Concept of Human Resource Information System (HRIS) Structure, Uses and Limitations

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Abstract: A properly developed information system is an immense requirement to get useful information by the HR managers for making effective decisions in organization. In changing situations of the competitive market, it is a vital challenge for the apex management to take correct decision considering anticipated changes of both the external and internal environment of the organization. The success of the management now-a-days fully depends on efficient utilization of all sorts of resources specially the most critical resource of the organization that is human resource. But an information system like HRIS is the most pertinent source of information that provides necessary inputs regarding recruitment, placement, training & development, career management, productivity and performance management by which the management strives to have the right number and the right kind of people at the right place, at the right time, to do things which result in, both, the organization and the individual receiving the maximum long range benefit. In this paper, attempts were taken to analyze structure, different approaches of developing an HRIS; its uses and limitations. Systems and software development areas are not discussed here rather conceptual and theoretical framework of an HRIS is discussed elaborately.

1.0 Backdrop

An information system is one, which is capable of storing and updating data, analyzing, retrieving and disseminating information. Therefore, it is understood that an information system would be comprehensive in holding all sorts of possible information and make those information available and useful for all sorts of prospective and respective users.

Now, about human resource information system, it can be relevantly commented that it is a system composed of HR related information. This HR information involves any qualitative or quantitative information concerning the size or characteristics of human resource or any parts of organization, the way it or any part of it functions. It also relates the employment opportunities available to those who are parts of it and their related interventions and aspirations, and which is pertinent to an understanding of signification hands or critical problems in the HR functions and the formulation of policies and programmes for resolving such problems.

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An efficient human resource information system is considered as an important tool to support the activities of decision makers and planners related to human resources of the organization. This calls for availability of reliable, comprehensive and up-to-date information for the purpose of analysing and assessing the changing HR situation, including the needs for the labour market. An effective human resource information system is equally valuable to individual employers and the private sector for assisting them in preparing 'employment plans for their organisation. Similarly, an efficient human resource information system is also useful for the workers and employers' organisation so that valuable information can be obtained regarding wage differentiates compensation matters, service condition and training needs. In broader sense, the human resource information system is the store-house of timely, reliable and useful information which can render and generate information according to the need of different types of users.

2.0 Objectives of the Paper

The main objective of the paper is to develop a theoretical structure of Human Resource Information System of an organization, and the specific objectives are as follows:

     i)   to examine different structures of an Human Resource Information System for collecting, analyzing and interpreting information on HR issues;

     ii) to analyze related sub-systems for HRIS and their uses in decision making process in organization;

     iii) to identify limitations and prospects for implementing HRIS in public organizations of Bangaldesh.

3.0 Methodology of the Study

The paper is an outcome of rigorous desk study and empirical analysis of related literatures. Gathered experience from some HRIS of public-private organizations visited earlier has been shared in this paper.

4.0 Conceptual Steps of Development of an HRIS

Human Resource Information System is a multi-pronged approach. It is an inter-related and complex system which is able to collect, process, preserve, analyze, retrieve and disseminate information for decision making related to personnel matters. Developing HRIS is a complex.

comprehensive and professional exercise. A successful development of HRIS is completely depend on logical sequences of the steps, strategic needs of the organization and anticipating changes of the HR areas in organization.

The steps of developing an HRIS for a well-organized organization are described below:

1) To determine the objectives of HRIS

2) To determine the scope and coverage of the system.

3) To identify the data and information, which is needed for the particular information system.

4) To select the sources and approaches for collecting information.

a. Identifying the sources of personal data like personal files, CVs, resumés etc.

b. Selecting approaches for collecting data like tracer approach, personnel survey etc.

c. Selecting and collecting published reports and returns of the organization as the sources of info;

d. Other sources.

5) To develop a software system with the help of system analyst considering output needed.

6) To develop necessary sub-systems.

7) To establish Central Data Bank with necessary IT infrastructure and technical manpower.

8) To establish data revising period and other retrieving method; determining periodic order of the information.

9) To establish electronic information dissemination system

a. WEB PAGE/WEBSITE

b. NETWORKING

c. INTRANET

5.0 Approaches to Development of HRIS

For developing an HRIS, it is very much relevant to select a correct approach. Two types of approaches are available in Management

Information System and one of them to be selected for development of HRIS considering the strengths and weaknesses of the organization concerned. For strong and well-structured organization where users' proficiency is high can follow the Traditional System Development Life Cycle Approach. It is the approach, where every stage of development is deliverable and well-defined. At the time of development of the system, involvement of the users and managers is very intensive and highest. In this approach, both the management and developer have a duty to verify time to time the needs and outputs of the desired system.

Another system development approach is called Prototype System Development Approach which is developed as a Model System for the organization and then the working prototype is being developed gradually by the developer as per needs of the organization.

6.0 Stages of the Application System Development Life Cycle

It is imperative to select a suitable approach for developing PMIS for an organization. For a well structured organization, Traditional System Development Life Cycle Approach is appropriate one. It is a computer based micro system; sometimes it is seen as a sub-system of Human Resource Information System (HRIS). The organization can follow the Traditional System Development Life Cycle Approach when preparedness of the organization is upto the mark and management's attitude is pro-ICT. The stages of the Application System Development Life Cycle are described below:

a. Definition Stage
  i. Proposal Definition
  ii. Feasibility Assessment
 iii. Information Requirement Analysis
  iv. Conceptual design

b. Development Stage
  i. Physical System design
  ii. Physical Data Base Design
  iii. Programme Development
  iv. Procedure Development

c. **Installation and Operation Stage**

   i.   Conversion

   ii. Trail Run of the System

   iii. Operation and Maintenance

   iv. Post Audit

Flow Chart of Development of an Application System Development Life Cycle
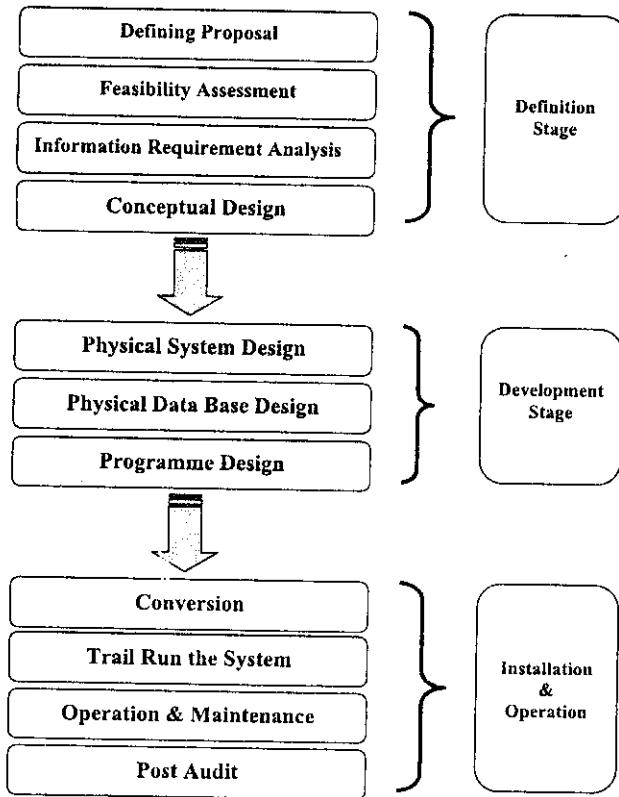
7.0 Byars and Rue Model for HRIS

HRIS is usually a part of the organization's larger management information system (MIS). It can be developed either by manually or by computerization. But computerization has its own advantage of providing more accurate and timely data for decision making. There are one more

approaches and techniques for system development. An approach of developing HRIS is described elaborately by Loyal L. Byars and Lesile W. Rue (1984) in their book named Human Resource Management. The authors described 14 steps in developing the system. An adapted form of the approach is outlined below where the specific procedures in developing and implementing an HRIS are described elaborately.

Step 1: *Inception of Idea*

The idea for having a HRIS must originate somewhere. The originator of the idea should prepare a preliminary report showing the need for a HRIS and what it can do for the organization.

Step 2: *Feasibility Study*

Feasibility study evaluates the present system and details the benefit of a HRIS including cost benefit analysis and efficiency-effectiveness of the desired output.

Step 3: *Selecting a Project Team*

Once the feasibility study has been accepted and the resources allocated, a project team should be selected. The project team consist of an HR representative who is knowledgeable about the organization's personnel functions and activities and about the organization itself and representative both management information systems and payroll. As the project progresses, additional clerical people from the HR Department can be included.

Step 4: *Defining the Requirements*

A statement of requirements specifies in detailed exactly what the HRIS will do. A large part of the statement of requirements normally deals with the reports that will be produced. Naturally, the statement also describes other specific requirements. This typically includes written descriptions of how users collect and prepare data, obtain approvals, complete forms, retrieve data and perform other non-technical task associated with HRIS use. The key here is to make sure that the mission of the HRIS truly matches management need for a HRIS.

Step 5: *Vendor Analysis*

This step determines what hardware and software are available that will meet the organization's actual need for the lowest price. This is a difficult task. The best approach is usually not to ask vendors if a particular

package can meet the organization's requirement but how it will meet those requirements. The result of this analysis will determine whether to purchase and 'off-the-shelf' package or develop the system internally.

Step-6: *Package Contract Negotiation*

After a vendor has been selected, the contract must be negotiated. The contract stipulates the vendor's responsibilities with regard to software, system development, installation, service, maintenance, training and documentation.

Step-7: *Training*

Training usually begins as soon as possible after the contract has been signed. First, the members of the project team are trained to use the HRIS. Towards the end of the implementation, the HR representative will train managers from other departments in how to submit information to the PIS and how to request information from it.

Step 8: *Tailoring the system*

This step involves making changes to the system to best feed the needs of the organization. A general rule of thumbs is not to modify the vendor's package, because modifications frequently cause problems. An alternative approach is to develop programs that augment the vendor's programes rather than altering it.

Step-9: *Collecting the data*

Prior to start-up of the system, data must be collected and entered into the system.

Step 10: *Testing the system*

Once the system has been tailor to the organization's needs and the data entered, a period of testing follows. The purpose of the testing phase is to verify the output of the HRIS and to make sure it is doing what it is supposed to do. All reports should be critically analyzed for accuracy.

Step-11: *Starting up*

Start-up begins when all the current actions are put into the system and reports are produced. It is wise to attempt start-up during a full period so that maximum possible time can be devoted to the HRIS. Even though the system has been tested, some additional errors often surface during start-up.

Step-12: *Running in parallel*

Even after the new HRIS has been tested; it is desirable to run the new system in parallel with the old system for a period of time. This allows for the comparison of outputs of both the system and examination of any inaccuracies.

Step-13: *Maintenance*

It normally takes several weeks or even months for HR people to feel comfortable with the new system. During this stabilization period, any remaining errors and adjustment should be handled.

Step-14: *Evaluation*

After the HRIS has been in place for a reasonable length of time. the system should be evaluated. It is HRIS right for the organization and it is being properly used.

8.0 Development of Input Modules for HRIS

Development of HRIS is a technical exercise. It is important to determine the desired out put from the system at the very beginning of the exercise. The desired out put will give clue what would be the correct input to have the desired out come of the system. The data inputs may be qualitative and quantitative or both. Possible sub-systems within the system can be outlined before starting the development of the system. For building a good and effective sub-system some additional input may be required. The input data and information will be on personal data, recruitment data, job history, performance data, training and development data, accounting data and miscellaneous data.

The details Modules on above areas are described below:

Module-1: Personal Data

> Name of the employee
>
> Father's name
>
> Mother's name
>
> Marital status
>
> Family History
>
> Date of Birth
>
> ID no

Batch no

Name of Cadre

Addresses

Module-2: Recruitment History

Date of joining

Date of Encaderment

Date of Confirmation

Serial no in combir ed gradation list

Position in Batch

Job preference

Module-3: Job History

Placement data

Transfer data/ deputation data/ lien data

Prior Experience

Jobs, performed earlier in different positions

Data on skills and specializations

Module-4: Performance Data

Numbers of ACR

Comments of Controlling/Reporting officers

Names and ID numbers of RIOs/CSOs

Job wise performance records

Reward for outstanding performance

Adverse comments (if any)

Average PA position on last 3 years

Module-5: Training & Development

Educational Attainments

Technical Qualifications

Titles, Durations, Institutions of Trainings

Performance in Trngs: Grade, Number. Position

Info of Foreign Training

Training requirements etc.

Module-6: Accounting Data

Salary grade

Basic Scale

Per annum increment

House allowance

Medical allowance

Training allowance

Conveyance allowance

GROSS SALARY

Income Tax deduction

Benevolent fund deduction

Group insurance deduction

House Loan deduction

Car loan deduction etc

### DRAWING AMOUNT

Module-7: Miscellaneous Data

Departmental Proceeding (if any)

Data of Fringe Benefit

Data on Compensation

Health Status

Serious Bad Habits

Extra Curricular Activities

9.0 Development of HRIS and Related Sub-Systems

The System must have required number of subsystems. Since an HRIS is a tool for managerial decision-making, it must have a focus on various sub-systems. The inbuilt subsystem of the HRIS will be able to provide useful information for taking decision on selection and recruitment,

training and development, career planning, payroll management and human resource planning for the organization.

A Flow Chart of Human Resource Information System
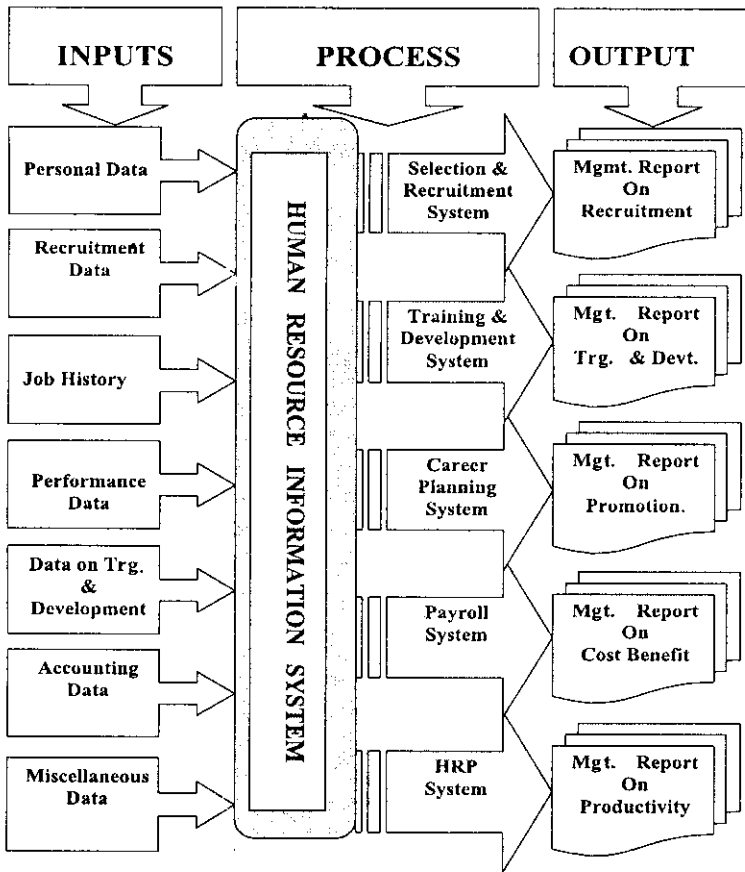
Under the proposed HRIS, the following sub-systems may be incorporated:

    a. Selection & Recruitment Sub-system

    b. Training & development Sub-system

    c. Promotion Sub-system

    d. Performance Appraisal Sub-system

    e. Career Planning Sub-system

    f. Productivity Sub-system

10. Desired Outputs

It is pertinent to have an idea of desired out put from the HRIS. From the HRIS. it is possible to have some important managerial reports and returns which may assist the managers of strategic level to take operational and strategic decision for the organization. To have the desired out puts in the form of managerial reports. it is imperative to have sufficient interfaces for the system so that concern parts and related clients can get access to have information and put necessary inputs to the system. These interfaces will be used as important portals of the system under the Intranets and Extranets of the organization. The proposed subsystems of the HRIS are described below:

Proposed Sub-system	Desired Output
Selection & Recruitment Sub-system	» Management reports on recruitment, placement, recruitment needs, attrition and retrenchment rate and trend etc.
Training and Development Sub-system	» Management report on training needs, training information etc. » Report on training performance, training records, list of prospect nominees for net course etc.
Promotion Sub-system	» Management reports on gradation and seniority list, qualification score for promotion, eligibility list of promotion etc.
Performance Appraisal Sub-system	» Management reports on performance targets, performance appraisal, and performance improvement plans etc.
Career Planning Sub-system	» Management reports on career development, career plan, succession plan, individual career prospects etc.
Productivity Sub-system	» Management reports on productivity, individual and team performance etc.

A Flow Chart of the Necessary Interfaces and User's Portals of the HRIS
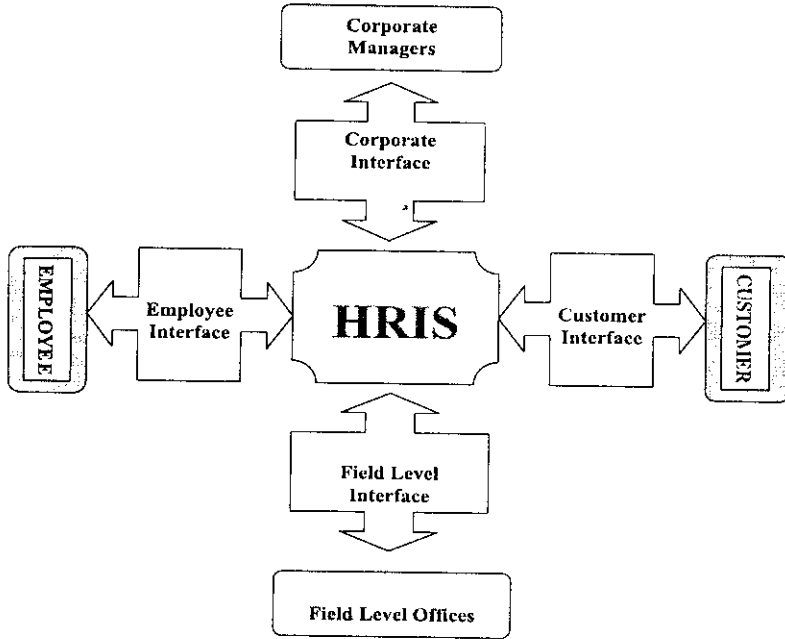
11. Benefits of HRIS

HR managers can get a number of benefits from a well-organized HRIS. It is an important tool for taking HR decisions of day to day and strategic in nature. Nankervis et al. (2002) made an inventory of benefits generally one HR manager can obtain from an HRIS:

   a. improve planning and program development using decision support software

   b. faster information processing and improved response times

   c. decreased administrative and HR costs

   d. accuracy of information

   e. enhance communication at all levels.

Apart from above mentioned benefits a visionary HR manager can use it as an important tool for planning HR strategically. As Professor Boudreau mentioned:

> *"After all, more than any other resource, the 'human resource' embodies information-based characteristics such as knowledge, skills, capabilities and competencies. Thus, the value of the 'human capital' of organizations, and the method of managing it, depend on understanding and using information".*

Actually, as a strategic tool, HRIS can be used to contribute to formulate, modify and evaluate HR plans, both in terms of qualitative and quantitative.

12. Macro-Micro Level Limitations in Implementation of HRIS in Bangladesh

For preparing HRIS the organization itself and macro level environment should be assessed. To assess preparedness and readiness a professional study must be performed. Without having a favorable ICT condition, the initiative to develop a HRIS and operation of the system must be hampered and sustainability of the system will be under the unforeseen threats. The existing limitations of macro and micro levels are described below:

i. Inadequate ICT Infrastructure within the government offices

In government offices, the use of computers is not up to the mark. Inadequate number of computer that is largely unused and under used in government offices is one of the main problems. Sometimes computer is used as a show piece in the table of a big boss. A few number of government offices have their computers connected with internet. Some government offices and training centres established LAN but due to inadequate number of expert user the LAN is not properly used in government organizations.

ii. Inadequate access to ICT by government officials

In public sector offices, government budgetary provisions are not friendly to procure and acquire ICT. The Computers found in government offices are generally donated by development projects and for its valuable price it was given place on the big table of the big boss. The desk level officers are considered for having access to computers though young officers are more competent and ready to accept new technology. Not only that, incase of nomination of foreign trainings on ICT the senior officers of line management are given priority rather than young professional of staff managerial areas.

iii. Lack of Awareness of government officials about ICT

The main obstacle to develop information system is the backdated mindset of the government officials. Especially the benefits and outcomes of the information systems are being failed to perceive by the senior

government officials. Due to proper knowledge on ICT they are generally failing to forecast the anticipatory needs of information systems. Sometimes the organizations have to face resistance due to the reasons mentioned below:

i. they don't like to change their traditional working methods;
ii. they think computerization may cause a huge redundant of manpower;
iii. they usually ready to perceive a computer only for typing purpose.

iv. Lack of incentive package for government officials

In public sector, there is no special incentive package for IT specialists rather they are considered as like as generalist people. Not only that sometime the generalist officers are shouldering the responsibilities of IT section and lack of knowledge and motivation they are sufficient to destroy all the system of IT establishment.

v. Inadequate training programmes

Since the idea of automation and HRIS are new so it is the only way to disseminate the concept to the users and experts is training. But training proramme is not adequate in terms of period and relevancy. Inappropriate nomination of participants and motivated programmes are the main problems in ICT training. The training components of ICT and other ICT related projects are often neglected or unimplemented by the authority.

vi. Unstable tenure of government officials

Frequent and unpredictable transfers of government officials are the common problems in public sector management. It causes the continuity of ICT projects. When an IT champion transfers from one station, it is found that absence of another competent person the running IT project became abandoned.

vii. Inadequate capacity of human resources

For a country of more than 140.6 million (Statistical Pocket Book 2007 of Bangladesh) people, the number of IT-trained people in the country is meagre with about 1,630 incoming students at public universities, 2,370 at private universities and 1,120 at polytechnics. On top of that, most of the well-trained IT graduates of the country leave since there is a little scope for them in Bangladesh in terms of professional development. There is no well-planned target to develop IT specialist considering

growing expansions and need of this sector.

viii. Failures of PACC

Public Administration Computer Centre is the only Central HR Information System of the country. But the PACC is completely failed to disseminate its functional and organizational philosophy to the micro organizations of the country. The name of the PACC is not correct and it should be modified as Central Human Resource Information System (CHRIS) or Public Administration Information System (PAIS). As a pioneer organization in Public Administration Information System, it should have a rule to prepare model HRIS for public sector organizations.

ix. Failures of Training Institutes

Under the instructions of National Training Council, every training institutes of public sector of the country prepared module on Computer Applications. It is completely skill based and operating packages are the main coverage of the module comprising with Microsoft Word, MS Excel, MS Power Point, MS Access. Some institutes cover Internet and Websites operation and browsing systems. But for ICT and Information System the training institutes must need to include MIS, E-governance, Office Automation, Intranet, Extranet, LAN, HRIS and E-commerce etc. It is needless to mention that E-governance is, now-a-days, considered as a strong component of good governance. So, all the training institutes of public sector should have a role to develop HR so that they can contribute for developing and operating HRIS effectively. But lack of proper vision and mission of training institutes regarding ICT and MIS, it is not yet possible to create proper skills in these issues.

13. Recommendations

Implementation of HRIS is not a one shot exercise rather it is a strategic option to be taken by the organization. Integration of decision-making process with the HRIS is the most imperative step for the organization and management apex as well. So, better implementation of HRIS in organization depends on pre-planned initiatives of the authority. In this line some strategic recommendations are extracted bellow:

a. Re-orientation of training on ICT

In public sector, training on computer literacy and skills are almost compulsory in core courses. But weakness of the training on computer is

not to give emphasis on MIS, office automation, LAN, intranet or extranet etc. Lack of proper example or demonstration the ideas on enormous potentiality of the MIS or HRIS or office automation or e-Governance is not discussed properly in training session. The training on computer is almost based on operating systems mainly on MS Word, MS Excel, Power Point etc. So, ICT training programs should be re-oriented to facilitate a thoughtful, positive attitude and outlook towards ICT, MIS and e-Governance.

b. Devolve more decision-making authority to lower levels

In Bangladesh the governance system is over centralized and based on bureaucracy centric. Many government officers and offices of lower levels have no sufficient amount of work and responsibilities. Information System allows for decentralization of governance through easy sharing of relevant information and documents. The government should devolve sufficient financial and administrative authority to local level offices so that they can be enabled to prepare HRIS and take decision on own affairs independently.

d. Business process re-engineering

Re-integration and business re-engineering is two important issues to be addressed before thinking on MIS and HRIS. After re-organizing internal and external communication systems necessary portal and interfaces to be opened so that all the sub-systems can get access to information. So, in planning HRIS for different offices the Government should seriously explore opportunities for better integration and sharing of resources and knowledge among related government offices.

e. Create ICT infrastructure throughout the government departments

Expansion of Information System depends on an adequate level of ICT infrastructure throughout the government. It is almost impossible to step towards the area of Information System if the computers are remaining in the position of stand-alone (that is not connected with intranet, extranet, LAN or web-portals etc.). There should be plans for computers to be connected internally (intranet) in offices through local area networks, and in turn to be inter-connected with other relevant offices (internet) through a wide area network (WAN).

f. Set up an ICT Resource Centre

The government should take steps to set up ICT Resource Centre that would serve as a think tank and policy research organization on PIS ad other computer-based management programmes. The Centre should include representatives from the government, the private sector, and the academic community. Its responsibilities may include, inter alia:

- conducting Research on HRIS related issues.

- conducting training, on advance management and techniques of decision making through HRIS. (Management Information System)

- monitoring HRIS initiatives in the country, evaluating progress and recommending actions.

- keeping track of best practices around the world.

- developing plans for HRIS, PIS, E-Governance technological architecture and choice of technology based on international benchmarks.

- developing HRIS prototype for public sector organization; for example the ICT resource centre can develop model HRIS for School Management Info System (SMIS).

- conducting needs assessments for HRIS in different government offices.

- serving as a meeting place and repository of information for government chief information officers (CIOs).

14. Conclusion

Information technology, especially through the increasing use of organizational intranets and HRIS enable more HR information to be collected and processed more comprehensively and with greater accuracy and speed. HR managers can take opportunities to have access and use of necessary information for taking prompt and correct decisions. It is an effective tool to take quality decisions and its implementation as well as analysis of HR interventions. A properly designed HRIS can provide an open-door access to employees, stakeholders, clients and customers and other interested parties which ultimately results a transparent, efficient and participative human resource management.

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