Case Study

HRIS in the Indian Scenario: A Case Study of a Large Organization

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Information is vital to the survival and growth of the firm. The human resource function is most critical, must be performed with conjunction with the strategic purposes of the firm and is primarily responsible for integrating all parts of the organization through information systems. When reference is made to the Human Resource Information System (HRIS) in today's environment of high tech wizardry, it is often thought as a business tool that allows for standardization in the gathering of information about and for a company's employees. Although this was the original purpose of HRIS, many additional uses are beginning to emerge. Most of the studies made on HRIS are descriptive, non-specific and generic in nature and far from empirical and pragmatic bases, while the HRIS scenario in India has largely remained unexplored. The available research on the subject are largely surveys limited to the extent and use of HRIS in large and small organizations, but no in-depth study has so far been attempted on a single large organization. It is in this backdrop that the present study has been undertaken to fill in this vital gap in the existing research. This paper tries to examine the status of HRIS of a large organization like National Aluminium Company Ltd. (NALCO).

INTRODUCTION

The success of a business enterprise in a complex and changing environment depends to a very large extent on the efficient management of its Human Resource (HR). To survive and to be successful, a firm has to retain its 'competitive advantage' over its rivals, by acquiring, maintaining, and developing a competent HR. Successful Human Resource Management requires mastery of a tremendous amount of well-organized information. Information can be defined as tangible or intangible entity, which serves to reduce uncertainty about some future state or event. Acquiring and analyzing information and taking action based on their interpretation of information is the common function of all organizations. Every organization needs to

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process information, whether it manufactures a product or provide a service.

An information system is a set of organized procedure which when executed, provides information to support decision-making. An information system is generally required to communicate effectively with the environment. It is only recently the formal Human Resource Information System (HRIS) using Information Technology (IT) is being implemented. An HRIS is a systematic procedure for collecting, storing, maintaining, retrieving and validating data needed by an organization about its HR. The HRIS is usually a part of the organization's larger Management Information System (MIS). Earlier manual systems are being gradually replaced by computerized HRIS. The HRIS need not be complex or even computerized. But computerization has its own advantage of providing more accurate and timely data for decision-making. Before the introduction of computers, the HRIS involved manual preparation of reports from data stored in file cabinets. Such a system dealt primarily with historical data. It provided the information demanded within the limits imposed by the physical capacities and constraints of the system. In contrast, a computer's file cabinet is the disc pack. Although new systems offer many advantages, they require thousands of hours of strategic planning, information gathering, priority setting and decision-making. To minimize disappointments and maximize success, manager must engage in thorough system planning. There is no ideal plan for HRIS. Each organization must develop its own HRIS plan; culture and priorities differ, as do skills, staff resources and financial options. Some organizations can buy a simple system off the self; other requires a customized system with interfaces to other systems.

LITERATURE REVIEW

The importance and scope of personnel function have resulted in greater complexity in the field. There is a need to cope with incredible volume of information and maintain it. There is a need to classify, reclassify and cross classify the information. This can be achieved by computerized personnel systems. Since the later half of the 1970s, there has been an increased emphasis on the need for computer-based personnel management systems—system which will enable personnel management to manage people more efficiently and effectively and to provide a more positive service to the organization (Vasundhara, 1999).

HRIS can be defined as the composite of database, computer application and hardware and software necessary to collect/record, store, manage, deliver, present and manipulate data for Human Resources (HRs). Schuster (1985) described that the HRIS is designed to link the operations of the HR system. It may be described as the flow and storage of information, which includes all reports and forms that enter the HR system, are transformed, generated within the system, and that flow out from the system. Besides handling routine work quickly and accurately, computerized HRIS can empower the personnel function by developing inputs for the strategic planning process. Additionally,

the computer is creating new jobs, helping to monitor personnel operations, individualizing training programs, and providing access to available array of information. The advantages of the system appear to outright the possible human costs of automating, although the effect of computerizing needs to be assessed periodically (Beutell, 1988). HR professionals can expect many new applications in future like an online employee opinion survey, the use of expert systems and greater use of HRIS data and functions by non-HR specialists (Fisher *et al.*, 1997). According to Miner and Crane (1995), HRIS are inherently planning systems, because they provide the kind of information, and illustrate the cause-effect relationship among data, that are needed to plan change. No two systems are exactly alike if they have been developed, as they should be, on the basis of the specifics of organizational HR and the needs of individual company (Werther and Davis, 1996). Mathis and Jackson (1999) described HRIS as an integrated system designed to provide information used in HR decision-making. HRIS through computers has simplified the task of analyzing vast amount of data and these can be invaluable aids in HR management, from payroll processing to record retention. An HRIS serves two major purposes in organizations. One relates to administrative and operational efficiency, the other to effectiveness (Matthewman, 2002). According to Cascio (1989), an HRIS is the method by which an organization collects, maintains, analyzes, and reports information on people and jobs. The system refers simply to the process of integrating a variety of activities into a logical, meaningful whole to accomplish a given objective. HRIS can add value in three dimension known as, the "three C's" – Communication, Change and Calculation (Milkovich and Boudreau, 1994).

A well-designed HRIS with the alignment of Human Resource Department (HRD) goals can serve as the main management tool for long-term strategic planning decisions (Sherman *et al.*, 1998). Now, through HRIS companies are gathering strategic information about their employees—such as performance management, compensation and recruiting information—to support better decision making and workforce management. The different IT tools being used in HR applications are: Improved Scanners, Optical Character Recognition (OCR), Interactive Voice Response (IVR), Internet, Intranet, computer telephony integration, new programming languages such as Java and distribution devices such as Kiosks (Jolls, 1997). Three competitive strategies were identified by Broderick and Boudreau (1992) that influence the objectives and design of HRIS—cost leadership, customer satisfaction and innovation. Cost leadership strategy flows on economics of scale, customer satisfaction strategy focuses on enhancing customer services to gain market share, whereas innovations emphasize differentiation through new products, services and technology. The reengineered HRIS transformed the HRD from a historic role of transaction processing to one of a strategic partner by redesigning which involves major changes to the existing system to guarantee a very high level of service and to better meet enterprise-wide goals of cost effectiveness and efficiency

(Rodger *et al.*, 1998). Indeed, past studies have shown that over 90% of organizations have a formalized and separate HRIS department on an equivalent function (Cholak and Simon, 1991). Nearly all organizations have actually implemented some form of HRIS (Richards-Carpenter, 1996). However, these applications vary widely from organization to organization and there is equal diversity in the resultant benefits (Haines, Petit, 1997). Smaller organizations were found to be less likely to use HRIS and the latter was also used less frequently in training and recruitment. It is also found that HRIS are still being used for administrative ends rather than analytical ones (Ball, 2001). It is obvious as we move into the 21st century that data will derive an increasing number of business decisions and strategies. HRIS is an excellent example of an area where business can capitalize not only on administrative cost savings, but also on leveraging a strategic advantage through information gathering, processing, and sharing (Kovach *et al.*, 2002). Preliminary research shows that successful HRIS operations are identified by such outcomes as organizational competence, i.e., meeting strategic goals (Pierce and Newstrom, 2002). Furthermore, successful HRIS functions support such key processes as executive decision-making, employee training, technology selection, interdepartmental integration, and organizational reporting structures (DeSanctis, 1986). While such studies provide valuable insights into HRIS implementation, their generalizability is limited due to the absence of a comprehensive foundation to contextually base these findings (Kovach and Cathcart, 1999). HRIS make vital contributions to knowledge management by advancing organizational learning (Argyis and Schon, 1996). Strategic initiatives and related modifications can also benefit from HRIS pathways. In addition, knowledge management involves relevant training, which can often be delivered in both cost- and time-effective ways with an HRIS. Even Total Quality Management (TQM) of highly skilled professionals such as physicians can be enriched with a carefully planned HRIS (Davenport, Glaser, 2002). The latest thinking has made the HR function be looked upon as the human capital management function in a bid to recognize the value of HRs. This needed more management level information and support, which is possible through computerized HRIS. But an HRIS cannot substitute for sound management policies and procedures that deal with interpersonal activities like counseling, interviewing, supervision and surveillance (Castelino, 2002). Organizations that are determined to improve productivity, lower costs, increase employee satisfaction are finding technology in general and HRIS in particular a big help. It affects the entire workforce and delivers significant financial returns, which are an important part of HR's growth as a strategic and value-adding partner to the business (IOMA, 2004). Adding or migrating HRIS applications to the web or a corporate intranet are some of the ways for controlling costs while achieving efficiencies from HRIS, but organizations are at different states of implementing this approach (IOMA, 2002a). The top five HRIS system/software used by firms are Peoplesoft, ADP, Lawson, In-houses creations and SAP, and Spectrum (Payroll Manager's

Report, 2002). Integration and processing capabilities, user friendliness, robustness and reporting are the good things users like in their HRIS while the things they do not like about their software are difficult/expensive to maintain and upgrade, poor customer services, tough to customize and lack of Graphical User Interface (GUI) (*Ibid.*). The biggest problems or obstacles HR professionals face in managing HRIS areas are budget shortfalls and not enough staff or not enough qualified staff followed by time—not enough of it and no way to balance strategic and tactical demands, and problems in dealing with other departments and the information technology department in particular (IOMA, 2002b). The focus of many HR management systems has been just eliminating 'administrative' by automating existing HR processes which produce departmental efficiency but not adding value to the organization. The key is to leverage HRIS to produce data that company decision makers can use to better manage their business (Human Resource Department Management Report, 2001). One of the most significant challenges faced by personnel executives today is measuring the performance of their HRIS in order to justify the value-added contribution of the HRIS in accomplishing the organization's mission (Hagood and Friedman, 2002).

THE PRESENT STUDY

In view of the fact that most of these studies are descriptive, non-specific and generic in nature and far from empirical and pragmatic bases, the HRIS scenario in India has largely remained unexplored. This limitation is of serious concern especially during past several decades, when HR functions have been transformed from a relatively obscure record keeping staff function to a central and top-level management function in the organization. There are many factors that have affected this change, one such factor is Information Technology (IT). The data management pressure coupled with the increasing accessibility of more powerful computers has lead to widespread growth of computer application in HRIS. Besides, there is a significant growth of HRIS vendors during the last few decades. This sizable growth in the HRIS providers along with the benefits accrue from the system, encourage the researcher to make a thorough study on the subject. The available research on the subject are largely surveys limited to the extent and use of HRIS in large and small organizations, but not in the Indian context. Above all, no in-depth study has, so far, even been attempted on a single large organization. It is in this backdrop that the present study has been undertaken to fill in this vital gap in the existing research.

OBJECTIVES

The study has been undertaken with the following objectives in view:

- To have an in-depth study of the functional overview of the system by exploring the focus of HRIS in National Aluminium Company Ltd. (NALCO).
- To study the important uses and applications of HRIS delivering significant returns in NALCO.

- To study the strengths and weaknesses of present HRIS keeping in view the strategic initiatives and related modifications required.
- To study the employees' perception about existing HRIS.

HYPOTHESES

It was hypothesized that:

- *Available HRIS software is not meeting all the needs of the HRD and requires reengineering to make it more effective.*
- *There is no significant difference among the respondents groups divided on the basis of demographic variables regarding their satisfaction for present HRIS software and perception of reengineering the same.*
- *There is no significant difference among the respondents groups divided on the basis of demographic variables regarding the HRIS's use, increasing the efficiency of the HRD and effectiveness of the HR functions by its contribution to achieve the overall objectiveness of the organization.*

METHODOLOGY

Keeping the above aspects in view, the researchers had informal discussions with a cross-section of managers, supervisors to ascertain what they meant by HRIS and what dimensions are to be focused upon in order to understand and improve its effectiveness.

Data for the study were collected from both primary and secondary sources. A few managers, supervisors belonging to HRDs of different units of the company constituted the primary sources. Employees working with other departments are not taken into consideration, as they have no access to it. The secondary sources included files, records and documents of the corporate office, the three units of NALCO—the Mining and Refinery Complex, the Captive Power Plant (CPP), and the Smelter plant, the Annual Reports, monthly and bimonthly magazine, and the occasional publications of NALCO. The descriptive analysis of data was supplemented with opinionated data collected from the 125 sample respondents, drawn from all the units of NALCO through purposive random sampling method. The data were collected with the help of a structured interview schedule.

NATIONAL ALUMINIUM COMPANY LTD. (NALCO)

National Aluminium Company Ltd. (NALCO) is considered to be a turning point in the 50 years history of Indian Aluminium Industry. In a major leap forward, NALCO has not only addressed itself to the country's need for self-sufficiency in aluminium, but also given the country the technology edge in producing this strategic metal on the best of the world standards. Incorporated in 1981, as a public sector undertaking under the Department of Mines, Ministry of Steel and Mines, the Government of India, NALCO is Asia's largest integrated aluminium complex, encompassing bauxite mining, alumina refining, aluminium smelting and casting, power generation, rail and port operations. NALCO has its corporate office at Bhubaneswar, the state capital of Orissa. The company operates through the following segments: Bauxite mine (Panchpatmali in Koraput district), Alumina refinery

(Damanjodi), Smelter plant (Angul in Dhenkanal district), Captive power plant (Angul), and Port facilities (Visakhapatnam). Different segment of the company went into production in a phased manner starting from 1985. Recently NALCO has been offered the NAVARATNA status. As on March 31, 2006, NALCO has a reservoir of 7,085 plus high-value HRs.

HRIS IN NALCO

HRIS: THE SOFTWARE

The system department in NALCO has been given the responsibility to design and develop a software for facilitating HRD to discharge its function effectively. The basic philosophy in the field of HR is to attract competent personnel with adequate amount of growth and opportunity to develop their skills and capabilities in a congenial work environment.

The main objectives of the HRIS of NALCO are:

- To maintain records of employees of NALCO in a systematic and presentable form such that analysis and control over the administrative and financial matters are obtained; and
- To ease the process of maintaining the records relating to various employees in a systematic manner and generating the required reports by the HRD and nominating employees for various training programs broadly for knowledge enhancement, skill development and attitude building.

Functional Overview of the HRIS

Computerized HRIS was approved and started by the management in the year 1996-97. For this purpose data are collected from manual records of employees. Data for executives are maintained in a centralized manner and for non-executive, it is decentralized.

Technical Features of HRIS

- Database is managed in SYBASE 12.5.
- The front end is Power Builder 9.0 and it is web-enabled.
- All the users are connected through LAN.
- Database is updated online.
- The system department is developing the software, so there is no reason to go to purchase the software from outside/vendors.
- System Architecture – Client-Server.
- Platform worked – Windows 98, UNIX ver. 4.0.
- GUI tools used – Power Builder 9.0.
- Designer tool used – Power Designer 6.1.2 32 bits.
- Backend (RDBMS) – SYBASE 12.5.

Modular Approach to HRIS in NALCO

In computer terms, modularity refers to a building block approach to system creation, having a separate module for each HR application instead of establishing a system in one large piece. Ideally, an organization implements an HRIS in bite-size chunks, or modules to achieve an effective system within an acceptable timeframe examining the needs for interdependence and independence among the affected HR functions. Normally, HR data are functionally interdependent.

Some data are specific to some functions, but most basic data are required by all functions. In addition, though some functions may need more specialized data, even these data could overlap several functions. In some cases, however, the needs and priorities of each functional area of HR may dictate an approach whereby each function is looked at separately.

- Employee Information Database Module (1996) (Annexure 1)
- HR Database Module (1997) (Annexure 2)
- Scholarship Module (1997) (Annexure 3)
- Training Module (2000) (Annexure 4) need to be modified

Old System	New System
• The HR Database Module was being maintained manually. • HR was wasted in maintaining the HR database, as the job was done by a single person using a system. • Only a single user used the system application at a time. • Only one module was in use at any time. • The application had been accessed only on one machine. • Other department in NALCO could not access the data. • Application was not user friendly. • Processing time was very long.	• Multi-user system. • Database is kept on a centralized server. • Totally menu driven. • Normalized database. • Standard office orders as per request. • Processing speed has been considerably reduced. • Authenticate users are allowed to access the application. • It has user-friendly GUI interface. • During data entry checks/validation have been kept with appropriate message. • Certain input fields have been provided with drop down list box, to avoid delay in data entry.

A well-planned NALCO HRIS database satisfies the major information requirements in all functional areas, even those outside the original implementation scheme. As future projects add data to support new functions, existing functions will benefit. The modular approach followed by NALCO provides the systems, designer with greater control and flexibility. After installation, HRs can change the system more quickly and with less chance of damage. The company has its in-built system. The different modules available are:

- Industrial Engineering Human Resource Planning and Incentives Module (2003) (Annexure 5)
- Performance Appraisal Module (1999-2000) (Annexure 6)
- Intranet Module (2001-02) (Annexure 7)

Scope and Brief Description of the HRIS

The HR Database System was previously being maintained on pen and paper. Different employees maintain files for each module separately. All office orders and

reports are prepared manually. The various problems compelled NALCO for the development of the new HRIS.

The Workflow of the System: NALCO is an organization with many different departments. HRD is the department looking after the HR database maintenance, training requirements of the employees and many more aspects. The workflow of the two functional modules are discussed for example.

The workflow of the HR Database Module (Annexure 2) involves the following steps: When an employee joins NALCO his personal details are recorded and he is given a personnel number. The personnel details include: Present and permanent address, a complete detail of the dependents of the employee, the experience of the employee before joining NALCO, the professional membership of an employee, and various types of loan provided to the employees.

The workflow of the Training involves the following steps: The process starts with receiving application of HOD after investigation, the employee list is then sent to the HRD, HRD then sends the selected employee list to the training cells of each unit with program details, after the nomination list is prepared the employees are intimated and asked to give confirmation, and the names of the employees who have given confirmation are again sent to the training cell. Finally the office orders are generated and sent to the concerned unit, department and HRD heads respectively. Similar steps are taken for other Human Resource Management functions.

Data Flow Diagram: Data flow diagram is a graphical tool used to describe and analyze the movement of data through a system. This includes processes, stores of data and delays in the system. It is two types. The physical data flow diagram shows the actual implementation and movement of data between people, departments and workstations, whereas logical data flow diagram focus on the flow of data between processes without regard for the specific devices, storage locations or people in the system. Figure 1 shows how the HR database system is revolving round the personnel details of the employees. Taking it as a raw input, transforming it again into information output, helps the HRD by generating various HR reports.

Figure 1: Context Diagram

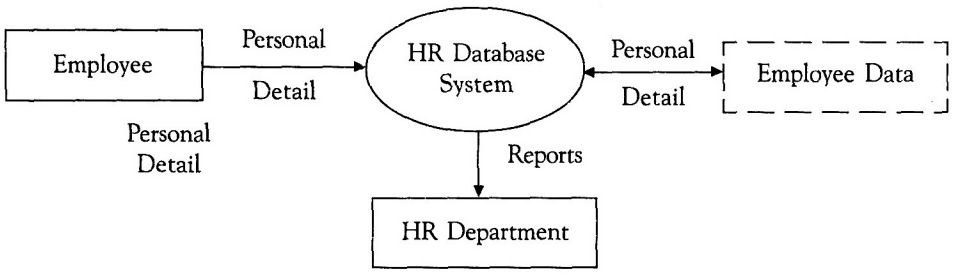


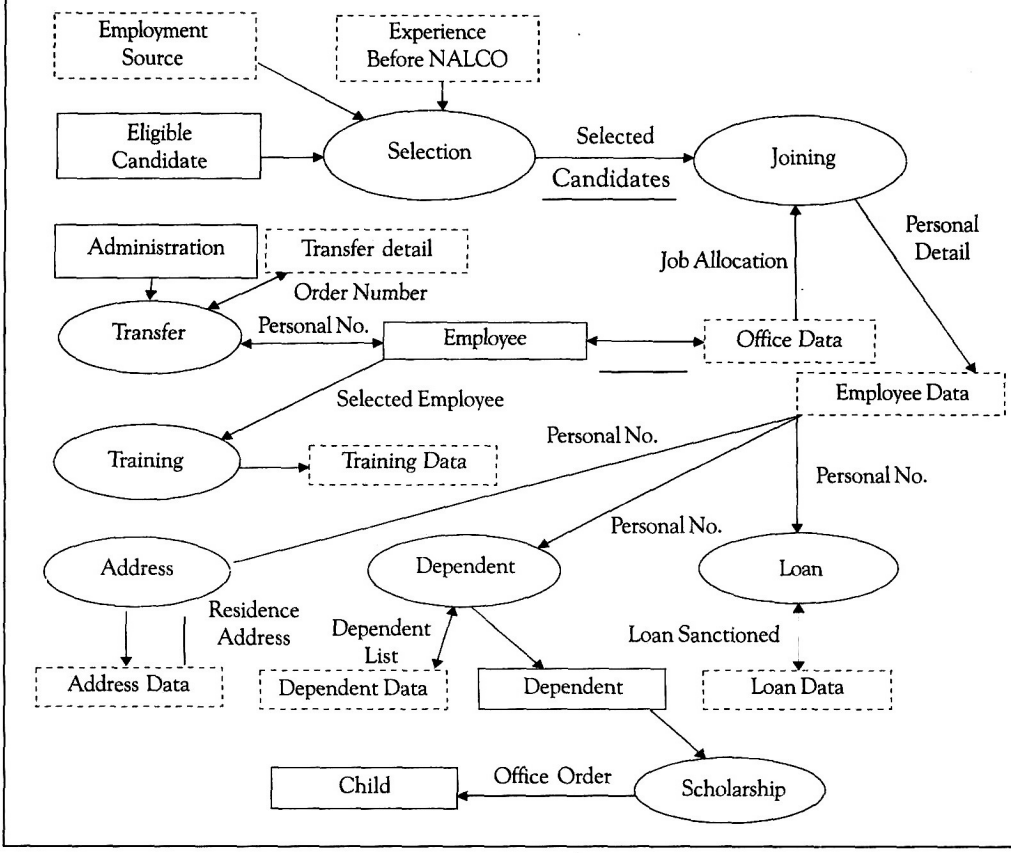
Figure 2 is an example of Data Flow Diagram. For the selection process, data about the prospective candidates are collected from various employment sources. Only eligible candidates' data enters through the selection process and only data of selected candidates who join the organization is recorded in HRIS. An employee's personal and job-related data are kept for administrative purpose which then can be used for the purpose of taking decision like transfer, training, address, dependent, loan, scholarship, child, etc. Figure 2 depicts the 1st level data flow from employee's personal details at the time of joining different HRD's decision points. Similarly other data flow diagram can be made for other HR functions.

USES OF HRIS IN NALCO

In NALCO, for effective functioning of the HRD, it is divided into following sections/cells namely:

- Establishment Cell
- Training Cell
- Industrial Engineering Cell
- Performance Appraisal Cell
- Recruitment and Industrial Relations (IRs) Cell

Figure 2: 1st Level Data Flow Diagram



Different sections/cells are using HRIS according to their own convenience and requirement; it is discussed section/cell wise as follows:

Establishment Cell

It is the policy making body for the organization on different HR issues. A large number and variety of functions are performed by the establishment cell; it has been entrusted with the planning and implementation of HRIS in the organization.

This cell is using the various modules of HRIS like:

- Personnel Master – The Employee Database (Annexure 1)
- HRM Master – The HR Database (Annexure 2)
- Child Master – The Scholarship Database (Annexure 3)
- Intranet Module – HRM Manual and e-forms (Annexure 7)

The employee database contains the basic information about employees like name, designation, date of birth, etc., whereas the HR database contains information necessary to take HR decision like details regarding qualifications, competency possessed, experience before and in NALCO, etc. In NALCO, various scholarship schemes are practiced for supporting the education of employees' children. The details information regarding operation of these schemes is available in scholarship database. The Intranet module contains Electronic forms, HRM manual, other manuals containing company information, and My Finance feature giving the update finance details of the employees. All these information are accessible to all the employees of NALCO by browsing the company intranet using personal ID number. Earlier employees has to physically come to the HRD Department to get the application forms for various purposes, and then to run after it to process the same, which was very time-consuming for both the parties. Now employees can apply and process the same through the Intranet which complete the process in an hour. The details information contents of these modules are given in the above mentioned Annexures.

Training Cell

In order to stay in business in today's competitive world, increased productivity is often critical. Sometimes this increase can be achieved by a change in working systems or by automation. In both the cases employees are to be trained in the use of system or new equipment. All the changes demanded in a business require training but more than this, training is a way of producing change.

For facilitating the activities carried out in a training cell, a software has been designed (Training Information System or TIS) by System Department as per the requirement and specification of the training cell. But it is not satisfying the training cell, as they need some modification in order to make it user friendly. The present module is based on codification system, which is creating problems like who will give the code? And coding multidisciplinary program is not a easy task. Therefore, there is a need of more advanced and smart software having

menu driven screen, i.e., interactive user ID option should be provided like mail ID creation. Accordingly, the system department is designing software, which they want to be tied with developmental program; performance appraisal system and succession planning in order to identify the training need directly. The TIS and the reports generated from the system are given in Annexure 4.

Industrial Engineering Cell

The Industrial Engineering Cell is entrusted with the task of planning the manpower requirements for NALCO. Manpower planning is a continuous exercise. It is the responsibility of the industrial engineering cell to ensure that there is neither shortage of manpower nor the company is overmanned. After an overall manpower planning for the organization, separate manpower chart is prepared for each department taking into account the workload of the section concerned, the nature and type of work, the duties and responsibilities involved and so on. While determining the manpower requirement, the industrial engineering department takes into account the following factors:

(a) Corporate planning: Both long-term planning (15 years) and short-term planning (5 years), (b) Turnover of the employees, Existing setup, (c) New projects, (d) Expansion program, Additional workload, (e) Employee who goes on study leave, and (f) Temporary absenteeism of the employees due to accidents sickness, etc. For easing its function one software is used. The different functions performed by using this software are given in Annexure 5(a).

Besides manpower planning the Industrial Engineering cell also deals with productivity-linked incentive scheme. For this purpose a software is being used which facilitates preparation of monthly incentive statement for different units and monthly statistical report on incentive scheme both for executives and non-executives. The details are given in the Annexure 5(b).

Performance Appraisal Cell

Performance Appraisal is the most indispensable tool for the organization. In NALCO, performance appraisal forms of all executives of different units are sent to the performance appraisal cell of corporate house where the cell does the final evaluation. For this purpose a software is being used. The information it provides is highly useful in taking decision regarding job rotation, promotion, transfer, career planning, succession planning, etc. For non-executives the final appraisal is done in the appraisal cell of their respective units. The details of various forms used for the system are shown in Annexure 6.

Recruitment and Industrial Relations (IRs) Cell

Recruitment Subsystem: Recruitment process is not enabled with any software. The executives at the entry level are recruited through GET and MT examination. This task has been given to an outside agency. The external agency conducts the examination and gives the list of selected candidates to the organization. Other functions are performed by the recruitment cell. For non-executives recruitment, it is the responsibility of the concerned unit, the HRD Development.

The recruitment subsystem is an isolated system and not linked to any other HR system. Computer is just used as a typewriter. The major drawbacks of the present system are:

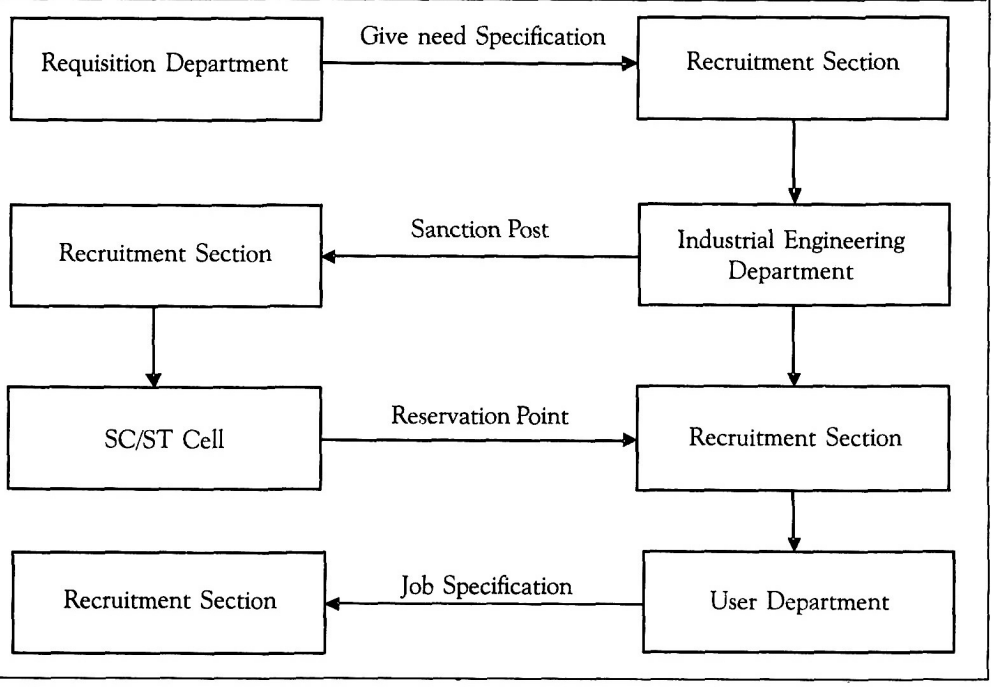
- Problem of Data Retrieval.
- Other department cannot get required information in soft copy.
- They have to come to the HRD and take the hard copy.
- Tracking applicants flow is done manually.
- Time analysis and cost analysis are done but on the basis of experience.

Figure 3 shows the flow of information in the process of recruitment. Any department having vacancy has to give requisition to recruitment section who in turn discusses the matter with the industrial engineering cell in order to sanction post against requirement. The Recruitment section after taking into consideration the reservation points, asks the concerned department to provide job specification for conducting recruitment. By taking this into consideration a software should be prepared which will be beneficial for the Recruitment Cell as well as for the organization. Almost half of the time now wasted on various clerical activities can be saved by using a software for this.

Industrial Relations (IRs) Subsystem

Industrial Relations (IRs) is one of the most delicate and complex activities in modern industrial society. With growing prosperity and rising wages, workers have achieved a higher standard of living. They have acquired education, sophistication

Figure 3: Flow Diagram of Recruitment Subsystem



and greater mobility. Career patterns have been changing a lot. With the change in time, workers have become more and more conscious of their rights and demands. The relationship existing in the industrial environment today is totally different from that of past and introduction to the study of IRs enumerates that it is an art; the art of living together for the purpose of production. IRs is the relations that exists in and grows out of employment.

The cell for keeping the IR information so far uses no module. Usually NALCO is going for long-term wage negotiation during which both parties do not use computer. Figure 4 depicts the flow of information in the IRs subsystem. Information on IRs in various units is collected daily through e-mail by Corporate IRs cell. The Smelter Plant unit and Captive Power Plant (CPP) unit of NALCO are at Angul in Dhenkanal district, whereas the Bauxite mine and the Alumina refinery unit are located at Damanjodi in Koraput district of Orissa.

Three categories of reports are generated from the system. The first category of reports are activities reports. The descriptive activities reports prepared are:

(i) Daily IRs Activities Report;

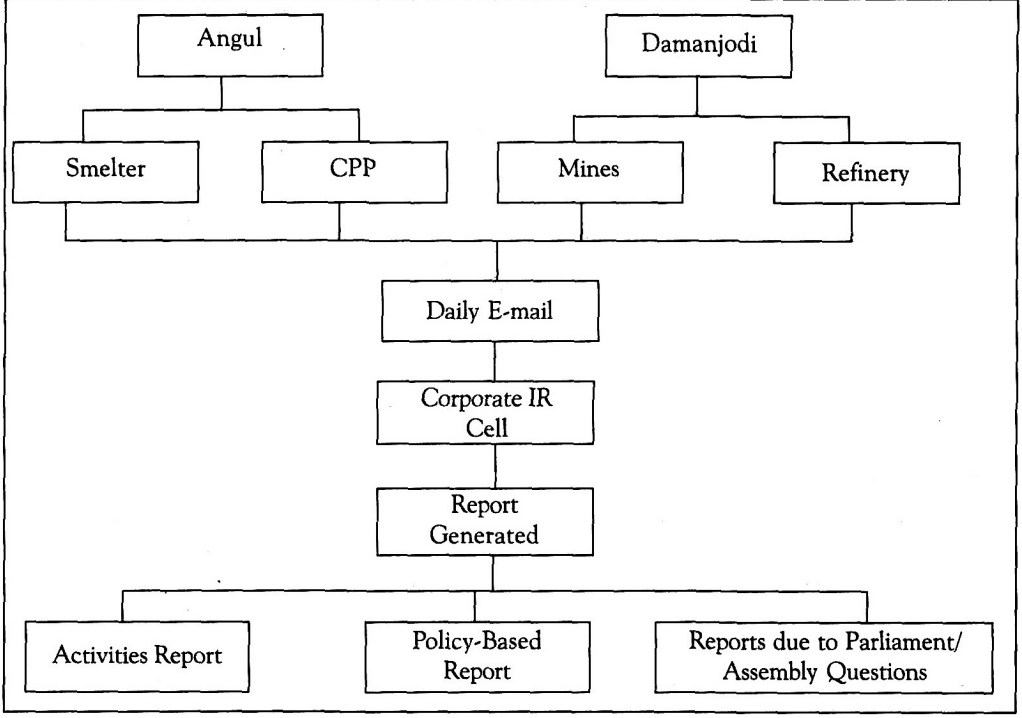
(ii) Monthly IRs Activities Report; and

(iii) Biannual IRs Activities Report.

The second category of reports are policy-based reports and the third are for Parliament/Assembly questions. Besides there are other reports like:

(i) Calender of the events on land displaced problem at Angul.

Figure 4: Present Industrial Relation System



(ii) Calender of the events on land displaced problem at Damanjodi.

(iii Calender of the events on contract labor problem at Angul/Damanjodi.

(iv) Calender of the events on IR of department employees (unit).

STRENGTH OF THE PRESENT HRIS

- Administrative and operating cost reduction by 50% (Establishment Cell and Corporate HRD).
- Administrative and operating time reduction by 50% (Establishment Cell and Corporate HRD).
- The need to print and distribute paper-based manual is eliminated by saving money on postage.
- All the organization's information is in one place; the need to refer multiple document and/or databases is eliminated.
- Report completion on time is possible.
- Cost effective, as it is in-house designed and developed.
- Better and presentable information are available.
- Generation of variety of data/reports.

WEAKNESS OF THE PRESENT HRIS

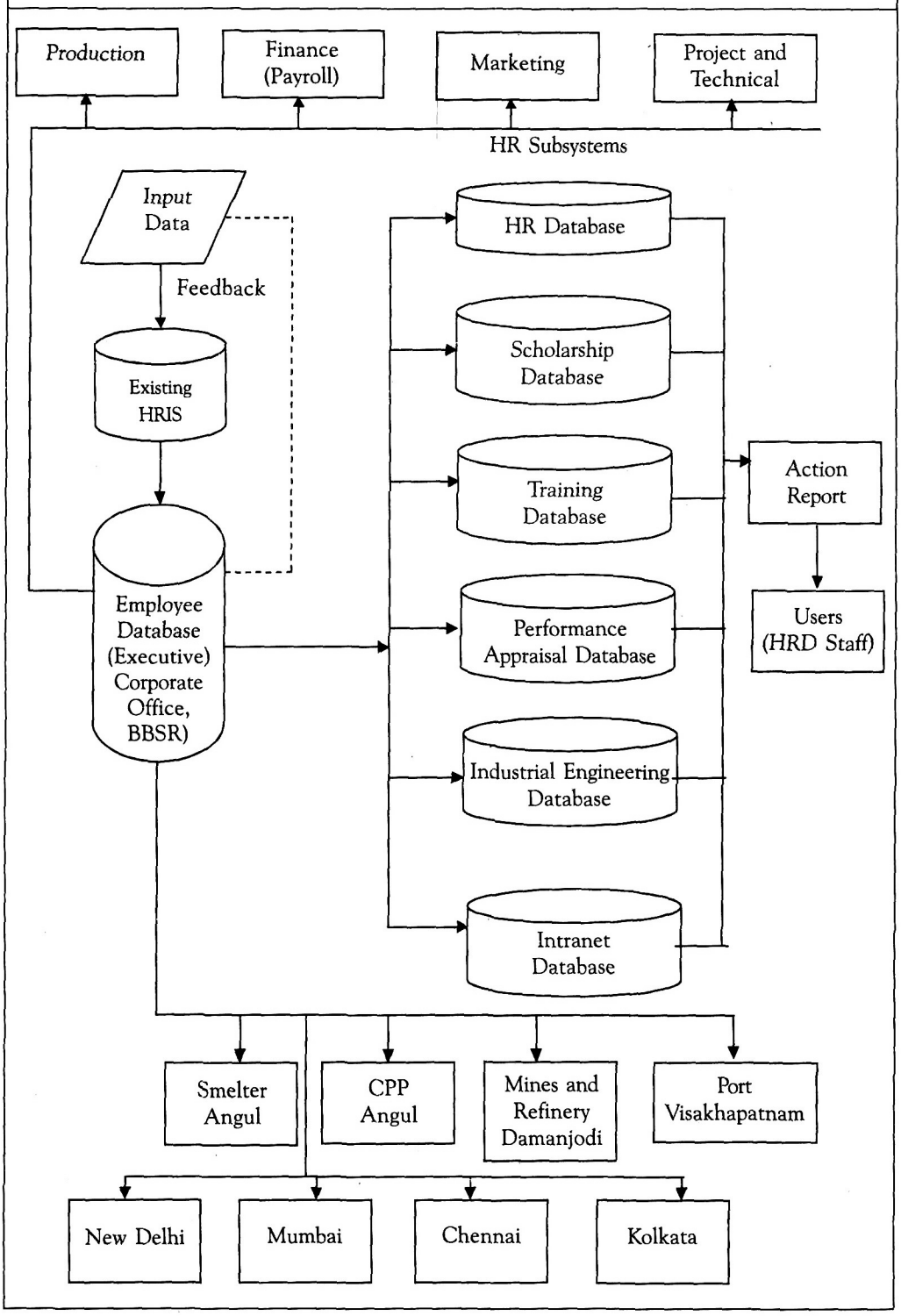
- Most of the models of HRIS are related to establishment cell and are general (basic) information about employees. But employees have no access to that information.
- No module is designed for recruitment functions.
- The module of training cell, the TIS is needed to be modified.
- Though no separate module is required for compensation management as it is available in payroll module maintained by finance department, there is no interface between payroll and HRIS. As a result the information related compensation management is not directly available in the department.
- Performance Appraisal system module is not web-based.
- Industrial engineering system module is not using any statistical tool for forecasting and other analysis purpose.
- A Monthly Information System (MIS) prepared by Corporate HRD containing the monthly HR information on various matters, is sent to the Ministry of Mines, Government of India. But the present HRIS is not helping to generate this report. For preparing this, data are collected physically from different units and cells or through e-mail which makes the process very time-consuming.
- A list of Statutory Reports and Returns are sent to different authorities by Corporate HRD Department in different intervals (monthly, quarterly, half yearly, annually, etc.), which is also not generated from present HRIS (Annexure 8).

On the whole the coverage of HRIS is not adequate and missing the integrated approach which would have checked duplication of data.

EXISTING AND PROPOSED MODELS OF HRIS IN NALCO

The existing HRIS model of NALCO (Figure 5) contain employee database of executives only. Employee-related data maintained in corporate office in Bhubaneswar is accessible to all the

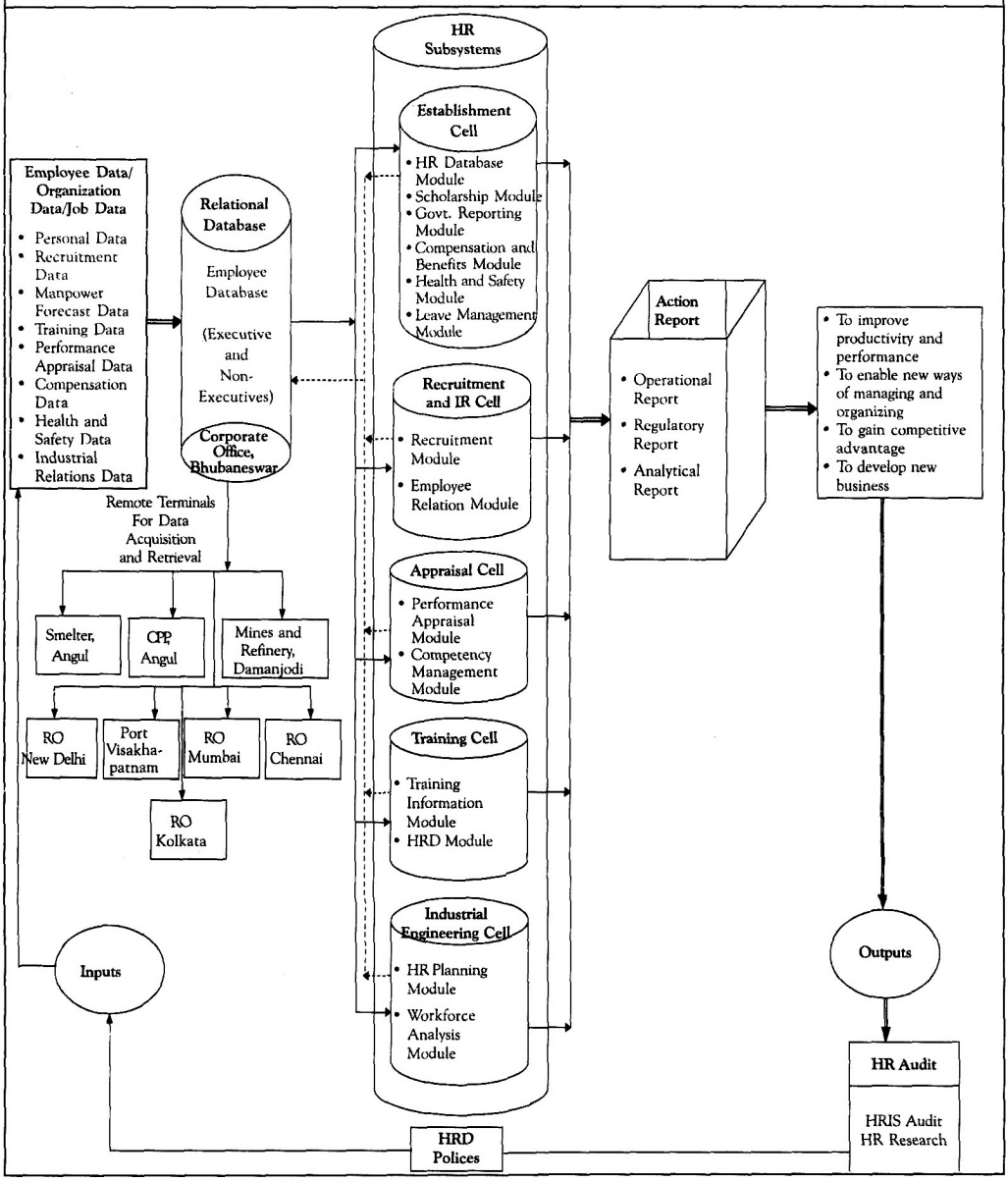
Figure 5: Existing HRIS Model of NALCO



departments, units and regional offices. Though it contains six modules, still many major HR functions are not covered. All these are working and generating reports independently, which is not accessible to other HR cell. Taking this and other drawbacks discussed earlier into account, a new model is proposed.

The proposed model (Figure 6) aims to cover employees' data of both executives and non-executives which would be stored and maintained in corporate office, Bhubaneswar. By using remote terminals, data acquisitions and retrieval shall be made by different units and regional offices. This model shows an integrated

Figure 6: Proposed HRIS Model of NALCO



HRIS which keeps all the data related to employees, jobs and organizations as inputs emanating from the HRD policies of the organizations. The integrated system covers five HR subsystems. The HRD Department of NALCO would contain all the necessary information related to all the HR functions. These subsystems having interfaced with each other enable the user to access data directly from any subsystem; thereby increasing the efficiency of the HR Department. Three types of action reports would generate from the proposed HRIS which is not possible now. These outputs of HRIS are subjected to HR audit which covers HRIS audit necessary to measure the performance of HRIS. The data stored in HRIS and the reports generated through it would facilitate HR research. The detail diagram of the proposed model is given in Figure 6.

RESULTS AND DISCUSSIONS

PERCEPTION OF THE SAMPLE RESPONDENTS ABOUT HRIS

The study deals with the Structure of HRIS which includes HRIS software, Reengineering of HRIS and Uses of HRIS.

Sample Characteristics

Table 1 shows the characteristics of sample respondents. The age of the sample is not evenly distributed. The majority (52.0%) of respondents belong to 41-50 years group, followed by 29.6% to 51-60 and 18.4% to 31-40 years group. Mostly older people are the respondents working in HRD Department. The average age of the respondents in the HRD Department is 46.9 years. Respondents working in Establishment Cell occupy 31.2%, followed by 20.8% in Recruitment and IRs Cell, 19.2% in Training Cell, 16.8% in Performance Appraisal and 12% in Industrial Engineering Cell.

Table 1 depicts that 47.2% of the respondents belong to Supervisory grade followed by Middle Management (17.6%), Junior/Lower Management (16.8%), Senior Management (12.8%), while only 5.6% belong to Top Management. It is observed that most of the respondents working in the HRD have long years of experience. As observed, 48.8% respondents have more than 11 years of experience, while 43.2% respondents have more than 21 years of experience. Only 8% of respondents have less than 10 years experience.

Majority of the respondents (87.2%) are male whereas only 12.8% are female. Table 1 shows that majority of the respondents work at Smelter unit (33.6%) of NALCO at Angul, followed by 24.8% at Corporate office in Bhubaneswar, 24% at Mines and Refinery at Damanjodi and 17.6% at CPP at Angul.

STRUCTURE OF HRIS

The second part of the schedule includes the assessment of structure of HRIS, which covers two aspects; these are 'HRIS software' and 'Reengineering HRIS' having statements related to it. The first aspect deals with the features of the present software whereas the second aspect examines the requirement for redesigning (both technical and non-technical dimensions) of the existing software. The respondents were asked to give their opinion taking into consideration the three-point scale provided, these are: Very true (Highest score: 3), Partly true (score: 2) and, Not true (score: 1).

Table 1: Distribution of Respondents According to Demographic Variables (N = 125)

S. No.	Variables		Frequency	Percent
1.	*Age*	(21-30) years	0	0
2.		(31-40) years	23	18.4
3.		(41-50) years	65	52.0
4.		(51-60) years	37	29.6
1.	*Section*	Establishment	39	31.2
2.		Recruitment and IR	36	20.8
3.		Performance Appraisal	21	16.8
4.		Training	24	19.2
5.		Industrial Engineering	15	12.0
1.	*Grade*	Supervisors	59	47.2
2.		Junior/Lower Management	21	16.8
3.		Middle Management	22	17.6
4.		Senior Management	16	12.8
5.		Top Management	07	5.6
1.	*Experience*	(1-10) years	10	8.0
2.		(11-20) years	61	48.8
3.		(21-30) years	54	43.2
1.	*Gender*	Male	109	87.2
2.		Female	16	12.8
1.	*Units*	Corporate Office, BBSR	31	24.8
2.		Smelter, Angul	42	33.6
3.		CPP, Angul	22	17.6
4.		Mines and Refinery, Damanjodi	30	24.0

To assess the respondents' opinion towards the structure of HRIS, Z-test for hypothesis testing, cross-tabulation, and chi-square test have been applied.

Available HRIS Software

It is observed from Table 2 that the software used by the department for HRIS is not meeting all the needs of the employees. The software is not as per the expectations of the department and some upgradations are necessary to improve the effectiveness of the system. But at the same time the respondents feel that the computerized HR information system in the organization is not acting as the filing cabinet, it is also helping them in analyzing the information stored in the system.

Table 2: Opinion on Available HRIS Software				
S. No.	Items	Mean	Std. Dev.	Z_C-Value
1.	Meeting all the needs	1.81	0.67	–1.74
2.	More than the expectations	1.56	0.63	–2.24
3.	Upgradation is necessary to improve the system	2.28	0.72	–0.99
4.	Acting as filing cabinet not used for analysis	1.92	0.59	–1.82
Note: Z_C at 5% significance level is –1.645.				

Reengineering the Present HRIS

From Table 3 it is inferred that the respondents are fully satisfied with the personal transaction process of the system but need additional information in the reports generated from the system. They are satisfied with the confidentiality regarding the access and distribution of information. They are satisfied with the level of training provided for employees with the use of the system. They believe that most of the respondents are aware about the capability of the system but there is a need for more hands-on-use of the system.

Table 3: Opinion on Reengineering the Present HRIS				
S. No.	Items	Mean	Std. Dev.	Z_C Value
1.	Satisfaction with personal transaction process	1.94	0.66	–1.59
2.	Need additional information from report generated	2.16	0.72	–1.16
3.	Satisfaction with privacy and security issue	2.28	0.60	–1.19
4.	Satisfaction with the level of training provided	2.02	0.73	–1.32
5.	Awareness about the capability of the system	1.89	0.74	–1.47
6.	More hands-on use of the system	2.07	0.75	–1.23
Note: Z_C at 5% significance level is –1.645.				

DEMOGRAPHIC VARIABLES AND STRUCTURE OF HRIS

As mentioned earlier, the demographic variables studied by the authors in relation to HRIS were *Age, Section, Grade, Experience, Gender and Units*. It was hypothesized that there would be significant differences among the groups divided on the basis of demographic variables regarding their perceptions of existing HRIS.

The age group of 31-40 years perceives some upgradation is necessary to improve the effectiveness of the existing HRIS (Table 4), as they need additional information from the system and wants more people to use the system. They also believe the computerized system simply replicate the filing cabinet and that information are not analyzed is true to some extent. The respondents who belong to 41-50 years of age are somehow satisfied with the confidentiality regarding access and distribution of information. The respondents belonging to 51-60 years are more satisfied with the above discussed

issue. No significant differences among various age groups were observed on six items under the structure of HRIS. Significant differences were only found in case of: present software is exceeding expectation, need upgradation, need additional information, and satisfaction with the level of training provided.

The respondents belonging to establishment section are more satisfied with the present HRIS (Table 4). This may be due to the fact that they are responsible for designing and developing the HRIS. The respondents belonging to Recruitment and IR section believe upgradation in the present system is necessary and there is a need for more hands-on use of the system probably because of the fact that no module has been designed by the system for their use. The respondents, who belong to Performance Appraisal Cell, were satisfied with the confidentiality regarding the access and distribution of information but seek upgradation in the existing system. Respondents of the training cell also require upgradation in the present system as they require additional information and more analysis feature in the system. Respondents from the Industrial Engineering Cell found the present software are meeting their need but at the same time need some upgradation to make it more effective. They are more satisfied with the training provided for the use of the system but want more hands-on use of the system. Significant differences were found among the five cells on six items under structure of HRIS. No significant differences were found in case of items, software needs upgradation, requirement for additional information, capability of the system and needs more hands-on use.

Top management, middle management and senior management people perceive the present HRIS is meeting all their need is partly true in comparison to other groups namely, junior management and supervisors. But almost all levels of respondents believe upgradation of the system is necessary to improve its effectiveness. The supervisors perceive the present system simply store the data, which is not analyzed more often. Almost all levels of employees are satisfied with the privacy and security aspect of the system, but need additional information from the system. Only the top management thinks that all the employees are aware about the capability of the system whereas the junior and senior management want more hands-on use of the system. No significant differences were obtained among the various grades on all items except awareness about capability of the system (Table 4).

Respondents having 1-10 years experience believe that the present HRIS is not up to their expectation, need additional information from the reports generated from the system and want more hands-on use of the system (Table 4). Employees having 11-20 and 21-30 years of experience, are partly satisfied with the present HRIS software and partly support the reengineering process. Groups with different work experience differ significantly on the items like it exceeded their expectation, analysis of information, required additional information, satisfaction with the level of training, and needs more hands-on use of the system.

The male employees need more additional information from the reports generated by using the present system and

Table 4: Mean and Chi-Square Values for Different Groups

Sample Divided on the Basis of Age (Years)										
Age (Years)	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
31-40 $N = 23$	1.56	1.13	2.56	2.09	1.74	2.74	2.173	1.608	1.652	2.434
41-50 $N = 65$	1.938	1.676	2.184	1.846	1.876	2.046	2.246	2.107	1.876	1.923
51-60 $N = 37$	1.75	1.648	2.216	1.945	2.189	2.0	2.405	2.135	2.081	2.108
χ^2	9.17 (0.057)	14.98 (0.005)	13.29 (0.010)	3.57 (0.467)	9.13 (0.058)	20.84 (0.000)	5.93 (0.204)	13.44 (0.009)	8.06 (0.089)	9.93 (0.042)
Sample Divided on the Basis of Section										
Section	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
Estab. $N = 39$	2.21	1.85	2.07	1.77	2.23	2.18	2.46	2.26	2.0	2.08
R.& IR $N = 26$	1.88	1.30	2.30	1.96	1.92	2.19	2.04	1.85	1.85	2.23
Pf. Ap. $N = 21$	1.67	1.67	2.38	2.05	1.95	2.05	2.43	1.71	2.00	2.21
Trg. $N = 24$	1.37	1.37	2.30	2.00	1.54	2.25	2.30	1.87	1.67	1.83
Inding $N = 15$	2.20	1.47	2.60	1.93	1.87	2.06	2.00	2.40	1.93	2.00
χ^2	31.71 (0.000)	16.64 (0.034)	11.12 (0.195)	19.72 (0.011)	28.49 (0.000)	13.02 (0.111)	21.14 (0.007)	26.42 (0.001)	13.93 (0.084)	5.62 (0.690)
Sample Divided on the Basis of Grade										
Section	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
Supv. $N = 59$	1.64	1.49	2.12	2.06	1.85	2.00	2.17	2.13	1.88	1.97
Jt. Mgmt. $N = 2$	1.81	1.57	2.28	1.81	2.05	2.24	2.24	1.86	1.71	2.38

Table 4 (Cont.)

Sample Divided on the Basis of Grade										
Section	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
Md. Mgmt. $N = 22$	2.04	1.68	2.45	1.91	2.1	2.13	2.45	1.91	1.95	1.863
Sr. Mgmt. $N = 16$	2.00	1.62	2.62	1.68	1.93	2.56	2.37	1.94	1.81	2.31
Top Mgmt. $N = 7$	2.14	1.71	2.28	1.57	2.00	2.42	2.57	2.14	2.57	2.14
χ^2	13.35 (0.100)	7.02 (0.535)	15.05 (0.058)	11.59 (0.170)	4.94 (0.763)	10.93 (0.203)	8.86 (0.354)	6.15 (0.630)	8.64 (0.017)	10.61 (0.224)
Sample Divided on the Basis of Experience (Years)										
Exp. (Years)	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
1-10 $N = 10$	1.80	1.00	2.90	1.90	1.80	2.80	2.30	1.60	1.60	2.80
11-20 $N = 61$	1.70	1.62	2.21	2.02	1.85	2.2	2.2	1.84	1.83	2.06
21-30 $N = 54$	1.94	1.611	2.24	1.8	2.07	2.00	2.37	2.31	2.02	1.94
χ^2	8.75 (0.068)	10.50 (0.033)	9.45 (0.051)	10.13 (0.038)	6.87 (0.142)	12.04 (0.017)	6.041 (0.196)	16.72 (0.002)	7.34 (0.119)	17.13 (0.002)
Sample Divided on the Basis of Gender										
Gender	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
Male $N = 109$	1.84	1.60	2.29	1.92	1.95	2.15	2.30	1.98	1.91	2.20
Female $N = 16$	1.87	1.31	2.19	1.90	1.94	1.81	2.125	2.31	1.75	1.75
χ^2	2.229 (0.328)	2.982 (0.225)	0.327 (0.849)	1.092 (0.579)	2.636 (0.268)	11.74 (0.003)	7.534 (0.023)	4.41 (0.11)	2.901 (0.234)	6.386 (0.041)

Table 4 (Cont.)

Sample Divided on the Basis of Units										
Units	Present HRIS Software				Reengineering the Present HRIS					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q5	Q6
C. O. $N = 31$	1.870	1.380	2.610	1.840	1.770	2.610	2.129	1.967	1.967	2.350
Smelter $N = 42$	1.833	1.690	2.023	2.023	2.071	1.809	2.452	2.238	2.047	1.930
CPP $N = 22$	1.450	1.730	2.040	2.000	2.045	1.863	2.320	2.270	2.040	1.860
M&R $N = 30$	1.900	1.460	2.460	1.800	1.860	2.400	2.160	1.600	1.500	2.560
χ^2	7.026 (0.318)	8.799 (0.185)	17.160 (0.009)	5.579 (0.472)	9.056 (0.170)	30.318 (0.000)	8.839 (0.183)	28.530 (0.000)	11.660 (0.142)	8.260 (0.220)

Note: The number in bracket show the significance level.

more hands-on use of the system than the female employees. For other items the scores were more or less identical. The result contained in Table 4 indicate that significant differences were observed between the two groups on the basis of gender for the items, additional information requirement, satisfaction with privacy and security issue and more hands-on use of the system.

Employees working in Corporate Office and M&R show identical score on almost all items, whereas the employees from Smelter and CPP show the same trend (Table 4). Employees working in Corporate Office and M&R require additional information from the system in comparison to employees working in Smelter and CPP. The employees working in M&R are more satisfied with the levels of training provided for using the system and believe maximum employees are not aware about the capability of the system than others. The employees working in corporate office and M&R needs more hands-on use of the system in comparison to employees belonging to Smelter and CPP. Significant differences were also obtained among four units on system upgradation, additional information requirement, and levels of training provided with the use of the system.

USES OF HRIS

The third part of the schedule contains questions relating to Uses of HRIS. There are 20 questions in the section. The respondents are asked to give their opinion taking into consideration the three-point scale, i.e., Very true (3), Partly true (2) and, Not true (1). To assess the respondents' opinion towards uses of HRIS, Hypothesis testing (Z-Test), Cross tabulation, Chi-square test and Factor analysis methods have been performed.

Opinion on Uses of HRIS

From Table 5, it is observed that the HRIS used in NALCO provides all the data in detail about employees. Data about employees are available in a centralized system. Organization is trying to have a special program for manpower planning through HRIS, which is to contain manpower turnover data helping in planning process. Appraisal information and competency possessed by employees are available in the system, which help in making comparisons of abilities and potentials across employees. Employee training profile is prepared through the use of HRIS. Training need assessment is also done by using the system. The present system helps in planning of wage and salary increases, which is otherwise a time-consuming process. It also contains the details of employees' dependents, which helps the department for distribution of benefits meant for facility members/dependents at the time of need. The system helps in leave management of employees.

Table 5: Opinion on Uses of HRIS

S. No.	Items	Mean	Std. Dev.	Z_c-Value
1.	Provide all the data in details	2.09	0.61	– 1.47
2.	Data available in a centralized HRIS	2.27	0.75	–0.96
3.	Manpower turnover data is available	2.01	0.76	–1.29
4.	Special program for MPP through HRIS	1.82	0.74	–1.58
5.	Skill inventory is available	2.19	0.61	– 1.30
6.	Experience details are available	2.30	0.74	–0.93
7.	Transfer details are available	2.33	0.77	–0.86
8.	Appraisal information are available	2.08	0.72	–1.26
9.	Comparison of appraisal is done	2.06	0.70	–1.32
10.	Competency possessed by employees are available	2.12	0.70	–1.25
11.	Matching training requirements to job positions	2.12	0.65	–1.34
12.	Training profile is prepared using HRIS	2.15	0.70	–1.19
13.	Training need assessment is done by using the system	1.82	0.74	–1.58
14.	Matching of Scale of Pay with grade is done by using the system	2.43	0.72	–0.78
15.	Helping in planning wage and salary increases	2.19	0.68	–1.18
16.	Provide regular reports on staff members and costs against budget or target	2.05	0.69	–1.35
17.	Contains details of employees' dependents	2.48	0.60	–0 .86
18.	Data on leave is available	2.28	0.72	–0.99
19.	HRIS has increased the efficiency of the HR department	2.37	0.56	–1.10
20.	HRIS has increased the effectiveness of HR functions	2.27	0.60	–1.21

Note: Z_c at 5% significance level is –1.645.

Table 6: Mean and Chi-Square Values on the Basis of Demographic Variables

Q	Age in Years				Section				Experience in Years				
	31-40	41-50	51-60	χ^2	Est	R&IR	Perf. App.	Trg.	χ^2	IE	1-10	11-20	21-30	χ^2
19	2.34	2.36	2.40	0.3000 (0.989)	2.40	2.00	2.38	2.41	27.320 (0.004)	2.53	2.5	2.16	2.5	7.93 (0.094)
20	1.95	2.28	2.29	14.625 (0.006)	2.43	2.07	2.09	2.21	19.476 (0.013)	2.53	2.3	2.07	2.4	16.16 (0.003)

Q	Grade					Gender			Unit					
	Sup	J. Mgmt	M. Mgmt	S. Mgt	T. Mgmt	χ^2	Male	Female	χ^2	C.O	Smelter	CPP	M&R	χ^2
19	2.32	2.28	2.4	2.50	2.71	6.405 (0.602)	2.2 7	2.75	7.937 (0.094)	2.55	2.24	2.3	2.47	10.28 (0.113)
20	2.2	2.1	2.32	2.43	2.85	13.50 (0.096)	2.2	2.69	16.16 (0.003)	2.29	2.36	2.2	2.2	9.451 (0.136)

Note: The number in bracket show the significance level.

Demographic Variable and Uses of HRIS

Respondents belonging to most of the categories unanimously agreed that the HRIS has not only increased the efficiency of the HR Department, but has also increased the effectiveness of HR functions by its contribution to achieve the overall objective of the organization (Table 6). It is inferred from Table 5 that respondents' opinion about the statement that the HRIS has increased the efficiency of the HR Department, is independent of age, grade, experience and unit but dependent of section and gender, whereas the statement that the HRIS has increased the effectiveness of the HR functions to achieve the overall objective of the organization is independent of grade and unit whereas dependent of age, section, experience and gender.

Factor Analysis for Uses of HRIS

Factor analysis is attempted to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables of uses of HRIS. It is used for data reduction to identify a small number of factors that explain the important uses of HRIS. Factor analysis of 20 items identified 6 factors of uses of HRIS (Table 7). The factors are: manpower inventory, performance management, leave management, career planning, man-

Table.7: (Factors of HRIS for Employees of NALCO)		
Factors	**Eigen Value**	**Variance (%)**
Manpower Inventory	3.832	19.159
Performance Management	2.381	11.906
Leave Management	1.606	8.028
Career Planning	1.358	6.789
Manpower Planning	1.323	6.615
Compensation Management	1.281	6.404

power planning, and compensation management. These factors account for about 58.90% variance in the data. All of the items under uses of HRIS have high communality, indicating that the variables within each factor have very high association among them.

The first factor called 'Manpower Inventory' accounts for the most variation (19.159%) consisting of seven variables. Eigen value for this factor is 3.832, which indicates the factor contains very high information than the other factors (Tables 7 and 8). This factor provides the maximum insights of usage of HRIS in NALCO. It indicates that the most important use of HRIS is having manpower inventory containing centralized and complete database as it is readily available, up-to-date, cost-effective, improve accuracy and greatly reduce fragmentation and duplication of data which help decision makers for quick decision.

The second important factor called 'Performance Management' accounts for 11.906% variance. The eigen value of this factor is 2.381 (Tables 7 and 8). It explains that HRIS is very much useful in managing performance of employee by easing the process of training need assessment, company appraisal data and linking it with competency mapping program. The third factor, 'Leave Management' accounts for 8.028% variance having eigen value 1.606. It indicates that HRIS is very necessary for a smooth leave management

Table 8: Factors of Uses of HRIS and the Variables Constituted the Factors		
Factors	**Variable Name**	**Factor Loadings**
Manpower Inventory	• Provide all the data in details	0.533
	• Centralized HRIS	0.619
	• Skill inventory	0.596
	• Transfer details maintenance	0.668
	• Matching grade and scale of pay	0.498
	• HRIS has increased the efficiency of HRD dept.	0.620
	• HRIS has increased the effectiveness of the HR functions	0.533

Table 8: Factors of Uses of HRIS and the Variables Constituted the Factors

Factors	Variable Name	Factor Loadings
Performance Management	• Compensation of appraisal across employees and work groups	0.611
	• Appraisal information	0.489
	• Details of competency mapping	0.606
	• Matching specific training requirement with training needs	0.553
	• Training need assessment	0.644
	• Training profile	0.401
Leave Management	• All types of leave availed and due to employees	0.599
Career Planning	• Linking experience, promotion, salary and increment	0.496
Manpower Planning	• Special program of MPP	0.613
	• Manpower turnover data	0.536
	• Planning wage and salary increases	0.480
Compensation Management	• Cost-benefit analysis	0.451
	• Benefits distribution	0.447

system, which would have been otherwise a time taking, and herculean task for the HRD department (Tables 7 and 8).

The forth, fifth and sixth factors are 'Career Planning', 'Human Resource Planning', and 'Compensation Management' respectively.

CONCLUSION

Information is vital to management. Accurate, timely and relevant information are necessary for decision-making. Being key to the employee productivity, competitive strength and corporate excellence, information are regarded as fifth organizational resource. Informa-tion forms the core of HR strategy in conjunction with the overall corporate strategy. Therefore, HRIS is vital to the success of HR function.

The HRIS of NALCO is a fully computerized system with a Database Management System (DBMS). A hybrid model of HRIS, i.e., a mix of system designs, allowing for centralization of certain functions and decentralization of others, varied management control and flexibility is followed by the HRD. Although the present HRIS has improved the overall speed and efficiency of HR functioning in NALCO, it is not able to meet all the needs of HRD.\ Reengi-neering of present HRIS is required in terms of additional in-

formation and more hands-on use of the system to make it more effective. The present HRIS has increased the efficiency of the HRD Department and has also increased the effectiveness of the HR functions by achieving the overall objective of the organization. The most important use of HRIS in NALCO is having a central and complete database.

The study results support the previous research finding that HRIS is still mostly used for administrative purpose and not for analytical ones. In-house system development decision is made by the organization to make it cost-effective but it is the main reason for NALCO HRD for delayed process. This reveals in-house development may be cost-effective and as per the need of the organization, but a very time-consuming process. The study goes with the previous research that inadequate manpower deployment is making the progress delayed. Age and experience are inversely proportional whereas level of management is directly proportional to the satisfaction with the progress of HRIS in the organization.

This leads to the conclusion that NALCO at present is using a moderately effective HRIS, which can be improved to be a sophisticated system overcoming all the drawbacks, if given the priority that it deserves.

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ANNEXURE 1

Personnel Master – Employee Database Module		
Personal No.	Qualification Status	Pers – Category
Employee Name	Diploma Status	Pers – Adder 1
Qualification	Group ID	Pers – Adder 2
Unit Code	Remark 1	Sh-Name
Seniority	Remark 2	Designation – New
Cadre	Job Code	Pay Scale Through
Grade	Designation	dpc – Date
Grade Date	Date of Joining	Date – Add
Date of Birth	Department Code	Date – Mod
Date of Superannuation	Gender	Machine – id
Date became Executive	Marital Status	User – id
Appointment Date	Blood Group	E-mail – id
Status	Hometown	
Status Date	Pers – Short Name	

ANNEXURE 2

HRM Master – The HR Database Module		
Address	Other Loan	Employment Source
Joining	Proficiency	Rotation
Dependent	Professional Membership	Antecedents
Experience Pre NALCO	Property Return	LTC Transaction
Experience in NALCO	Extra Curricular Activities	Actual Competency
Vehicle Loan	Language	HR Requisite Qualification
House Building Loan		

ANNEXURE 3

Child Master – The Scholarship Database Module		
Personal No.	Principal	Course Persued
Employee Name	Course Code	Ren. Status
Employee Designation	Course Name	Remark 1
Unit Code	Duration	Remark 2
SC/ST Category (Status)	Last Year Course	Sino
Child No.	Eligibility Status	Current Year
Child Name	Qualified Examination	Application Date
Child Status	Marks	Sanction Order No.
College Name	Amount	Sanction Order Date

ANNEXURE 3 (Cont.)

Human Resource Management (HRM) Reports

The various reports generated by using the above modules of HRIS are:

- Seniority List
- Superannuation Detail
- Ex-Qualified List
- Executive Birthday List
- DPC Seniority List
- Executive completed years
- DPC Promotion List
- Moderation Report
- Manpower List (Executives)
- DPC Promotion Letter
- DPC (Not-Qualified) List
- DPC (Non-Executive) List
- Man-Power-List (Non-executives)
- Scholarship Orders

ANNEXURE 4

Training Information System Module

Training Agency Details	Training Needed	Training Program Details
Training Conducted	Training Nomination	Training Program Header
Training Configuration	Training Occupancy	Training Program Reports
Training Faculty	Training Plan	Training Unit
Training Module Details	Training Program Attended	Training Unit Master
Training Module Header		

At present the following reports are generated from the system.

- Training profile of executives year wise containing designation, training categories, program and date, agencies or faculties and venue of program.
- Approved list of external faculty for in-house training (year wise) containing program designation and name of the institute/address.
- Approved list of external agency from external training (year wise) containing broad area of training program, name and address of the agency.
- Approval list of internal faculty for in-house training containing name of the faculty, designation, unit, areas and specialization and name of the session/program.
- Faculty biodata file.
- Training needs of executives (year wise).
- Department Procedure Manual Corporate Training Department.
- Approved training modules.
- Departmental objective, target and achievement.
- Training needs of executives for the year.
- Approval list of formats:

ANNEXURE 4 (Cont.)

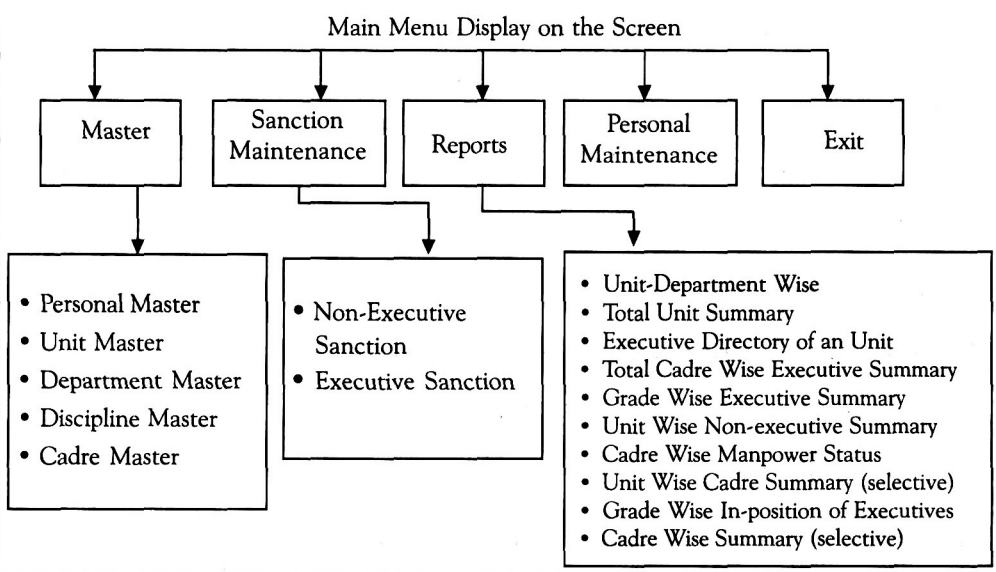
- Training calendar (In-house training plan for the year)
- Module/session
- Internal faculty day for In-house training program for the year
- External faculty day for In-house training program for the year
- External agency for In-house external training program
- Training profile of the executives for the year
- Feedback analysis
- Connective action for training program
- Training calender – Extensive training plan for the year
- Training calender – Foreign training plan for the year

- ISO-9002 quality system internal audit correspondence.
- Training calender (Foreign-training) containing program category, level, plan/attended, no. of employees to be covered in different months (quarterly review).
- Training calender (In-house) containing programs title, level, number of programs attended in different months and proposed plan/implementation (quarterly review).
- Quarterly review of annual plan of HRD program in-house training plan for the year containing program title, number of programs in different months, planned/actuals/back log and remarks.
- Training calender (external training) containing program category, level, plan/attended, number of employees to be covered in different months (Quarterly review).

ANNEXURE 5

Industrial Engineering Module

(a) Manpower Inventory



ANNEXURE 5 (Cont.)

(b) Incentive Processing (Power Builder)

User Name: Salary: _____ Password: _____ P. No.: _____

(1) Data Maintenance → Point Master → Point data to be entered first for all officers (new, apply, for save pay)

(2) Data Transfer/Into Incentive: From Payroll for Corporate Office

From File for Delhi and Kolkata Office

From Pondichery for Mumbai also

(3) Unit code : 60 for Corp. Office

: 70 for Delhi

: 80 for Kolkata

: 91 for Pondicherry

: 95 for Mumbai

(4) Group Master: If any changes in group code like addition and deletion

(5) Transaction Data Maintenance: Empty transaction (only adjustment amount to be entered) and manual entry for Pondichery and Mumbai office after receipt of the data

(6) Processing

(i) Group code updation to be done

(ii) No. group code list

(iii Incentive calculation

(7) Report: Incentive statement: Executive and Non-executives

(8) Statistical Report: Executive and Non-Executive

(9) Data Transfer: To payroll for Corporate Office

(10) Approval for FPP: Question Pro-File Name – FPP points

ANNEXURE V (Cont.)

Monthly Incentive Statement for Corporate Office, Bhubaneswar

Executive	FPP: 76.38	Working Days: 22.0

Per. No.	Name	Scale Code	Group Code	Wage (Rs.)	ALPI	AI	Leave Days	Calculated Approx. (Rs.)

Incentive Amount (Rs.)	Adjustment Amount	Total Amount	Grand Total

Incentive Earning Range	0-500	501-1000	1001-1500	1501-2000	2001-2500	2501-2550
Number of Persons	0	2	0	0	1	169

(Note: FPP: Factor Productivity Point, AI : Absenteeism Index, ALPI : Average Labor Productivity Index).

Monthly Statistical Report on Incentive Schemes

(A) Executives

Indices/Units	Mines	Refinery	Vizag	Smelter	CPP	Corp.

Chennai	Kolkata	Delhi	Mumbai	Total/Avg.

1. Total Number of Executives
2. Total Wages (B+DA) (Rs. in lakh)
3. Average FPP
4. Total Incentive Amount (Rs. in lakh) % of Wages
5. Average Per Capital Incentive Earning (Rs. in lakh)
6. Incentive Earning (Number of employees)

   Rs. 0-500

   Rs. 501-1000

   Rs. 1001-1500

   Rs. 1501-2000

   Rs. 2001-2500

   Rs. 2501 and above

ANNEXURE 5 (Cont.)

7. Average Per Capital Incentive Earning (Rs.)

Grade	
E0/E1/E2	
E3/E4	
E7/E8/E9 and above	

(B) Non-Executives

1. Total Number of Non-executive
2. Total Wages (B+DA) (Rs. in lakh)
3. Average FPP
4. Total Incentive Amount (Rs. in lakh) % of Wages
5. Average Per Capital Incentive Earning (Rs.)
6. Total OT amount (Rs. in lakh) % of Wages
7. Average Per Capita OT Paid (Rs.)
8. Average LPI for 'A' Group
9. Average AI for 'A' Group
10. Incentive Earning (Number of Employees)

    Rs. 0-500

    Rs. 501-1000

    Rs. 1001-1500

    Rs. 1501-2000

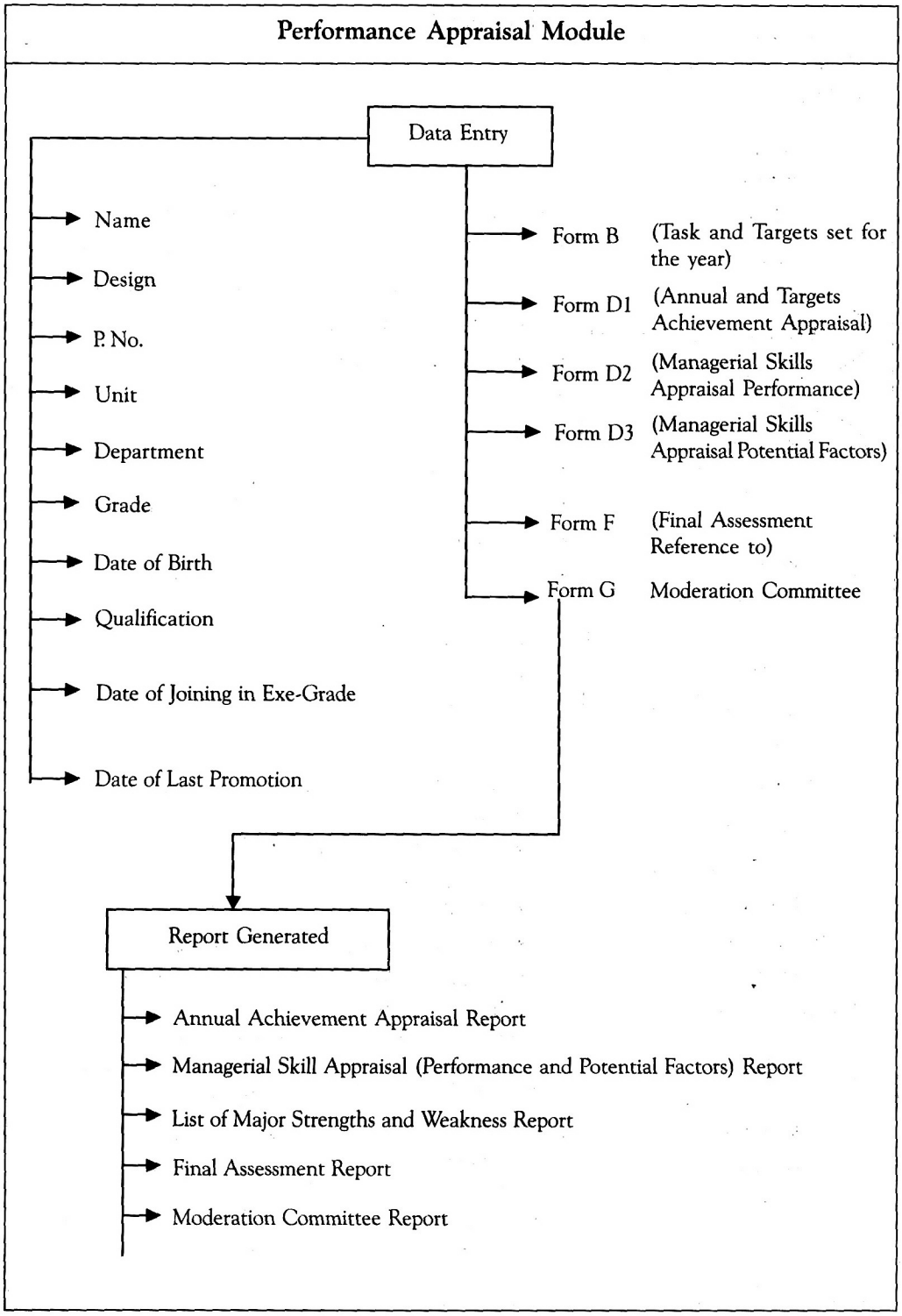
    Rs. 2001-2500

    Rs. 2501 and above

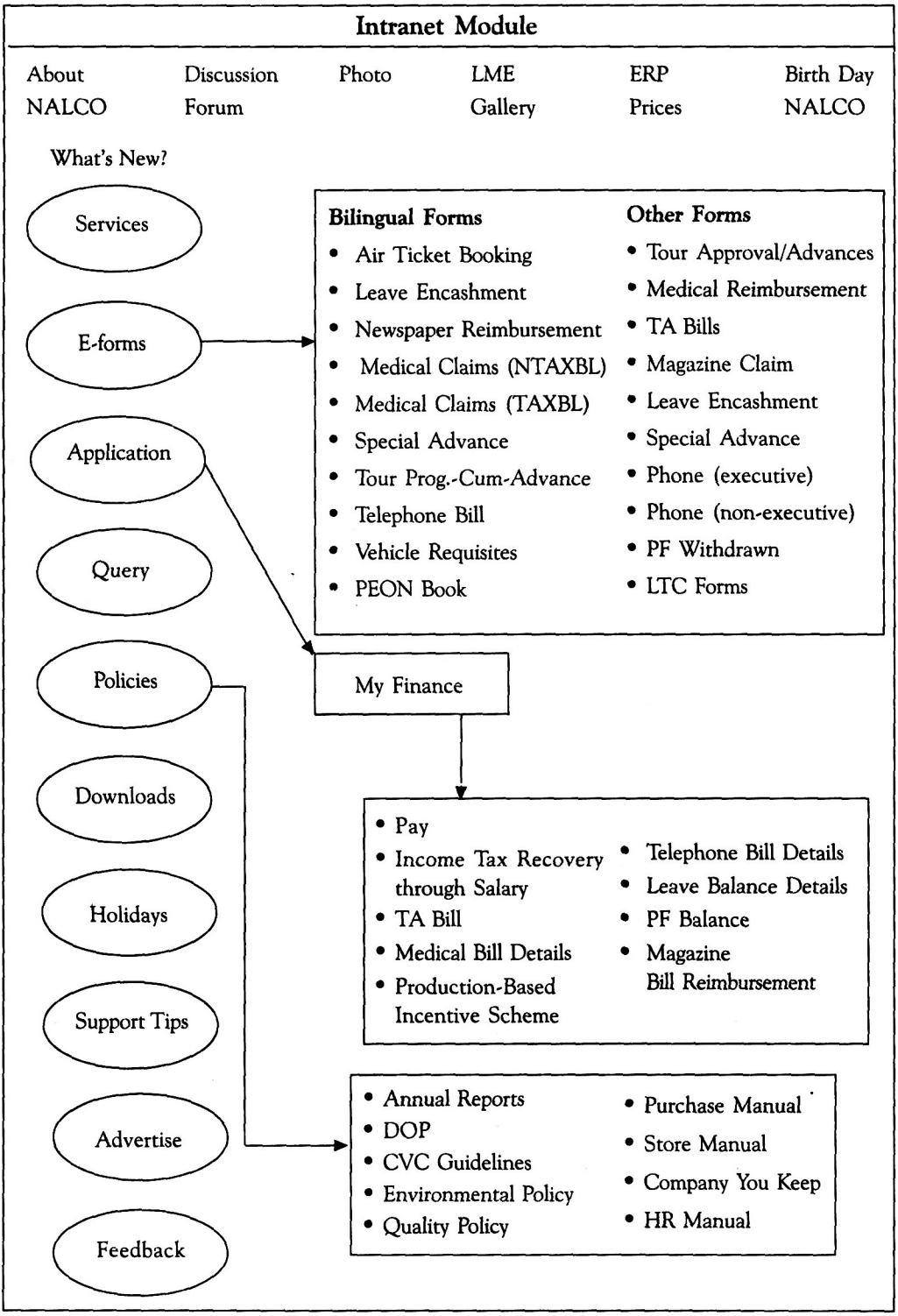
11. Average per Capital Incentive Earning (Rs.)

Grade	
W1-W2	
W3-W5/M0-M3/T0-T3/P0-P3/	
M4-M7/S0-S4/T4-T7/P4-P7	

ANNEXURE 6



ANNEXURE 7



ANNEXURE 8

List of Statutory Reports and Returns Sent to Different Authorities by Corporate HRD Department

S. No.	Name of the Section	Nature of the Return (Monthly/Qrtly./Half-Yearly/Annually	Subject Matter of the Return	The Authority to Whom the Return is Being Sent	Due Date of Sending the Return
1.	Establishment	Monthly	Status of disciplinary cases	Ministry of Coal and Mines	1st week of every month
2.	-do-	Quarterly	Monitoring of personnel matters	Ministry of Mines, Govt. of India	1st week of month following the quarter
3.	-do-	Half-yearly	Top Post	The Secretary, PESB, New Delhi	1st week of month following the half year
4.	-do-	Annually	Appointment of non-Indians to Civil Post	Ministry of Mines, Govt. of India	1st week of month following the year
5.	SC/ST cell	Annually	Annual reports regarding representation of SCs, STs and OBCs in the Central Govt. Services/Central PSUs	Ministry of Heavy Industries and Public Enterprises, Dept. of Public Enterprises, Govt. of India	March 31
6.	-do-	Half-yearly	Particulars of recruitment made and the numbers filled by ex-servicemen in category 'C' & 'D' posts	The Director General (Resettlement), Ministry of Defence	June 30 and December 31
7.	-do-	Half-yearly	Particulars of posts filled by physically handicapped persons in Group – 'C' & 'D' categories and the number of vacancies carried forward for the half-year ending June 30/December 31	Ministry of Welfare, Govt. of India	June 30 and December 31

ANNEXURE 8 (Cont.)

8.	-do-	Half-yearly	Half-Yearly Report on the implementation of the Prime Ministry's 15 Point Program for the Welfare of Minorities	Ministry of Social Justice and Empowerment (Minority Cell), Govt. of India	March 31, and September 30
9.	SC/ST Cell	Monthly	Monitoring the progress of 15 Point Program for Minorities	Director (MoU and Admn.), Ministry of Heavy Industries and Public Enterprises, Dept. of Public Enterprises, Govt. of India	10th of each month
10.	HCE	Monthly	Training and Development activities of all units	DGM (HRD) – I/GM (HRD)	3rd of every month
11.	-do-	Monthly	Corporate Training and Development for SC/ST position	DGM (HRD) – I/DGM (HRD) II	1st day of every month
12.	IE	Monthly	Manpower report for the company	CMD/Directors	12th of each month
13.	-do-	Monthly	Incentive Statistical Report for all units	CMD/Directors	30th of each month
14.	Rect./Contract Labor/IR	Quarterly	EMI-I Return	District Employment Exchange, Bhubaneswar	March 31, June 30, September 30, December 31
15.	-do-	Biennial	EMI-II Return	District Employment Exchange, Bhubaneswar	September 30
16.	-do-	Half-Yearly	ESI contribution – Form No. 6	ESI Authority, Bhubaneswar	April 30 and October 31

ANNEXURE 8 (Cont.)

17.	-do-	As and when required	Submission of declaration from in respect of new contract labor engaged – Form No. 3	ESI Authority, Bhubaneswar	Within 20 days of engagement
18.	-do-	As and when required	Accidents reports from Employer Form No. 16	ESI Authority, Bbubaneswar	On occurrence
19.	-do-	As and when required	Return on new enrollments Form No. 5	RPFC, Bhubaneswar	Within 20 days of engament
20.	-do-	As and when required	Return on leaving service – Form No. 10	RPFC, Bhubaneswar	-do-
21.	-do-	- do -	Return for nomination & declaration of contract labour – Form No. 2R	- do -	-do-
22.	-do-	Monthly	Return on monthly contribution deposit – Form No. 12A®	- do -	15th of the month
23.	-do-	- do -	Updation of Certificate of Registration Form-II	DLO, Bhubaneswar	-do-
24.	Rectt./ Contract Labour/IR	Annually	Detailed Status of the Contractor and Contract under CL (R&A) Act – Form No. XXI	-do-	-do-
25.	-do-	- do -	Renewal of Registration under OS & CE Act 1956 – Form No. 1	-do-	-do-
26.	-do-	- do -	Return on OS & CE Act 1956 regarding notice of daily hours of employees – Form No. 5	-do-	-do-

ANNEXURE 8 (Cont.)

27.	-do-	- do -	Return on OS & CE Act 1956 regarding holiday declaration – Form No. 7	-do-	-do-
28.	-do-	- do -	Return on OS & CE Act 1956 regarding payment of wages leave with wage, bonus, gratuity OT etc. – Form No. 13	-do-	-do-
29.	-do-	-do-	Return on wages and deduction from wages – Form No. IV under payment of wages Act.	-do-	-do-
30.	-do-	-do-	Return on Orissa Industrial Establishment (N&F) Holidays Act.-1969 – Form No.V	-do-	-do-
31.	-do-	Half-yearly	Return on monitoring of implementation of scheme of employees participation in Management	Jt. Secy. (IR), Ministry of Labor, Govt. of India	June 30 and December 31
32.	-do-	Monthly	Return on Non-payment statutory dues to the workers	Dy. Director, Ministry of Labor, Govt. of India	1st week of the month
Source: Establishment Cell, Corporate HRD Department					