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Measuring the Effectiveness of Human Resource Planning: A Case of Nilachal Ispat Nigam Limited

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Abstract

Background/Objectives: The purpose of the study is to examine the effectiveness of human resource planning, techniques implemented in Nilachal Ispat Nigam Limited, India. **Methods/Statistical Analysis**: A stratified-random sample of 155 employees including senior, middle and lower level managers were taken for the study from 14 departments of Nilachal Ispat Nigam Limited. Secondary data was collected from HR managers and departmental heads who were directly and indirectly involved in planning of human resources. Stability index and employee turnover index were calculated and mean ranking was done by using SPSS 20.0. **Findings**: It was found out that the productivity of Nilachal Ispat Nigam limited is decreased due to less use of per capita consumption of steel in domestic market. Unavailability of raw material is also a factor for less production which is caused by constraints in governmental policy. The stability index found to be very high and labour turnover index was negligible. Employee cost to total revenue has been increased. Employee productivity is gradually increasing in last two years for which proper human resource planning is one of the key factors for the growth of the organization. The study also reveals that the planners' expectations are more on Delphi Technique and job analysis to make effective human resource planning. **Applications/Improvements**: The study suggests that new bloods to be injected in every department to make the human resource planning more vibrant. This study can enlighten in restructuring HRP in varied organizations.

Keywords: Effectiveness, Human Resource Planning, Human Resource Techniques, Labour Stability, Labour Turnover, Productivity

1. Introduction

Human resource is most valuable aspect among all resources of the organization. This accurate measurement can be implemented only by effective human resource planning, but it is also evident that despite the efforts taken for bringing all rights for the company, still there are some challenges for human resource planning in terms of productivity, effectiveness, efficacy and consistency. It further adds value by its execution and implementation. But the irony is the human resource planning has to be moderated as per the market demand, employee turnover, natural calamities, operational and situational crisis, which sometimes becomes difficult in public sector to execute. An effective human resource planning process analyzes the manpower needs under changing conditions and expansion activities.

As economists view that human wants are unlimited, it is certain that everyone wants more, starting from

workers to management. Workers normally require more jobs, more participation in management's decisions, flexible timing and work arrangements, more leisure time, more status and information. Employers will want more automation, more employee involvement and commitment, more skilled, dedicated and versatile employees. Government will want more stringent legislations and policies, joint collaboration among employee and employer. Traditional methods of recruitment, selection, performance appraisal and administration and operation styles are being challenged. This paper has tried to measure and examine the current status of human resource management in Nilachal Ispat Nigam Limited (NINL).

2. Methodology

The study has followed a mixed-method of concurrent research. The primary data was gathered through in-depth

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interviews of 155 employees from 14 departments through stratified-random sampling technique, including employees of all levels. The secondary date was collected from HR managers and departmental heads, who are directly or indirectly involved in Human Resource Planning (HRP) of NINL.

Effective Human Resource Planning (HRP) denotes here the accurate method of demand forecasting, supply forecasting, Man power position, employee turnover index, stability index, HR audit and employee productivity. The effective Human Resource Planning can bring excellence and became instrumented to growth, efficacy and sustainability.

3. Statement of Research **Problem**

Human resource is basically a line function at its initial stage as they mostly work directly under line manager. But the line managers give priorities to material handling and then to finance. The irony is that the line managers take the human resources for granted and forget the importance of the people variable, which creates hindrances in every organization. Many organizations face incurable problems towards the journey of its excellence which can be solved by proper implementation of Human Resource Planning (HRP). In this study questions to be answered included;

- How the organization uses Human Resources Planning?
- What are the process prevailing for calculating Employee turnover, Employee Productivity and stability index?

4. Clarification of Concepts

Human Resource Planning ensures right kind of people, at right place, at right time. It is a strategic and semi structured and/or unstructured exercise which require dedication and attention from a variety of manpower involved (Top level, Middle level and others) Mohanty and Desmukh¹. In spite of giving more attention and dedication by the organization, still some challenges have to be faced by the organization for implementing effective Human Resource Planning. Employees inside the organization are not become proactive and become reactive with time to time which results faulty recruitment. Japanese MNC's failure rate is low then other MNC because the traditional Japanese loyalty to one's organization and low mobility of employees. Human power is a key ingredient to the successful journey of an organization Tung². However, it is viewed that insufficient human resource investment impedes the firm's growth Lang and Gupta³. It is essential to give more emphasis to human resource planning within the organization. Some of the organizations usually are unsuccessful to fore sight long run benefits or the advantage of human resource planning but some of them distinguish the benefit of effective Human Resource Planning and make it a part of their organization, Sword and Cutsinger4.

HR Planning is essential in identifying effective workforce with proper skills and knowledge needed. A well-structured and carefully performed human resource system, including recruiting, hiring and retention, not only can improve a firm's profitability, but also can sharpen its competitive edge, Boxall and Steeneveld⁵. Today's organization cares for a job more as a mean of enjoying themselves then to earn money, thus the employee hardly ever leave the organization, Mllela⁶.

Human Resource Planning is defined as "the process in which management determines how the organization should move from a current human resource planning to a desired human resource planning, Vietter7. An organizations effectiveness is completely depend upon the cautious study of its Human Resource Planning, which results increased productivity, more pleased and developed employees inside the organization. Human Resource Planning is the key element to ensuring the organizations effectiveness and efficiency of human resource management. A plan is always predetermined course of action which generally has three major characteristics:

- It must involve future.
- It must involve action.
- There should be an element of human or organizational identity.

It is the process of assessing about the future method or practice for predict teething troubles and searching though reasoned action on the basis of fore-knowledge and to guide the action towards the required goal, Lester⁸. It is likely to define Human Resource Planning from a tapered point of view or from a very broad one, Patten9. Starting from a very narrow sense of replacement planning which normally conducted in industrial elation activities within an organization to tantamount to personnel planning and its actions like staffing, selection, placement, training

and development, wages and salary management labour relations etc. to human resource and employment policy at the level of financial system. In this context human resource is regarded as the qualitative and quantitative measurement of the employees and planning considered as to enhance employees in line with different other organizational goals, Srivastava¹⁰. It may involve different skill enhancement programmes to improve employee's performance, participation, in order to increase organizational productivity, quality and ideas for innovation.

5. Process of HRP

The first step of Human Resource Planning process is to collect information and forecasting about the requirement and existing resource. The process of Human Resource Planning can be broadly delineated into four different stages:

5.1 Investigation

It is the initial stage of the organization in which it tries to develop awareness about the detailed manpower position with a holistic view. Manager can use a SWOT analysis to get a better picture with taking external environment, performance and productivity trend, working culture and operational and strategic plans into consideration.

5.2 Forecasting

Forecasting of future needs provide the information regarding how many and what type of peoples are required by the HR manager. There are many type of forecasting methods are used by the HR planners some of them are Zero Based forecasting and Bottom-up approach.

5.3 Planning and Control Management

In this stage forecasting of human resources are converted into human resource policy which covers the matters like hiring, training and development. Efforts must be made in planning and documentation for the training and development policies for awareness of the problem in context of changing technology and environment.

5.4 Utilization of Human Resources

It is the final step of the Human Resource Planning process where success is measured in terms of achievement of both qualitative and quantitative trends.

6. Labour Turnover Analysis

Labour turnover analysis focuses into the attrition rates and the current market scenario. The HR manager is accountable to get the attrition rate by gathering lots of data. The attrition rate gives a concrete data about organizational behaviour in pockets. For example higher attrition rate of one group then other implies a poor management, similarly low productivity with low attrition rate implies self-satisfied staff who are not interested to go to extra yard to achieve organizations objective. In this type of situation the HR staff must be effective to communicate the message to those staff for achieving the objectives of the organization. Proper placement of employees reduces the rate of employee turnover, accident, absenteeism and also increases the morale of the individual employee.

7. Work Environment Analysis

Work environment analysis gives emphasis on the assessment of the scope provided to the employees to use and enhance their skills to achieve job satisfaction. In order to improve the work environment, best practices like defining employees about their work environment through orientation programme to realize and facilitate them with the environment, formation of various committee like canteen committee, cultural committee, technical committee, celebration committee from the voluntary representative among the employees to make a creative, energetic and productive environment. The HRD department of Nilachal Ispat Nigam Limited (NINL) is conducting lots of orientation programmes throughout the year in order to make good relationship among the employees and to create productive environment.

8. Operational Effectiveness Analysis

Operational effectiveness analysis is the estimation of productivity and utilization of the people. It helps to find out the ways to best employees from the view of organizational goal. Today's organization face low productivity due to various operational factors like lack of employee engagement, lack of motivation, bad manager, long association with the same job etc. To develop the productivity of Nilachal Ispat Nigam Limited (NINL) the HR manager organizes a series of training and development programmes in both works and non works area of

the organization. Inter departmental training programme are also being conducted to develop overall efficiency and calibre of the employee.

9. Human Resource Audit

Human resource audit may be defined as the process of planning and controlling the use of human resources effectively and efficiently to help the management within an organization, Batra¹¹. A systematic audit gives a diagnostic tool to calculate human resources performance against organization prospects and leading practices and target areas that would profitable from improvement. An audit means by which an organization determines where it presently stands and access what has to achieve to improve its human resource functions.

Human resource audit is always a learning tool not a test which involves organized review of all aspects of human resources ensuring that Government regulations and organization policies are being stick on. It is a systematic evaluation of the vigour, weakness, constraints and developmental aspects of existing human resources in context of organizational performance, Sekhri¹².

10. Human Resource Techniques

There are several quantitative techniques and methods to implement Human Resource Planning which are discussed below:

10.1 Audit of Key Positions

This method tries to measure management's performance and the effectiveness of use of management's new techniques in the existing environment. This method is simple but time-consuming. There are few principles in this method which are to be followed:

- Orientation and initial interviews.
- Preparation of questionnaire and other study's plan.
- Internal fact gathering.
- External fact gathering.
- Analysis.
- · Conclusions and recommendations, and
- Implementation of current analysed audit's results.

These results can be used during career development, placement of managers, transfers and promotions.

10.2 Manning Tables

It jointly indicates job analysis and time series. It is suitable to show the chart of number of employees for each job title. The manning table indicates all jobs by title and number of employees engaged in it. Employees may be classified as per the demographic variables like gender, age, marital status, physically challenged and other useful characteristics, as well as training time. Manning table also helps to identify manpower needs, training and development of employees.

10.3 Expert Estimate Techniques

Expert opinion is the simplest way of making Human Resource Planning for long-term business. It can be done manually. It can forecast ten to twenty years into the future regarding time required for events, expenditure and probability of events occurred in future. There might be some biases in this method which can be corrected by incorporating Delphi-technique.

10.4 Trend Projection Technique

This technique uses past behaviour of a variable to explain future behaviour. This technique is simple where casual relationships may not be explicitly taken into account. Researcher tries to study various past methods of implementations and their results and decides the method to be used in future. He understands the best from the given data and is able to separate the time-series data into seasonal, cyclical and trend components. This is very useful in short-term forecasting and planning needs (time horizon of six months). It is bit complex and proficiency in computer is a must.

10.5 Skill Inventory

This is the first step of Human Resource Planning. Here the important components are to be noticed and extracted from a vast pool of data. The measure characteristics that are pertinent for the future requirement of organization are to be chosen. We can use both on-the-job and off-the-job data of all employees and then drag as per the requirement of organisation for future strategy and need. This data can be used in planning, training and development and EDP cell.

10.6 Job Analysis

Job analysis is the combination of job description and job specifications. Before job description, we need to identify

the job itself, with job title, people on job, location on organizational chart, location of plant, types of machines and departments.

In Job description, total job information is to be taken trough interviews, observations, questionnaires, supervisory conferences, checklists, manuals, time study reports and organizational hierarchy.

Job specification is the determination of type of employees required including specific skills, educational qualifications, physical fitness, required to perform each job. This method helps in conducting recruitment, selection, placement and training that are to be imparted to employees. It is simple but time-consuming.

10.7 Modelling and Multiple Predictive Techniques

These techniques are used when forecast variable is explained as a function of casual variables which can show dependency of one variable with other related and explanatory variables. Multiple regression analysis can help the organization to predict future man power of coming two years. But this calculation requires a lot of related data and use of computer.

10.8 Delphi Technique

In this technique, a panel of experts responds in writing to a questionnaire dealing with a specific problem; for example, the forecast of supply of tailors in the market for the following year. The median response is calculated, and open end opinions are further requested to respond, which differ widely from it. Answers are resubmitted many a times and extract the answers unless it reaches up to the median Stabilized value through percentile. This method is used in both long-range and short-range planning of human resource needs. It is a complex method and time-consuming.

11. Practices of HRP in NINL

The Nilachal Ispat Nigam Limited (NINL) is one of the integrated steel plant situated at Kalinga Nagar Industrial complex, Jajpur, Odisha, India, having capacity of 1.1 M.T per year. Its future plan of expansion is to produce 5.0 M.T per annum within 2015. The HRD department is fully accountable for HR function and planning within the organization taking the consultation with departmental heads. Its measure area of concentration is to maintain and justify the total revenue generated, annual production, profit loss account, productivity of last five years with the help of man power position and to achieve the forecasted annual production with proper Human Resource Planning.

NINL finds out the demand and supply forecasting with the existing man power position, its modification, employee turnover, retention ratio, stability index and employee cost to rationalise human resource planning which are discussed below.

Table 1 indicates the increase of man power in numbers for last five years due to expansion of phase-II production. The future production plan is 5.0 M.T. per year which projects more man power requirement in the near future. As Nilachal Ispat Nigam Limited is a public

Table 1.	Manpower position at NINL

	Manpower Position at NINL														
Area/	Area/ Mar 2014		4	Mar 2013		Mar 2012		Mar 2011		Mar 2010					
Year	Nos./ Dept.	Exe	Non. Exe	Nos./ Dept	Exe	Non. Exe	Nos./ Dept	Exe	Non. Exe	Nos./ Dept	Exe	Non. Exe	Nos./ Dept	Exe	Non. Exe
Total works	1056	219	837	1061	216	845	1114	222	892	1145	203	942	1146	197	949
Non works	182	76	106	176	72	104	175	69	106	164	60	104	167	62	105
Project	21	9	12	28	13	15	36	18	18	41	23	18	41	23	18
Mines	5	4	1	5	4	1	7	5	2	09	7	2	11	8	3
SMS	338	100	238	233	70	163	115	34	81	67	8	59	0	0	0
Total		408	1194		375	1128		348	1099		303	1123			
Total	1602			1503			1447			1426			1365		

sector, the employee attrition rate is less, because they get better salary and other benefits which are much better than others. Moreover, job security is there. Again, there have been continuous problems in raw material and production as it depends on mines. In last three years in India, particularly in Odisha, steel manufacturing units are crossing through a critical phage as government has banned excavation of iron ore due to scam. Another thing is that, NINL is not a leader in steel market in India. So, government is not interested to create the employment vacancies as it happens in private sectors. So the current status of man power has been shown in the Table 1.

Table 2 depicts the gross hot metal Production annually. There is a fall in production in the year of 2011 to 2012 due to decrease in market demand, unavailable of raw material and changes in government policies.

Table 3 illustrates that in 2012 and 2013 the Coke production is more in comparison to 2010, 2011 and 2014. There is a fluctuations show in coke production which is due to the same reason, i.e. unavailability of raw material and government policies.

Table 4 and Figure 1 shows the employee productivity of NINL. The Table shows that there is a decrease in productivity in 2012, 2013, 2014 in comparison to 2010 and 2011. Normally NINL calculates the productivity from the total Hot metal produced in the organization.

It is evident from Table 5 that employment cost has been decreased in last 5 years. The percentage of

Table 2. Production of hot metal at NINL (2010-14)

Year	Total Hot metal production in 000'tons
2014	645
2013	529
2012	570
2011	642
2010	719

Table 3. Gross coke at NINL (2010-14)

Year	Gross Coke in 000'ton
2014	538
2013	648
2012	710
2011	573
2010	523

Table 4. Employee productivity at NINL

Year	Total Hot metal Production in 000'tons	Total Manpower in nos.	Employee Productivity Total production/Total Manpower deployed .in tons
2014	645	1602	402.621
2013	529	1503	351.962
2012	570	1447	393.918
2011	642	1426	450.210
2010	719	1365	526.739

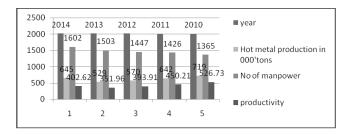


Figure 1. Employee productivity at NINL.

Table 5. Employee cost at NINL

Year	Total Revenue Generated in Lakhs.	Total Employees in nos.	Employee cost In lakhs.	%age of Employee cost to Total revenue
2014	155517.18	1602	97.09	5.69
2013	148940.01	1503	99.09	5.56
2012	195098.96	1447	134.82	4.02
2011	158464.44	1426	111.12	4.22
2010	152223.75	1365	111.51	3.37

employment cost was 3.37% in 2010 where as 5.69% in 2014, but cost was 111.51 and 97.09 in 2014.

11.1 Labour Stability Index at NINL

Labour stability index is a major factor of the growth of any organization. If the employees' attrition rate is high, that means the retaining part is very poor of the organization and vice-versa. Here the employees are considering the organization as a stepping stone to that organization. So, measuring stability index of the organization is important and it has to be measured time to time. The following calculation shows the stability index of Human Resource Planning.

It is expressed as:

 $\frac{\text{No of leavers with more than 1 year's service}}{\text{Numbers employed one year ago}} \times 100.$

OR

$$\frac{\text{No of employees with 1 year's Service at date}}{\text{Number of employees employed exactly one year before}} \times 100.$$

Table 6 shows the labour stability index of NINL. It is supported on the number of employees who could have continued during the whole period. As rule, employees with a full year's service are articulated as a percentage of employees in post one year ago. This labour stability index typically links the leaving rate with length of service. As Nilachal Ispat Nigam limited is a public sector undertaking under the Government of Odisha, the stability of employees are always high in percentage.

Table 7 indicates the responses of respondents, basically of HR experts and other departmental heads. They

Table 6. Stability index of NINL

Year	Total manpower in nos.	No of employees with 1 year's Service at date	Number of employees employed exactly one year before	Stability index
2014	1602	103	1503	93.82
2013	1503	56	1447	96.27
2012	1447	21	1426	98.54
2011	1426	61	1326	92.98
2010	1365	08	1353	99.12

Table 7. Mean ranking of HRP techniques as per views of employees

Sl No	Techniques of HRP	Mean Ranking*
1	Audit of Key Positions	2.54
2	Manning Table	2.94
3	Expert Estimate	3.02
4	Trend Projection	3.10
5	Skills Inventory	3.13
6	Job Analysis	3.25
7	Modelling, Multiple Predictive Techniques	3.08
8	Delphi Technique	3.44

 * Scale: 5 is agree to frequently used to 1 disagree to frequently used

ranked the techniques as per their opinion to implement HRP for effectiveness. There is more expectation on Delphi technique (X=3.44) and job analysis (X=3.25). In Delphi technique, expert opinions are to be taken and analysed time and again and finally reach a solution until the percentile value becomes stabilized. Secondly, job description and specification are to be meticulously followed to get effective Human Resource Planning. Supply of man power and demand of man-power can be matched as per constant follow up of job analysis.

11.2 Annual Labour Turnover Index

As Nilachal Ispat Nigam Limited (NINL) is a public sector undertaking, employee turnover rate is very negligible because the employees do not leave the company unless extreme exigencies or gross misconduct. So, there is less chance to calculate annual labour turnover.

However, 0.36% turnover was found using the formulae.

It is usually expressed as follows:

 $\frac{\text{No of Employees leaving during the year}}{\text{Average No employed during the year}} \times 100.$

OR

This also may call as percentage wastage rate or the conventional turnover index. To calculate the wastage and looks at the number of staff leaving during the year as a percentage of the total number employed who could have left, that is, it provides information about the ratio of leavers to the average numbers employed during the course of a year.

The organizations just hire people without planning with a great expectation without giving adequate time to the employee and fire them within a short period of time, which become a trial and error method of the employees within the organization and results a failure of the organization in near future.

12. Conclusion

Human Resource Planning is directly linked with the business strategy. As Nilachal Ispat Nigam Limited is a public sector undertaking, there is less chance of moderating the Human Resource Planning frequently as per the present market situation. This study found out that there is a highest stability index but the productivity has not maintained a constant growth. Human Resource Planning in NINL was found to be effective but not fully, as around fifty percentage employees are committed there, where as rest employees are to be trained properly from all angles like skill development, motivation, group dynamics and team building etc., so that productivity will be more and cost of production will be less. So, in a holistic approach, Human Resource Planning will be perfect and recruitment and selection process are to be blamed. NINL cannot fire easily to any employee as it is a public sector undertaking. There can be infusion of new bloods to add value to productivity and growth of the organization. Implication of Human Resource Planning has to be evaluated time to time to obtain optimal use of human resources and future requirements.

13. References

- 1. Mohanty RP, Deshmuch GS. Evolution of a DSS for Human Resource Planning in petroleum company. International Journal of Production Economics. 1997 Sep; 51(3):251–61.
- Tung RL. Human Resource Planning ain Japanese Multinationals. Journal of International Business Studies. 1984; 15(2):139–49.

- 3. Lang T, Gupta B. The human resource issues and their impact on firm growth in small E-Business in China. Indian Journal of Science and Technology. 2015 Feb; 8(S4):135–44.
- Sword DM, Cutsinger J. Human Resource Planning and Budgeting: A Dallas Perspective. Public Administration Review. 1984 Mar-Apr; 44(2):174–6.
- Boxall P, Steenveld M. Human resource strategy and competitive advantage: A longitudinal study of engineering consultancies. Journal of Management Studies. 1999 Jul; 36(4):443–63.
- 6. Mallela CSR. Human Resource Planning: Then and Now. Prabandhan: Indian Journal of Management. 2012 Sep; 5(9):27–31.
- 7. Vietter E. The nature of managerial manpower planning. Willy Online Library. 1964; 3(2):20–7.
- 8. Lester RA. Manpower planning in a free society. Princeton; Princeton University Press; 1996. p. 71–2.
- 9. Patten TH. Manpower planning and the development of human resources. U.S.A. Jhon Willy and Sons. Inc; 1971. p. 31–3.
- Srivastava MP. HRP Approaches, needs, assessment and priorities in manpower planning. Institute of Applied Manpower Research, New Delhi. Mahwah Publication (P) Ltd; 1997. p. 1.
- 11. Batra GS. Human resource audit as a tool of human resource valuation: Interface and emerging practices. Managerial Auditing Journal. 1996; 11(8):23–30.
- 12. Sekhri A. Human Resource Planning and Audit. New Delhi. Himalaya Publication House; 2010.