5. CONCLUSION

Bhilai steel plant selling their secondary products like coal chemicals through forward online auction can boost sales and maximize revenue with the use in search engine optimization. Online promotions

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and the proper use of internet for advertisements can generate leads and customers for business-tobusiness businesses. Motivated employees and good team work can help an organisation run successfully.

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