International Journal of Management, IT & Engineering
Vol. 9 Issue 3, March 2019,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

A Study on Strategic Enterprise Risk and Enterprise Resource Management for Enhancing Overall Organizational Performance to Achieve Business Excellence in Coal Mining Industry

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Abstract

In world, annually 2 - millions and in every 15 seconds one person in work related accidents and illness are killed. Mining is the 2nd largest industry in terms of mortality in the world. The worst consequence of their risks is early death of work force. Though mining industry in the world, every year produces billions tons of coal and raw materials worth billions of dollars, and provides job for millions of people around the world, but every year 1000's of people in the world in mining industry are killed & injured. Although mine accidents in certain part of mining industries in the world are declining, but risks & accidents in the mining industries are still important; as it involves not only direct & indirect (4 times direct) cost but also lowers morale of the employees which is difficult to quantify, but can be seen on poor performance and reduced productivity and increased cost of production.

According to hazardous nature of work in the mines, it is clear that the injuries of work related accidents in the mines are high; but a lot of work related accidents can be avoided in future. Similarly impact of other operational, technological, financial, socio- political, environmental, etc. risks have adverse effect on performance and sustainability of the organisation which if not managed/mitigated timely will surely lead to collapse of the organisation.

Keyword: Mortality, Mining Industry, Reduced Productivity, Performance And Sustainability

Introduction

In view of India's rapid economic growth at projected 10-12%, the energy and resources requirement to meet the basic needs of its people i.e. 17% of world population, as also growing. Economic development, as well as realization of basic human needs is increasingly dependent on the availability of modern energy services for raising living standards of its citizen along with zero scarcity of food too.

With limited petroleum and natural gas resources, coal is irreplaceable as primary form of energy, driving economic development. For commercial application, high grade coal is a preferred option, but it is generally low grade coal(20-40% ash and upto 4500 kcal/kg of GCV) that are available in large quantities. Hence, to fruitfully make maximum use of such abundant low grade coals, technological advancements are taking place in the form of **'Clean Coal Technologies'** i.e. Coal Gasification, Coal Liquification, Coal Bed Methane, Advanced Combustion Technologies, Coal Conversion, Carbon Capture & Storage, etc. for ensuring improved efficiency of commercial coal utilization in eco- friendly manner with reduced carbondioxide emission and other pollutant emission through renovation and modernization for the well being of mankind and national growth.

Conversion of coal to Synthetic Natural Gas for getting ammonia to manufacture Urea so as to improve agriculture yield at lower cost, to attain adequacy in production of food material to eradicate poverty and assuring well-being of the society as a whole.

Apart from use of coal in electric power generation, coal is used for steel production, cement manufacturing and as a liquid fuel, chemical and pharmaceutical industries, paper manufacturing, ingredients in activated carbon, carbon fibre, silicon metal, lubricant, coal tar, bitumen and asphalt, producer gas, etc. ceramic/tile burning & bricks industry.

Manufacture of hard coke for blast furnaces which is also used as reducing agent while smelting oxidized iron in blast furnace.

Gases produced from coal during carbonization recovered as bye product are used for production of chemicals, fertilizers & synthetic petrol.

Review of literature

1. **Title:** Hazard identification and risk analysis in mining industry.
   Author: Amol Paithankar : Deptt. of Mining Engineering : NIT; Rourkela.
   Findings: Study pointed out the method of Hazard identification. Risk assessment with major tress on opencast coal mining and covered only accident risk.
   Gap: Estimation/Identification of Financial impact of safety/hazardous risk, operational Technological, economic, social, political, land & revenue, environment, sales & marketing risks etc. Establishing frame work of Risk Management & Risk Organization for each department and formation of risk management committee, with risk owner and risk mitigation owner, quality circles, Total Quality Maintenance, Total Production Management.

2. **Title:** Analysis and Modelling for Risk Management for u/g coal mines safety.
   Author: Ozlam Deniz Eratak : Graduate School of Natural and Applied Sciences of Middle East Technical University for Ph.D. (Mining)

Findings: Stresses on causes of risk in u/g coal mines only.

Gap: Quality of inspection for ZAP (Zero Accidental Potential)

Research Methodology

Research Problem is one which requires a researcher to find out the best solution for given problem i.e.; to find by which course of action the objectives can be attained optimally in context of a given environment.

Objectives of Study

- To suggest measures for optimum deployment, utilization and management of enterprise resources to enhance productivity and profitability of organization for business excellence.
- To scan business environment and gain better understanding of the organization strength, weakness, opportunities and threats i.e. to carry out SWOT analysis and PESTLE - Political, Economic, Social, Technological, Legal, and environmental analysis.

Hypothesis

H1- That effective implementation of tools and techniques for Risk Management & Risk Minimization and optimum utilization of enterprise resources, would enhance Safety, production, productivity, profitability and all other components and contribute overall organizational performance for attainment of business excellence.

Data analysis

Descriptive Statistics						
Sr. No.	**Brief of questionnaire/Schedule/Variables**	**N**	**Mean**	**Std. Deviation**	**Min**	**Max**
1	Are vital input resources are Adequate	1722	1.0999	.29993	1.00	2.00
2	Are leadership development /workshops effective	1722	1.2503	.43331	1.00	2.00
3	Adequacy of policy and procedures Authority responsibility and management control system	1722	1.2003	.40038	1.00	2.00
4	Tools and techniques of Resource/Risk management improves performance	1722	1.1504	.35757	1.00	2.00
5	Consistency of reward system is fair/not fair	1722	1.0999	.29993	1.00	2.00
6	Freedom to innovate and management tolerates mistakes	1722	1.3002	.45849	1.00	2.00
7	Your inputs considered in setting goals	1722	1.2503	.43331	1.00	2.00
8	Do promotions/transfer have positive impact on organisational goal	1722	1.2003	.40038	1.00	2.00
9	Are Deadlines /targets realistic	1722	1.2503	.43331	1.00	2.00
10	Are Energy audit carried out in organisation	1722	1.1504	.35757	1.00	2.00

Inferences and Interpretation

The Descriptive procedure displays univariate summary statistics for several variables in a single table. The table shows Sample size (N), mean, minimum, maximum and standard deviation. The mean score and standard deviation is based on responses of YES-NO Type Questions. We have assigned value 1 for Yes and 2 for No. The mean score is moving between 1 to 2 are representing agreeing with the statements. Along with this the description of each statement has been given in below tables which include frequency of responses and percentage.

- Customer grievances should for taken seriously and settled amicably and

judiciously, timely to retain our esteemed customer.

- Zero accident potential (ZAP) can be achieved easily.
- employee felt need for establishing washeries and deshaling plant to improve coal quality and ensure customers satisfaction and avoid loss of revenue due to huge grade slippage.
- Proper performance system and indicator should be incorporated in the system for proper monitoring and improving performance as employee felt the lackuna.
- Enterprise Resource Planning (ERP) solutions should be implemented to reduce cost & proper monitoring and efficiency improvement in all departments which should be interlinked as employee felt its requirement.
- ISO & TQM/TPM initiatives should be taken serious note of as employee expressed their concern for it.
- Resource generation strategies and waste management initiatives should be increased to generate revenue and reduce lost, as employee felt shortage in efforts under this head.
- That vital input resources are adequate to achieve set goals, as strongly accepted by the employees

Conclusion

Strategic planning for enterprise risk and resource management helps to ensure that everyone associated with the project shares a common vision. The challenge will be to keep the momentum going to ensure continuous improvement. Commitment of top management is needed to bring strategic planning to fruition.

As it has been shown above that the coal mining industry as well as the environment in which various mines of Western Coalfields Limited, Nagpur area and WCL as a whole are operating, is changing rapidly with intrusion of private/foreign players specialized in skill, technology, competency, I.T. initiatives, lump sum budget and know how; with the existing legacy of practices, mines under the area of study are facing various issues leading to tremendous financial losses as well as reduction in market share posing stake to shareholders values, their survival and sustainable growth. It is the need of the hour to become competitive which is only and only possible by adopting modern tools and techniques of enterprise risk and resource management along with strategic planning.

References:

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3. Coal India Limited, Annual Reports and Accounts.
4. Data on Safety and Mines Accident: Coal India Limited.
5. International Energy Agency
6. Annual Coal Grade Declaration booklet & CIL Coal prices.
7. CSIR-CIMFR: Coal smaple analysis results: QC and S & M Deptt; WCL, Nagpur.