Productivity Improvement through Incentive Scheme - A Case Study

Debesh Mishra[1], A. Mohanty[2]

[1]*Mahavir Institute of Engineering & Technology, Bhubaneswar, Odisha*

[2]*College of Engineering and Technology, Bhubaneswar, Odisha*

Abstract: **National Aluminum Company, a profit making public sector had an incentive scheme earlier under which the incentive amount payable to the employees of NALCO, Angul (Orissa), was based on their wages not on their performance. More over the employees without full presence in the plant were getting the same incentive amount as that of employees with full presence i.e. nil absent employees. Hence an attempt is made in the revised incentive scheme to reduce absenteeism; through introduction of productivity based group incentive scheme. This study is an attempt to do a comparative analysis of the earlier and newly introduced incentive scheme at NALCO, Angul. The objective analysis clearly indicates that the newly introduced incentive scheme not only helped in improving productivity and performance but also in reducing the absenteeism of employees significantly.**

I. INTRODUCTION

Incentives are the benefits provided to employees other than their normal wages. Incentives may be of monetary form or it may be provided in non-monetary form also, which motivates the employees to put more efforts in their works to achieve the organizational objectives.In most of the industries and business houses today one of the main causes of disputes is wage inequality, which arises when different wages are paid for comparable jobs. In order to eliminate such inequalities, it is essential to develop a rationalised wage and salary structure. In a rationalised wage structure, same basic wages are paid for jobs, which are of same level of difficulty. So, it is necessary to determine objectively the relative worth of different jobs in the organization. Various jobs differ in terms of tasks involved, skills required, physical and mental strain caused and working conditions etc. An orderly and systematic procedure is needed to determine which jobs are more valuable and therefore should be paid more and job evaluation is the technique used for this purpose, which establishes a rational basis for incentive schemes.

According to ILO (International Labour Organization-Geneva) " Job Evaluation may be defined, as an attempt to determine and compare the demands which the normal performance of particular jobs make on normal workers without taking account of the individual abilities or performance of the workers concerned." Thus job evaluation is the process to determine, in a systematic and analytical manner, the comparative worth of jobs within an organization.

It assesses the worth of a job not of the job holder. He worth or merit of employees is determined through merit rating. Job evaluation is concerned only with the evaluation of jobs and not of workers performing them.

II. OLD INCENTIVE SCHEME IN NALCO SMELTER PLANT

National Aluminium Company limited (Nalco) is considered to be a turning point in the history of industries. In a major leap forward, Nalco has not only addressed the need for self sufficiency in aluminium but also given the country a technological edge in producing this strategic metal as per world standards.

Incorporated in 1981 as a public sector enterprise, Nalco was set up to exploit a pant of the east coast, in technological collaboration with aluminium echini of France.

With consistent track record in capacity utilization technology absorption, quality assurance, export performance and posting of profits, Nalco is a bright example of India's industrial capacity, today as an **ISO 9001, ISO 14001, OHSAS 18001 and NAVARATNA** company with its products registered in London Metal Exchange, Nalco has emerged as the largest integrated bauxite-aluminium complex in Asia.
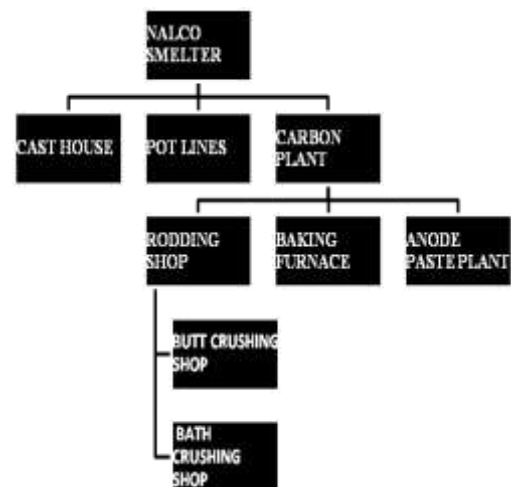
(Fig: NALCO SMELTER, Angul)

The old incentive scheme in NALCO, Angul was directly proportional to the wage of employees. Based on the operating experience this scheme was developed with more emphasis on the followings,

a) Increase of availability of equipment.

b) Reduced cost of production.

c) Quality parameters/pollution control.

d) Individual area performance.

e) To comply with marketing target

Coverage

The scheme covers all workmen, supervisors including Trainees who are in receipt of wages on regular roll including employees on deputation to NALCO. The employees are broadly classified into 3 major groups depending upon their contribution to production.

a) Direct production at units-Group"A"

b) Technical services at units-Group"B"

c) Common services at units-Group"C"

It will not cover Apprentices, Casual labour, Work charge labour and employees on deputation from NALCO to other organizations.

Selection of parameters

For the purpose of the incentive payment NALCO is divided into two major heads e.g. production units and corporate and other offices in the production unit, the geographical locations of the complexes has been taken into consideration. Smelter and captive power plant are considered to be one complex. Mines and Alumina Refinery as another complex and the port facility is taken as one subsidiary complex. For corporate and other offices of NALCO, the incentive will be governed by the points earned by the above complexes.

III. INDICES AND POINT PLAN SUMMARY FOR SMELTER PLANT

For measuring the performance of each unit various key parameters have been selected and the relative weightages have been assigned according to their influence for achieving the corporate objectives.

1. Capital Productivity Indices

Sl.n	Parameters	Unit	FPP	Earning Range
1.	Smelter Productivity Index	%	30	85-100
2.	Power Plant Productivity Index	%	10	60-80

2. Area Productivity Indices

(A) Carbon Area

Sl.no.	Parameters	Unit	FPP	Earning Range
1.	Butt and Green Scrap Consumption	%	10	24-34
2.	Apparent Density (Green Anode)	T/m^3	15	1.54-1.60
3.	Cast Iron Consumption	Kg/rodded anode	10	18-13.5
4.	Overall Recovery	%	15	90-95
5.	HFO Consumption	LT/T	10	85-74

(B) Potline

Sl.No.	Parameters	Unit	FPP	Earning Range
1.	DC Energy Consumption	Kwh/T	10	14900-13900
2.	Alf3 Consumption	Kg/T	05	29-25
3.	Average Metal Purity	Al%	10	99.4-99.7
4.	Completion Of Shift Schedules	%	20	91-100
5.	Pot Productivity	Kg/potday	10	1280-1320
6.	Average Instability	Mohm	05	0.25-0.20

(C) Cast House

Sl.No.	Parameters	Unit	FPP	Earning Range
1.	Rail Despatch of Aluminium (Free Time)	Hours	10	58-28
2.	ICM Productivity	%	05	90-100
3.	WRM Productivity	%	05	90-100
4.	BCF Productivity	%	2.5	90-100
5.	Sows Productivity	%	05	90-100
6.	Strip Productivity	%	2.5	90-100
7.	Melt Loss	%	05	1.80-1.40
8.	Overall Productivity	%	15	90-100
9.	HFO Consumption (ICM+WRM)	L/T	05	85-60
10.	Pending Ladle	No.s	05	3-0

Factor Productivity Point

FPP is a measure of incentive earning in terms of productivity and is calculated for different groups at units.

The employees working in different areas will be eligible for 100% FPP earned by the area.

Formula Used To Calculate The Incentive Amount

Incentive Earning(Rs.) = (Wage×0.2×FPP× AI× GF× PF) / 100

i) The wages for this purpose shall mean & include the sum total of basic pay and dearness allowance (Basic + DA).

ii) FPP, which is the factor productivity point, shall be derived with respect to performance level using the parameters, weightage and measuring scales.

iii) LPI=Labour Productivity Index

$$\frac{\text{Wage}}{(\text{Wage} + \text{OT amount}) - 8\% \text{ of wages}}$$

Where wage of individual = Basic Pay + DA

iv) AI = Absenteeism Index

The AI relating to number of days worked, applicable for the employees are as follows,

AI =

$$\frac{\text{Number of days worked out of 29 days i.e.}(29 \text{ days}-\text{leave days})}{Number\ of\ working\ days\ excluding\ offs\ \&\ Holidays}$$

No. of working days are the days excluding weekly offs, closed holidays, compensatory offs.

How ever the following will be considered as days present,

* Period of official tours excluding external official training, seminar or conference.

* Special leave period granted by the management on account of Blood donation, participation in sports etc.

* Training period for the In-house training sponsored by the company.

For Full present employee with 25 working days, AI = (29-0)/25= 1.16

v) GF is the Group Factor which is a multiplying factor for the calculation of incentive amount.

GF for A Group = 1.00

GF for B Group = 0.85

GF for C Group = 0.70

vi) PF is the Productivity Factor which is the multiplying factor and is allowed for higher productivity (FPP earning beyond 50), which will be calculated as follows,

For FPP up to 50, PF = 1.00

For FPP 50 to 100, PF = 1+0.006 for every productivity increase.

vii) Incentive Ceiling is fixed for Rs.2850 p.m.

IV. ANALYSIS OF THE OLD INCENTIVE SCHEME

Problems faced in Old Incentive Scheme

As the old incentive scheme was wage dependent, even though the wage remains equal for different workers and their performance factor varies, or even if the wages are equal, the performance factors are equal and absenteeism index varies, the workers were getting the same bonus amount. So it became essential to form a new incentive scheme such that the company productivity can be increased with minimizing the absenteeism of employees.

The above problems can be better understood from the example below,

Example

i) In July 2005, for a full present employee i.e. AI = 1.16, FPP with PF is 120.00, his wage is Rs.22,000, LPI is 1.087, GF is 1.00

Then, Incentive Amount = $\frac{0.2\times 22{,}000\times1.16\times120\times1.00}{100}$

= Rs.6125

But, the ceiling limit is Rs.2850, hence

The Payable Incentive Amount = Rs.2850× 1.087 = Rs.3098

ii) In July 2005, for an employee with 6 days leave with the working days of 25 days i.e. AI = (29-6)/25 = 0.92

LPI = 1.087, Wage = Rs.22,000, FPP with PF = 120.00, GF =1.00

Then, Incentive Amount = $\frac{0.2\times 22{,}000\times0.92\times120\times1.00}{100}$

= Rs.4858

But, the ceiling limit is Rs.2850, hence

The Payable Incentive Amount = Rs.2850× 1.087 = Rs.3098

Thus, from the above example it can be observed that both the employees are getting the same incentive amounts even though one of them is absent for 6 days while one is full present.

Hence, considering all the above problems the quality circle running in the plant decided to formulate a new incentive plan such that there will be no discrimination in paying the incentive amount and the new plan will reduce the absenteeism of its employees i.e. persons remaining absent from their duties will be getting less incentives.

V. FORMULATION OF NEW INCENTIVE PLAN

If incentive schemes are to be effective, they must be accepted by those who will be affected by them. From the rich body of literature on human resources management we can learn that the following factors are important criteria that staff members take into consideration when judging their own remuneration:

a) *Distributive fairness:* Here an employee might ask: "How much do I receive and how much do I receive in comparison with my peers?"

b) *Procedural fairness:* "What is the process that was used in order to decide how much I receive?"

c) *Equity principle:* According to this principle employees believe that they should be paid according to their contributions to the organization.

d) *Principle of status consistency*: It demands that salaries should (at least roughly) reflect the staff members' positions in the organizational hierarchy. In other words, superiors should receive higher salaries than their subordinates.

Factors Influencing the Choice of Incentive System

When deliberating what would be an appropriate system of incentives for a particular organisation, it may be useful to analyse the following factors:

a) *Technology:* Are that tasks interdependent or independent from each other? Can the tasks (and thus the performance of individual employees) be measured? For example, according to this criteria, there are substantial differences between the delivery of credit under an individual lending technology (mostly independent and measurable tasks) and the provision of deposit facilities in a branch setting (tasks may be interdependent and difficult to measure).

b) *Composition of Workforce:* What is the occupational mix of the workforce (i.e. what levels of education and professional training)? What is the demographic composition? How long have the staff members served in the organisation? For instance, university graduates may be motivated by different factors than staff members with only a basic education. Young, unmarried staff members may seek different rewards than older staff members who have to take care of children.

c) *Culture*: What is the value that is placed on openness and transparency? Do staff members enjoy self-management? What is the importance of money? Some cultures may place a very high value on money while its prominence may be reduced in others.

d) *External Environment*: Examples are the levels of unionisation, social norms, and a host of other legal issues, including labor laws and worker co-determination.

e) *System of Governance and Strategy:* Finally, it is important to study the system of governance in the particular organisation as well as the institutional strategy. Care must be taken to design an incentive scheme that will support the respective institutional strategy.

Careful analysis of the above items will most likely help to prevent costly mistakes and unnecessary revisions of incentive schemes.

Incentive planning process

Designing a new incentive plan depend upon the nature of problem in the existing incentive plan and the nature of the organization. Fig. below illustrates the process followed while making a new incentive plan.
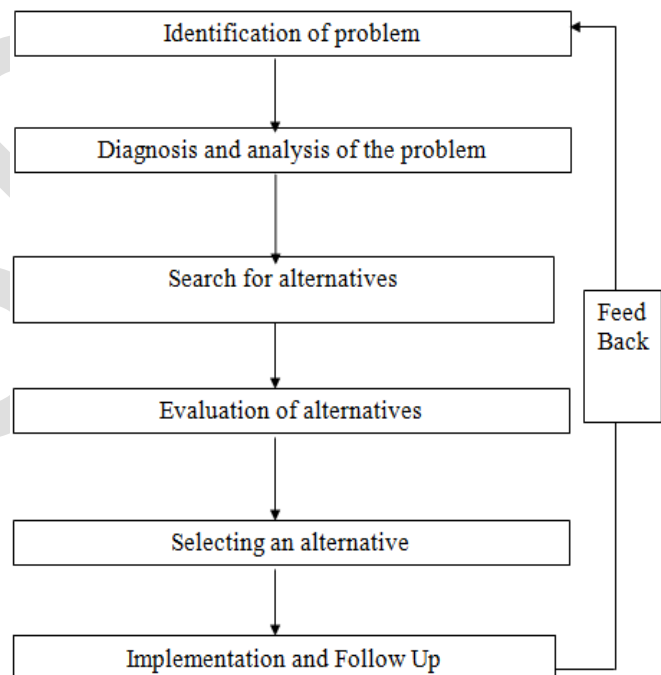
(Fig: Incentive planning process)

i) Identification of problem

Identification of a problem begins with recognition of the problem, which arises due to gap between what is and what should be i.e. present and desired state of affairs. The problem with the existing incentive scheme was the absenteeism of the employees which reduces the productivity of the plant.

ii) Diagnosis and analysis of the problem

Diagnosing the real problem implies knowing the real cause of gap between what is and what should be and

understanding the problem in relation to the objective of the organization. The next phase after diagnosing is the analysis of the problem which involves classification of the problem and gathering information. Problem with the existing incentive scheme was even though an employee remains absent for some days, he was getting the same incentive amount as that of a full present employee of the same group. This was because the incentive was directly proportional to the wage of the employee.

iii) Searching for Alternatives

The next step is to find out different alternative solutions based on the decision makers past experience, practices followed by others and using creative techniques.

iv) Evaluation of alternatives

Evaluation is the process of measuring the positive and negative consequences of each alternative. Peter F.Drucker has suggested the following criteria to weigh the alternative such as Risk involved in each alternative, Economy of efforts i.e. cost, time and efforts involved, Timing or situations, Limitation of available resources.

v) Selecting an alternative

In this stage the optimum alternative which maximizes the results under given conditions is selected. This is selected by comparing different alternatives with various approaches such as experience, experimentation, research and analysis.

vi) Implementation and Follow up

Implementation of alternative involves the following, such as the decision should be communicated to those responsible for its implementation, acceptance should be obtained from them, and responsibilities for specific task should be assigned to individuals. Once the decision is implemented, it has to be closely monitored. Constant follow up helps to take corrective measures as and when necessary.

VI. REVISED INCENTIVE SCHEME

Introduction

The revised incentive scheme in NALCO, Angul is a **productivity linked group incentive scheme**. Based on the operating experience the scheme has been reviewed giving more emphasis on the followings,

a) Increase of availability of equipment.

b) Reduced cost of production.

c) Quality parameters/pollution control.

d) Individual area performance.

e) To comply with marketing target.

f) Improvement of attendance & labour productivity.

g) Simplification of method of calculation of incentive amount.

h) Encourage team work and integration.

Coverage

The scheme covers all workman, supervisors including Trainees who are in receipt of wages on regular roll including employees on deputation to NALCO. The employees will broadly be classified into 2 major groups depending upon their contribution to production. The Groups are,

a) Direct production at units-Group"A"

b) Services at units-Group"B"

The scheme will not cover Apprentices, Casual labour, Workcharge labour and employees on deputation from NALCO to other organisations.

Factor Productivity Point

FPP is a measure of incentive earning in terms of productivity and is calculated for different direct A groups at units. The employees working in different areas will be eligible for 100% FPP earned by the area.

Formula Used To Calculate The Incentive Amount

Incentive Earning (Rs.) = $PI \times LPI \times AI \times GF \times CF$

i) PI = Payment Index = $\dfrac{FPP \times PF \times BFI}{100}$

a) BFI = Base Financial Index = Rs.3600

b) FPP = Factor Productivity Point i.e. Performance of plant

FPP = 100 points.

1. Capital productivity Indices for,

   i) Smelter = 30 points

   ii) CPP = 10 points

2. Area Productivity Indices for,

   i) Carbon Area = 60 points

   ii) Potline = 60 points

   iii) Cast House = 60 points

For other departments it is calculated in a weighted average.

c) PF = Productivity Factor

For FPP upto 80, PF = 1.00

For FPP from 81 to 100, PF = 1+0.006 for every point increase

ii) LPI=Labour Productivity Index

$$LPI = \frac{Duty\ Hours}{(Duty\ hours + OT\ hours) - 8\%\ of\ Duty\ hours}$$

Where Duty Hour is the schedule working hours of particular month.

For example- * If the OT is Nil, then

$$LPI = 1/0.92 = 1.087$$

* For 25 working days, OT = 4×8 = 32 hrs.

$$LPI = 200/(200+32-16) = 0.92$$

iii) AI = Absenteeism Index

The AI relating to number of days worked, applicable for the employees are as follows,

$$AI = \frac{Number\ of\ days\ worked\ out\ of\ 29\ days\ i.e.(29\ days - leave\ days)}{Number\ of\ working\ days\ excluding\ offs\ \&\ Holidays}$$

No. of working days are the days excluding weekly offs, closed holidays, compensatory offs.

How ever the following will be considered as days present,

* Period of official tours excluding external official training, seminar or conference.

* Special leave period granted by the management on account of Blood donation, participation in sports etc.

* Training period for the In-house training sponsored by the company.

For Full present employee with 25 working days, AI = (29-0)/25= 1.16

iv) GF is the Group Factor which is a multiplying factor for the calculation of incentive amount.

GF for A Group i.e. Direct production = 1.00

GF for B Group i.e. Services = 0.875

v) CF is the Category Factor which is the multiplying factor and is alloted for different catgories of employees as follows,

Category	Symbol	Range
a. Semi skilled/ Un skilled	W	W1-W6
b.Skilled	T	T0-T7
c.Supervisor	S	S0-S4
d.Executives	E	E0-E9

CF for various categories are as follows,

For W1, CF = 0.7

W2, CF = 0.9

T0-T2/W3-W4, CF = 1.0

T3-T4/S0-S2/W5, CF = 1.025

T5-T6/S3/W6, CF = 1.05

T7/S4, CF = 1.10

E0-E9, CF = 1.20

vi) Incentive Ceiling is fixed for Rs.5005 p.m. for Group A & Rs.4805 p.m. for Group B Executives.

VII. RESULT ANALYSIS

Absenteeism: (As % to Total Working Days)

Month	2005-2007	2007-2009
April	11.83	10.96
May	11.64	10.32
June	9.34	9.02
July	17.86	9.51
August	8.24	8.85
September	6.8	6.46
October	7.27	7.63
November	7.27	8.78
December	7.46	7.93
January	12.53	12.06
February	13.33	11.34
March	10.54	8.51
Mean	**10.3425**	**9.2808**

Thus, as average number of working days is 60,000, so availability increases by 637 man days per month.

Plant performance

Pot Line

Alf3 Consumption in kg/T

Month	2005-2007	2007-2009
April	24.39	25.19
May	24.56	26.05
June	22.86	24.65
July	24.04	23.81
August	23.50	25.11
September	27.99	25.63
October	24.76	23.87
November	24.35	23.09
December	24.57	23.09

January	24.27	22.94
February	25.71	22.52
March	24.61	21.86
Mean	**24.6341**	**23.9841**

Thus the productivity increases by 0.02%.

Carbon Area

HFO Consumption in LT/T

Month	2005-2007	2007-2009
April	77.87	85.93
May	86.27	72.02
June	88.48	81.40
July	73.39	74.28
August	78.55	65.51
September	76.69	68.97
October	81.95	66.24
November	77.63	71.69
December	72.20	70.83
January	81.14	69.59
February	71.68	72.88
March	72.38	74.75
Mean	**78.18**	**72.84**

Thus the productivity increases by 0.06%.

Cast House

H. F.O. Consumption in LT/T

Month	2005-2007	2007-2009
April	39.91	45.68
May	36.73	42.44
June	34.11	43.04
July	34.45	40.52
August	32.37	40.10
September	37.88	39.27
October	37.11	42.37
November	32.90	42.21
December	31.32	41.67
January	36.97	42.26
February	40.19	41.71
March	39.88	38.91
Mean	**36.15**	**41.68**

Thus the productivity increases by 0.13%.

VIII. CONCLUSION

The present revised incentive scheme which is productivity linked group incentive scheme, has reduced the absenteeism of employees to much more extent and made the calculation of incentive amount easier and also increased the productivity of the plant as compared to the previous incentive scheme.

Any incentive scheme must be monitored and improved periodically based on its performance in the plant and the satisfaction of the employees availing the incentives.

Each department should come up with its own set of goals, but the initial plan must be a company-wide one with a big picture goal. Once that goal is stated, each department can look at its own operations and come up with a set of smaller goals that are all designed to help meet the larger goal. The performance of one department is directly dependent on the performance of another department, so it is important that those two departments work together in establishing goals. As far as the design of incentive schemes is concerned, one fundamental lesson seems to be that for any incentive mechanism to be effective, it must be fully integrated into the organization. Thus, incentive schemes must be adapted to the: Culture, Clientele, Products and Processes.

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