Job Involvement and Job Satisfaction of Mining Workers in Keonjhar and Jajpur district of Odisha

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Abstract

Industrialization played an important role in the development of a nation. Mineral resources development is an essential condition for successful economic development of an economy. Like any other industrial project, mining paves the way for development of infrastructure and generation of market forces. It not only generates employment opportunities to the people but also provides income to state exchequer and foreign exchange to the mineral producing country.

The present study is a humble attempt to study the job involvement and job satisfaction of mining workers in Keonjar and Jajpur district of Odisha. The present study endeavours to show the existing socio-economic conditions and status of the miners with regard to their job involvement and job satisfaction in mining activities. Findings of the study would also suggest some policy measures. The sample was selected from mining workers of Jajpur and Kheonjar district of Odisha. By using structured questionnaire, data was collected, results are discussed and recommendations are offered for improving the job involvement and job satisfaction of mining workers.

Keywords: Job Involvement, Job Satisfaction, Mining Workers, Condition, Successful.

Introduction

Minerals constitute an important source of raw materials for most of the basic industries necessitating their exploration from earth. They undoubtedly represent the wealth of a region where they exist and open up wide vistas for the prosperity of the region. Since time immemorial, mankind has embarked upon the processing and harnessing of mineral resources for various purposes. Among the minerals, iron, copper and buxite have been the three most important base minerals and continue to remain so even today. As a result, mining of these minerals can be traced thousands of years prior to Christian era.

Development of mining industry is a milestone in the field of industrial development of the country. Mining industry in India is comparatively a later development. As late as thirties of last century, no mine has started working in India. The State of Odisha is a very rich mineral bearing State of India. It is blessed with abundance of natural resources. No other part of India is so much enriched with minerals as the region of Keonjhar, Jajpur and Mayurbhanj district of Odisha. The share of Odisha in All India mineral value is substantial in respect of chromite and iron ore. The State produces about 89.5% of chromite in the country in the Sukinda ultramagic field of Jajpur and Baula and Nuasahi of Keonjhar district.

As regards the production of ores in Odisha vis-à-vis India, Odisha occupies first, fourth and first position in chromite, iron ore and manganese. The district is the leading producer of manganese ore. It produces 90% of total ore produced in Odisha and 24.77% in India. The district, which contributes a sizeable percentage of iron ore and manganese ore produced in Odisha, has had fortune of imparting a string of benefits to its people – thanks to mining.

Apart from direct employment benefits, there has been also a realization of benefits in form of a number of indirect employment opportunities. Apart from work force engaged in mining directly, one can observe a number of people gainfully employed in various other activities like running workshop-cum garage for truck repair, leasing out trucks/jeeps to the mining companies, running the shops/restaurants, provision stores and other allied activities. On the educational front, families are able to send their children for higher education without much burden of its opportunity cost, thus opening the doors of college and university education to their children. All these and other benefits have accrued to the people largely due to the ongoing mining activities. But the issue that cries for attention is the price that these people have to pay for these benefits. How far have economic benefits offset the social costs of mining?

Extraction of mineral ore by the most polluting open cast mining method has left the residents pondering on what to do with the colossal amount of mining rejects which created havoc with their normal living conditions. Mining cannot be done without degrading land and without disturbing the existing environment. Degradation of the environment has not left the lives of the people untouched. Damage to the rivers, fields, wells, marriage life, flora and fauna is one way or the other has badly affected the people themselves. Moreover, dust and other forms of pollution are slowly but steadily deteriorating the health of the people.

The fact that dust is responsible for growing incidence of respiratory disease especially tuberculosis has been even acknowledged by Government. High rate of accidents involving mining vehicles, social evils like alcoholism and gambling are the other problems that stare the people in the face. Recently, there have been a lot of public protests

against mining activities and steel industries related to that in Odisha.

Socio-economic profile of the study area

The State of Odisha lies along the eastern coast of India. Geographically, two thirds of Odisha harbor many metallic and non-metallic minerals. Besides large reserves of chromium, bauxite and manganese, Odisha has the largest reserve of superior quality of hematite Iron Ore in the country. Within the State Odisha, Keonjhar and Jajpur district were selected for this study because of the concentration of chromite and iron Ore mines in the Joda-Badbil mining belt in Keonjhar district and Sukinda block in Jajpur district.

Keonjhar is basically a land locked district with an area of 8240 square kilometers. The district of Keonjhar, lying between 21º1'N and 22º10'N latitude and 85º11' E to 86º22' E longitude presents a panorama of millennia, both from the geographical and anthropological point of view. Spread over an area of 8,240 sq. kms, it is as varied as the whole of Orissa with water-falls roaring gorges, mountains and minerals. The manifold expressions of nature in this district are unique in Orissa.

The district of Keonjhar is highly rich in mineral resources and has vast deposits of iron, manganese and chrome Ores. About 30 percent of its total area is covered with tracts of dense forests. But the district, in spite of its immense mineral and forest wealth, is still remaining economically backward.

The district of Jajpur with a total area of 2889 square kilometers is situated between 20°.30´-21°.10´ North latitude and 85º .40´ -86 .44´ East longitude. The district of Jaipur is also endowed with vast reserves of mineral resources.

The Sukinda chromite valley in Jaipur district in Orissa is well known for its extensive chromite ore deposits. This valley is considered as one of the richest chromite and nickel producing areas and suppliers of India's demand.

Importance of the study

Mineral resources occupy a place of prominence among the precious natural resources. For a State like Odisha endowed with wide variety of valuable ores and minerals in abundant quantity, systematic and planned development of the mineral resources is essential for economic growth of the State. Odisha continues to be one of the industrially backward States despite its vast natural resources.

Though the district under study is rich in mineral and forest resources, there is no major large-scale industry in the district except Kalinga Iron works of Barbil, Ferromanganese plant of Joda and Sponge Iron plant at Palaspanga. The Keonjhar district is considered as a relatively backward district among 13 district of the State occupying 10th position in the composite development index.

In Orissa, the State government believes that the vast mineral reserves offer potential not only for overall economic growth, but also for creating local employment opportunities. Accordingly, plans are being developed to expand mining output threefold within the next five years.

Exploration and exploitation of mineral resources in an abundantly mineralized area are undoubtedly essential pre-requisites for socio-economic development of the people in the country. Hence comes the role of recognition of labour as a human factor in economic development. A healthy working force is a prelude to new industrial society of high order. The per capita availability of mineral product in India is below the availability in large number of industrialized countries which need to raised by an efficient working force.

As per the Mines Act 1952, a person is said to be 'employed' in a mine who works under appointment by or with the knowledge of manager, whether for wages or not in any mining operation. Industrial workforce represents the lower socio-economic strata of the society and there is an urgent need for their improvement.

'Labour' stands as an item in the concurrent list in the Indian Constitution. The need for labour welfare was emphasized by the Constitution of India in the chapter 'Directive Principles of State Policy'. The Planning Commission of India in its very first report pleaded for an "adequate provision for the basic needs of workers in respect of food, clothing and shelter so as to enable them to remain in a state of health and efficiency".

Recent studies show that the number of mining leases, area covered and average number of workers employed have kept a rising trend over the last decade. Mining and more so open cast mining concentrated in a region for decades is bound to have significant in impact on the social, economic and health status of the people. While it is claimed that the economic status of the people would improve due to mining activities, it needs to be counter checked at micro level.

At the same time what is the impact of mining activities on their health status also needs to be examined through the study. Since the miners are basically the tribals surviving in a state of social and economic backwardness, their socio-economic improvement is to be treated on a priority basis.

Significance of the study

The mining industry is playing a very great role in export promotion and earning a huge amount of foreign exchange resources. In the present study, an attempt is made to understand the job involvement and job satisfaction of mine workers living in mining areas. The topic has inter-disciplinary relevance in terms of policy making, implementation process, finance and political will. The

interplay of these factors can have definite bearing on the outcome of devising a suitable mining policy.

Review of Literature

Odisha, one of the mineral-rich state has a vast deposit of wide varieties of known mineral and is placed at the top rank in production of some key strategic minerals such as coal, iron ore, chromite and bauxite. Unfortunately for Odisha, almost all its minerals are found in the same regions that hold its greenest forests and are largely inhabited by the scheduled tribes – who traditionally depend on the very same forests and watersheds for their survival. Mining in this area, therefore, is not a simple 'dig and sell' proposition. It is, in fact, a highly complex socioeconomic and environmental challenge: at stake are natural resources as well as people – forests, wildlife, water, environmental quality and livelihoods.

The footprint of mining activity on the surrounding environment is an established fact in Odisha. The Suakati mines of Keonjhar district have a number of old mines operating since 1960. The area is located at Juanga pidha "the customary home of a primitive tribal group". The impact of mining on the socioeconomic condition of the surrounding inhabitants is well observed. Studies on socioeconomic profile have been made by Kumar[6] for West Bokaro Mining Complex, by Prusty[10] for Jharia Coalfields and by Mishra et al[7,8] in mining areas of Talcher and Ib Valley of Orissa.

Work on the concept of quality of life grew out of the social indicators movement of the 1960s and investigators started using a social indicator approach to define what quality of life (QOL) meant to them. However, subsequently many researchers adopted both subjective and objective approaches to assess QOL based on literature on the subject. Noronha and Nairy adopted participation process, case histories, biomedical health analysis and spatial and environmental analysis in developing a Quality-of-Life tool.

With this background, the present study was undertaken to assess the impact of mining on the living conditions, socioeconomic development of the people living in villages surrounding the mining cluster at Suakati. The present study was undertaken to assess the impact of mining on the living conditions of the people by including various parameters like health, nutritional status, communication status and livelihood of people living in surrounding villages of the iron ore mines.

Objectives of the study

Following are the objectives of the study:

a) To study the socio-economic backgrounds of mining workers.
b) To examine job involvement and job satisfaction of mining workers.
c) To suggest measures on the basis of findings of the study.

Research methodology

The study is based on sample survey. On the basis of purposive sampling, two districts out of 30 districts of Odisha and again two blocks one from each district (Joda block in Keonjhar district and Sukinda in Jaipur district) were selected keeping in view the high concentration of mines and mine workers (mostly tribals) in the region.

An extensive and intensive field work was undertaken to make in-depth study of the socio-economic condition of the mine workers. A sample of 722 individual mine workers was randomly selected, out of which 361 were randomly selected from each districts as per objectives of study. Further, relevant information is also collected from social activists, officials connected with the mining activity, people's representatives and others with the help of interview schedules.

Data analysis: The frequency and percentage analysis were applied to identify different categories and their backgrounds, which are presented in the table 1. Table 1 shows gender-based distribution of participants. Among 722 respondents of mining workers sample taken in jajpur and Kheonjar districts of Odisha, 82.50 percent are male and 17.50 percent are female. Further, the sample distribution of participants is with respect to marital status of mining workers. Out of the total respondents, majority are married (90.20 per cent) and few are unmarried (9.80 per cent).

With respect to age of the participants as shown above, majority of mining workers belong to 36 to 40 yrs of age (49.20 percent) and then coming to 26 to 35 yrs age (36.40 percent). Few of the respondents are coming in the age group of 40 years and above (11.90 per cent) and below 25 years (2.50 per cent). Also, in figure of category of mining workers, majority of the workers are skilled (29.80 per cent) and semi-skilled (28.70 per cent). The above category distribution of mining workers shows that skill distribution are near to equal. In type of family as shown in table, majority of participant workers belongs to nuclear type (76.20 per cent) and then coming to joint family (23.80 percent).

Since majority of mining workers belong to nuclear type of family, their family members constitute 3 to 4 (48.60 per cent) and upto 2 (44.20 per cent). Few respondents belong to joint family (7.20 per cent). Out of the total respondents, majority of workers earned 20,000 to 30,000 as monthly income (44.70 per cent), then in range of 10,000 to 20,000 (28.70 per cent) respectively. Few of the respondents are getting monthly income below 10,000 (21.70 per cent) and above 30,000 (4.80 per cent).

In educational qualification, majority of workers are having secondary education (41.40 per cent) and then having primary education (31.40 per cent). Few of the respondents are having higher education (14.80 per cent) and few are illiterate (12.30 per cent).

Table 1
Demographic Profile of the Respondents
[Mining workers of Jaipur and Kheonjar N=722 (361+361)]

	Frequency	Percent	Cumulative Percent
Gender			
Male	596	82.5	82.5
Female	126	17.5	100.0
Total	**722**	**100.0**	
Marital Status			
Married	651	90.2	90.2
Unmarried	71	9.8	100.0
Total	**722**	**100.0**	
Age			
Below 25 yrs	18	2.5	2.5
26 - 35 yrs	263	36.4	38.9
36 - 40 yrs	355	49.2	88.1
40 yrs and above	86	11.9	100.0
Total	**722**	**100.0**	
Category of workers			
Skilled	215	29.8	29.8
Unskilled	157	21.7	51.5
Semi-skilled	207	28.7	80.2
High skilled	143	19.8	100.0
Total	**722**	**100.0**	
Family type			
Joint family	172	23.8	23.8
Nuclear	550	76.2	100.0
Total	**722**	**100.0**	
Size of family			
upto 2	319	44.2	44.2
3 - 4	351	48.6	92.8
5-6	52	7.2	100.0
Total	**722**	**100.0**	
Income level			
Below 10000	157	21.7	21.7
10000 - 20000	207	28.7	50.4
20000 - 30000	323	44.7	95.2
Above 30000	35	4.8	100.0
Total	**722**	**100.0**	
Education level			
Illiterate	89	12.3	12.3
Primary education	227	31.4	43.8
Secondary education	299	41.4	85.2
Higher or other education	107	14.8	100.0
Total	**722**	**100.0**	

Source: Developed from the survey data

Job involvement and job satisfaction (Mining Workers)
Reliability and Validity analysis: The questionnaires for development of job involvement and job satisfaction of mining workers were asked to the respondents in nine related statements.

Reliability of the variables related to job involvement and job satisfaction of mining workers in Jajpur and Kheonjar district of Odisha was ensured through item analysis. The item wise mean, standard deviation (SD) and the Cronbach alpha were calculated to check for internal consistency of the scale. The Cronbach alpha in all cases is higher than 0.7. An alpha value of 0.6 and above is considered usable in exploratory studies.

Table 2 represents the reliability statistics of the scales used for the measurement of job involvement and job satisfaction of mining workers. Result shows the Cronbach's alpha of each and combined Cronbach's alpha value of all the items for the measurement. The alpha value is coming more than 0.8 which reveals that the items used in the questionnaire are internally homogenous and consistent.

Therefore, the variables used for the measurement of job involvement and satisfaction are significantly contributing to the study. Further, the average value of each item is coming higher than 3.

Out of 9 items, the item no. 4: Having a good relationship with co-workers and item 3: Personal growth and development have highest mean value i.e. 4.02 and 3.82 respectively. This means that mining workers in both the places are having good relationship with their co-workers and helping their personal growth and development.

Factor analysis (Job Involvement and Satisfaction of mining workers)
The factor analysis was applied to 9 variables related to job involvement and job satisfaction of mining workers. The KMO value of factor analysis of outcomes of job involvement and job satisfaction of mining workers is 0.831 which indicates that factor analysis is reliable to be done for these 9 variables which also cross validated by significant value of Bartlett's test of sphericity i.e. 0.000.

If KMO value lies between 0.8 and 0.9, it is great for factor analysis. For these data, the value is 0.831, which falls in the range. Thus factor analysis is appropriate for these data.

Table 2
Descriptive and Reliability Analysis (job involvement and job satisfaction)

S.N.	Statements	Mean	Std. Deviation	Cronbach's Alpha	Combined Cronbach's Alpha	N of Items
1	Job Satisfaction	3.81	0.453	0.898	0.867	9
2	A feeling of accomplishment	3.13	0.332	0.861		
3	Personal growth and development	3.82	0.444	0.841		
4	Having a good relationship with co-workers	4.02	0.154	0.879		
5	Pay and hinge benefits	3.35	0.573	0.882		
6	Job security	3.00	0.634	0.807		
7	Independence	2.52	0.776	0.807		
8	Having a good relationship with your boss	2.68	0.608	0.823		
9	Knowledge about cooperative	3.48	0.709	0.825		

Source: Developed from the survey data

Table 3
KMO and Bartlett's Test (job involvement and job satisfaction of mining workers)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.831**
Bartlett's Test of Sphericity	**Approx. Chi-Square**	**32.256**
	df	36
	Sig.	0.000

Source: Developed from the survey data

Table 4
Total Variance Explained (job involvement and job satisfaction of mining workers)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.637	29.295	29.295	2.637	29.295	29.295	2.512	27.914	27.914
2	2.294	25.493	54.789	2.294	25.493	54.789	2.311	25.683	53.597
3	1.161	12.897	67.685	1.161	12.897	67.685	1.195	13.282	66.880
4	1.088	12.086	79.771	1.088	12.086	79.771	1.160	12.892	79.771
5	0.800	8.888	88.660						
6	0.501	5.569	94.229						
7	0.294	3.267	97.496						
8	0.147	1.637	99.133						
9	0.078	0.867	100.000						

Extraction Method: Principal Component Analysis.
Source: Developed from the survey data

Table 5
Rotated Component Matrix (job involvement and job satisfaction of mining workers)

Items	Component			
	1	2	3	4
III1				0.541
III2				0.770
III3		0.857		
III4			0.900	
III5		0.754		
III6	0.708			
III7	0.952			
III8	0.840			
III9		0.887		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.
Source: Developed from the survey data

All the 9 variables of job involvement and job satisfaction of mining workers are reduced to four different factors which explained around 79.771% of the total variance. Out of the 4 reduced factors, 1st factor with their loading pattern explained about 27.914 percent of the variance. The 2nd factor explains about 25.683 percent, 3rd factor explains 13.282 percent and 4th factor explains 12.892 per cent of the total variance. In combine, the entire 4 factors explain about 79.771 percent of the total variance.

All the 9 variables related to job involvement and job satisfaction of mining workers are reduced to 4 different factors. We have extracted the factors through Varimax method and through principal component analysis where the Eigen value should be greater than 1. Variable 6, 7 and 8 constitute factor 1 with new name as "Job Security" Similarly, variables 3, 5 and 9 were defined as factor 2 with new name as "growth and development", Variable 4 constitutes factor 3 named as "relationship" and variable 1 and 2 constitute factor 4 named as "Job Satisfaction".

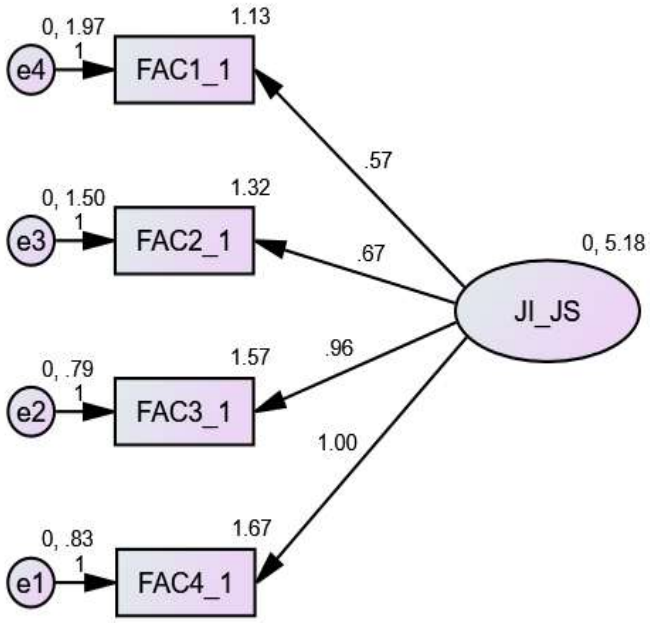
These tables show the model fitness structured by SEM (Structural Equation Model) regarding outcomes of job involvement and job satisfaction of mining workers in Jajpur and Kheonjhar district of Odisha. The confirmatory factor analysis through AMOS observed that all the measures were associated with their respective constructs.

The fit of the model was examined and verified that each indicator loaded significantly with its intended construct. In the model, Chi-square = 10.574, df = 7, p>0.001, CFI=0.985, GFI=0.983, NFI=0.981, RFI = 0.972, RMSEA=0.042, provided a good fit to the data. Thus, SEM model is well fitted.

Table 6
New Factors named (job involvement and job satisfaction of mining workers)

Factors	Variables	New Name
Factor 1	6, 7 and 8	Job Security
Factor 2	3, 5 and 9	growth & development
Factor 3	4	relationship
Factor 4	1 and 2	Job Satisfaction

Source: Developed from the survey data



FAC1_1: Job Security; FAC2_1: Growth and development; FAC3_1: Relationship; FAC4_1: Job Satisfaction
Fig. 1: SEM of job involvement and job satisfaction of mining workers

Table 7
SEM results of job involvement and job satisfaction of mining workers

Particulars	CFI	RMSEA	GFI	NFI
Chi-square = 10.574	0.985	0.042	0.983	0.981
Degrees of freedom = 7	**NFI**	**RFI**	**TLI**	
Probability level = 0.000	0.959	0.972	0.986	

Source: Developed from the collected data
CFI: Comparative fit index; RMSEA: Root Mean Square Error of Approximation; NFI: Normed fit index; GFI: Goodness – of-fit; RFI**:** Relative fit index

Table 8
Path coefficients (job involvement and job satisfaction of mining workers)

Particulars			Estimate	S.E.	C.R.	P Label
FAC4_1	<---	JI_JS	1.000			
FAC3_1	<---	JI_JS	0.959	0.024	39.209	***
FAC2_1	<---	JI_JS	0.667	0.024	27.787	***
FAC1_1	<---	JI_JS	0.570	0.026	21.994	***

FAC1_1: Job Security; FAC2_1: Growth and development; FAC3_1: Relationship; FAC4_1: Job Satisfaction
Source: Developed from the survey data

Since, probability level (P label) is ***/0.000 (<0.05), all the factors are significant towards the measurement of job involvement and job satisfaction of mining workers in Jaipur and Kheonjhar district of Odisha. Out of the four reduced factors, the factor 1 i.e. Job Security (1.00) is coming as the most influential factor for job involvement and job

satisfaction of mining workers and the second factor is 3 i.e. relationship (0.959) since the estimated coefficient value is high.

Findings

- Nine variables has been used to undertake the response related to job involvement and job satisfaction of mining worker. The variables in the questionnaire are significantly contributing the study as Cronbach alpha value is coming > 0.8. Further, the average value of each item is coming higher than 3. This reveals that mining workers agree upon the items used for the measurement of job involvement and satisfaction.
- Out of 9 variables, 4th variable: Having a good relationship with co-workers and 3rd variable: Personal growth and development are having highest mean value i.e. 4.02 and 3.82 respectively. This reveals that mining workers in both the places are having good relationship with their co-workers and helping their personal growth and development.
- SEM is regarding outcomes of job involvement and job satisfaction of mining workers in Jajpur and Kheonjhar district of Odisha. In the confirmatory factor analysis through AMOS, it was observed that all the measures were associated with their respective constructs. The fit of the model was examined and verified that each indicator loaded significantly with its intended construct Probability level (P label) is ***/0.000 (<0.05). Nine variables are reduced to four factors i.e. job security, growth and development, relationship and job satisfaction.

  All the factors are significant towards the measurement of job involvement and job satisfaction of mining workers in Jaipur and Kheonjhar district of Odisha. Out of the four reduced factors, the factor 1 i.e. job security (1.00) is coming as the most influential factor for job involvement and job satisfaction of mining workers and the second factor is coming 3 i.e. relationship (0.959) since the estimated coefficient value is high.

Conclusion

This study is one of the attempts towards comprehensive analyses of job involvement and job satisfaction of local mining workers of Jaipur and Kheonjar districts of Odisha, an important stakeholder in the public policy debate surrounding the mining industry in Orissa. We find consistent environmental health impacts to villagers living in close proximity to mines. The study provides important insights on the full impacts of mines, encouraging policy makers to look beyond the obvious positive economic impacts of mining.

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