

A PROTOTYPE OF INFORMATION TECHNOLOGY BASED HUMAN RESOURCES SYSTEM

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ABSTRACT

Human Resources System (HRS) is a network of inter-related processes. In the past years, the personnel recruitment process has been, largely, considered very critical and attended to by the Human Resources Personnel (HRP) at the expense of the other processes such as personnel development, welfare and productivity, and the joint relationships of these to the cost and benefits of the investment portfolio of corporate organizations. In recent times, the Human Resources (HR) function is gradually moving from the routine type to strategic role which involves the re-engineering of all employment processes using Information Technology (IT). In this paper, we propose a prototype of HRS with emphasis on personnel procurement. The prototype is developed and tested in a LAN environment which is characterized by a Compaq Proliant as the server machine, eight Compaq Deskpro 2000 as workstations and Microsoft NT Backup as the distributed operating system. The software packages used for the development

of the system are Microsoft Access Database Management System and Visual Basic Application Language. The primary goal of our research is to enhance the productivity of the HRP, thereby improving the productivity of the corporate organization they serve.

1. INTRODUCTION

Over the years, the personnel recruitment in corporate organizations has been based, largely, on the traditional unstructured interview method. The psycho-analytical or psycho-metric test method which provides the ground for the assessment of the knowledge acquired by both study and experience of applicants for jobs is currently being adopted by corporate organizations world wide. The psycho-metric test is concerned with the assessment of applicants' personality. Among the decision variables that may be considered in the assessment are personality questionnaires, measurement of verbal and numerical skills,

one-to-one interviews, panel interviews and role playing designed to simulate workstation. For example, applicants may be asked to stand in for a fictional manager who is sick, sort through the manager's bulging in-tray, give priorities to the problems and provide written solutions within a given period, say, three hours, preside over some fictional meetings and, perhaps, write strategic plan. The performance of the applicants can be rated by a team of assessors. The psycho-metric test creates or elucidates the profile of each applicant, pin points his or her strengths, skills, talents, flaws and weaknesses. The test, indeed, helps to determine whether an applicant has the right attributes for the role required for the job duties and how well individual applicant will assimilate with colleagues and corporate culture and tradition.

With the persistent lull in the economic activities of every nation, world wide, shrinking the job opportunities in the public and private sectors, the adoption of the psycho-metric method of personnel recruitment is desirable. The rate of growth of the development of a nation depends, largely, on the quality of the crop of the management team that are charged with the responsibility of formulating policies, providing strategic plan, making decisions, monitoring of operations and controlling of operations. It is obvious that every nation in the world is currently being hit by serious economic, social and political doldrums. The corporate world requires managers that possess the ability to reason out things in a multi-dimensional way and be able to draw conclusions for decision making. It is noted that a multi-dimensional system is often characterized by a large number of decision variables and the combinations of such decision variables.

In [Colin 1998], it is recognized that

Human Resources Personnel (HRP) are becoming more strategic by doing the following:

- a. Developing a deep understanding of people's productivity and how this contributes towards organizational goals.
- b. Having expert knowledge of all employment cost and the contribution they make to profitability.
- c. Ensuring that the organization has full skills inventory and skills acquisition/development process.
- d. Putting comprehensive HR planning processes in place to build an understanding of business vulnerabilities and opportunities.

It is recognized, too, in [Colins 1998] that the only choice for the HR function to make a transition to a strategic role within any corporate organization involves learning much more about how Information Technology (IT) can help both the HR function and the rest of the corporate organization. The orientation involves the following:

- a. Re-engineering of all employment processes using IT automation wherever practical, while ensuring that the end result provides additional added value to the customers and does not result in additional work for the line managers.
- b. Re-engineering to ensure that HRP are not involved in the routine of running employment processes; rather, the role should be of employment process design and audit.
- c. Recognizing that a change in the role of the HR function directly affects the role of the line manager and that the bid to successfully re-engineer both roles and processes will mean developing the line managers' use of HR information in planning and managing people.

In this paper, we report on the first phase of our research work on the role of IT in Human Resources System (HRS) sponsored by the First Bank Nigeria Plc. endowed Chair of Computer Science, occupied by the first author. The first phase is concerned with the development and test run of an IT based personnel recruitment system. The role of IT in personnel recruitment is particularly relevant to the needs of corporate organizations because of the overbearing efforts the HRP puts on it at the expense of the other components of HRS. The proposed system has as its subsystems a knowledge base, inference engine and decision support engine. The choice of the subsystems is informed by the fact that the automation of the combinatorial analysis of HRS decision variables is not likely going to yield meaningful and realistic results that could meet the corporate objectives. Moreover, the mathematical and algorithmic procedure for the combinatorial analysis of large decision variables may assume an exponential growth, thus making computation in real time explosive. The system is menu driven and provides mechanism for intelligent and interactive sessions between it and the user, that is, the HRP. The ultimate objective of the proposed system is to enhance the performance of the HRP.

Section 2 of the paper reviews the conventional method of personnel employment process. The framework for IT based HRS where emphasis is on the personnel recruitment is presented in Section 3. The case study of the framework using the knowledge of sample applicants, jobs and corporate organizations is presented in Section 4. Some conclusions are drawn in Section 5.

2. ANALYSIS OF PERSONNEL EMPLOYMENT PROCESS

In corporate organizations, many plans can be carried out by the HRP among which are the strategic plan, human resources plan and personnel employment plan. The interrelationships of the three types of plan stated above are conceptualized in Figure 2.1. The human resources management involves planning, organizing, staffing, directing, coordinating, reporting and budgeting [Adebayo 1991]. The human resources management model commonly used in corporate organizations is conceptualized in Figure 2.2.

The major goals of human resources plan are the following:

- a. Estimating the future demands for employees.
- b. Comparing the expected demand with the current workforce.
- c. Determining the shortages based on organizational objectives.

The personnel employment planning process is conceptualized in Figure 2.3. When the demand and supply forecast has been made and compared, the management tend to take the decisions on whether to retain, reduce, increase or redistribute the current human resources. The decision to recruit new employees is often based on the demand analysis coupled with the consideration of the organization's functional objectives, statutory responsibilities, job duties, budget and availability of infrastructure such as office space, utilities, job tools and so on. The personnel recruitment process is conceptualized in Figure 2.4.

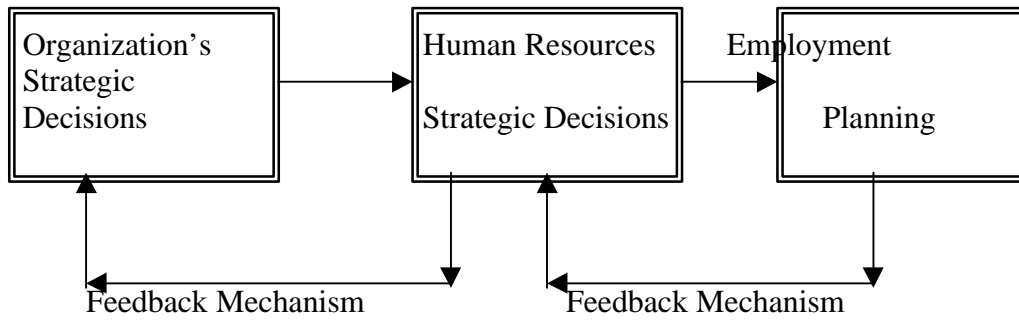


Figure 2.1 – Gross Representation of Personnel Employment Process

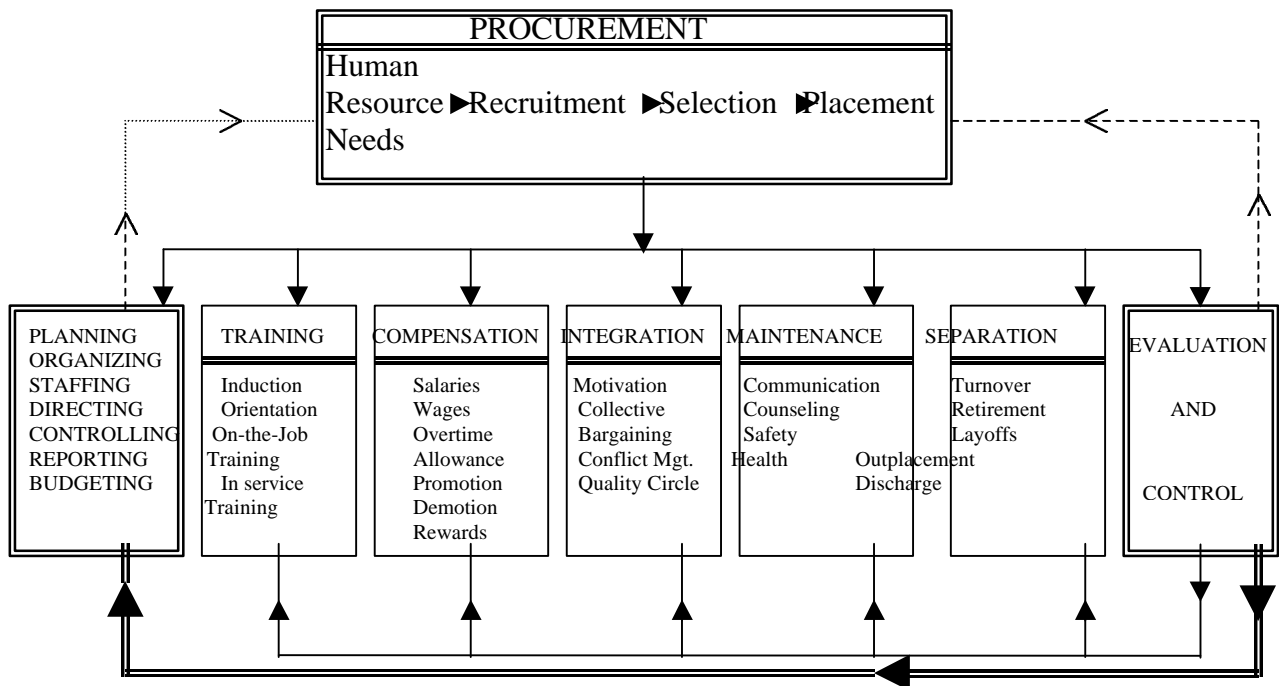


Figure 2.2 – Human Resources Management Model

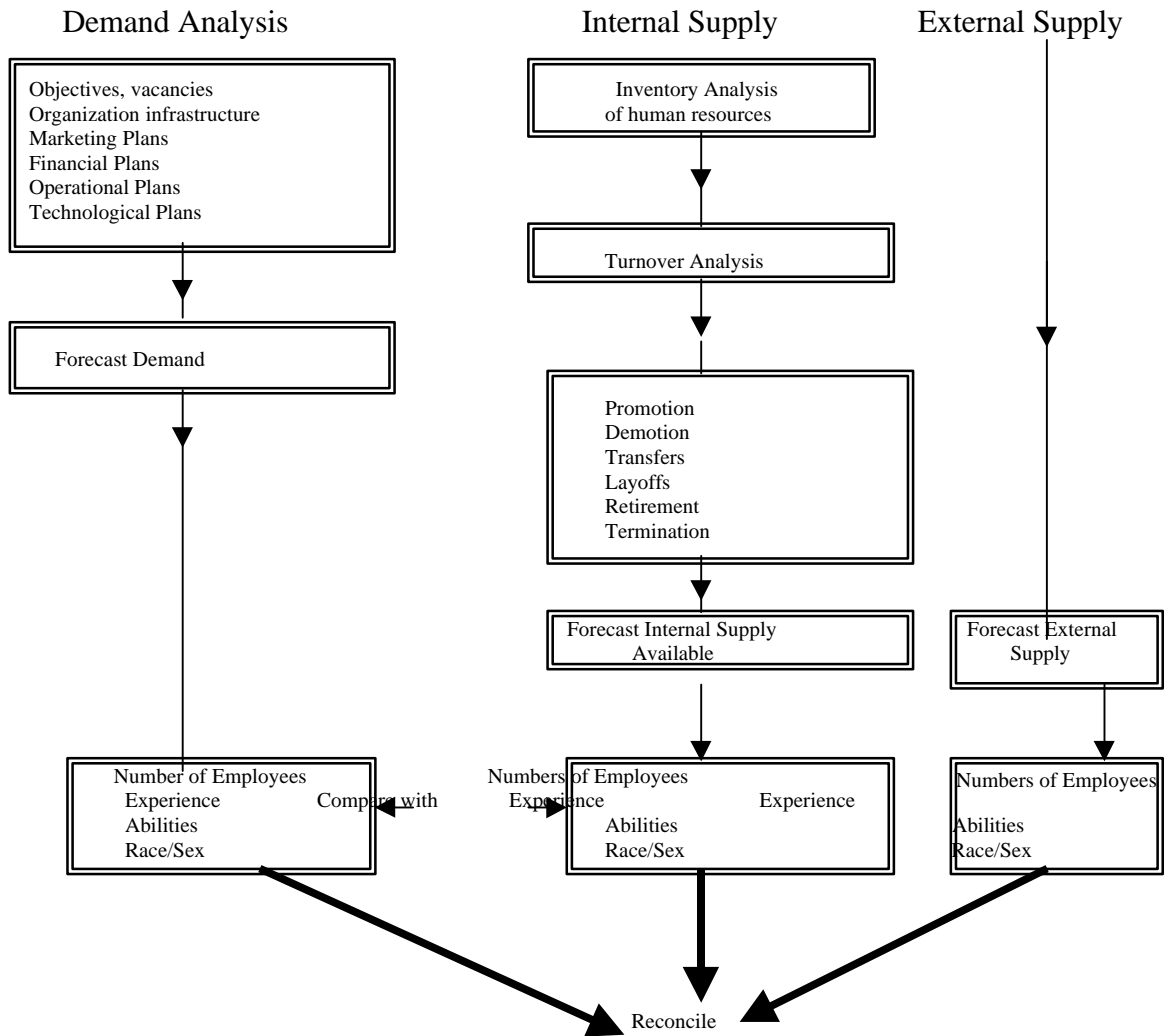


Figure 2.3 – Employment Planning Process

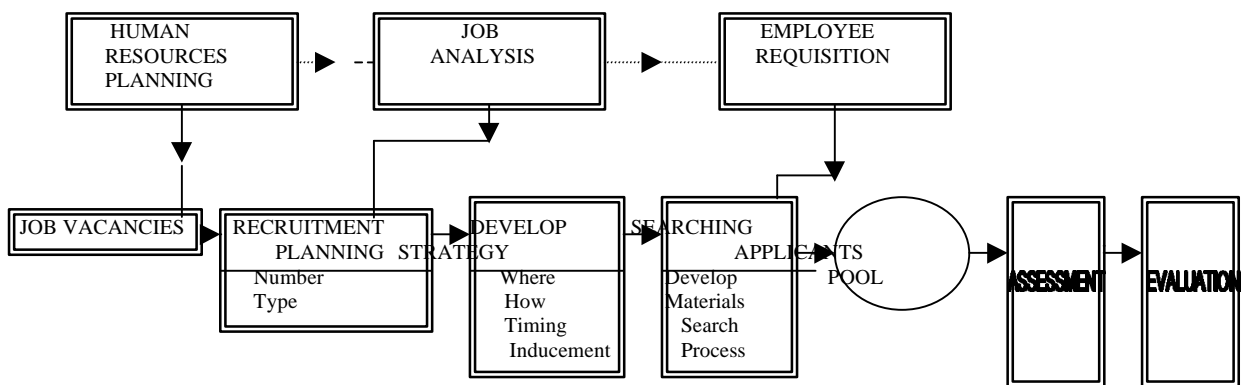


Figure 2.4 – Personnel Recruitment Process

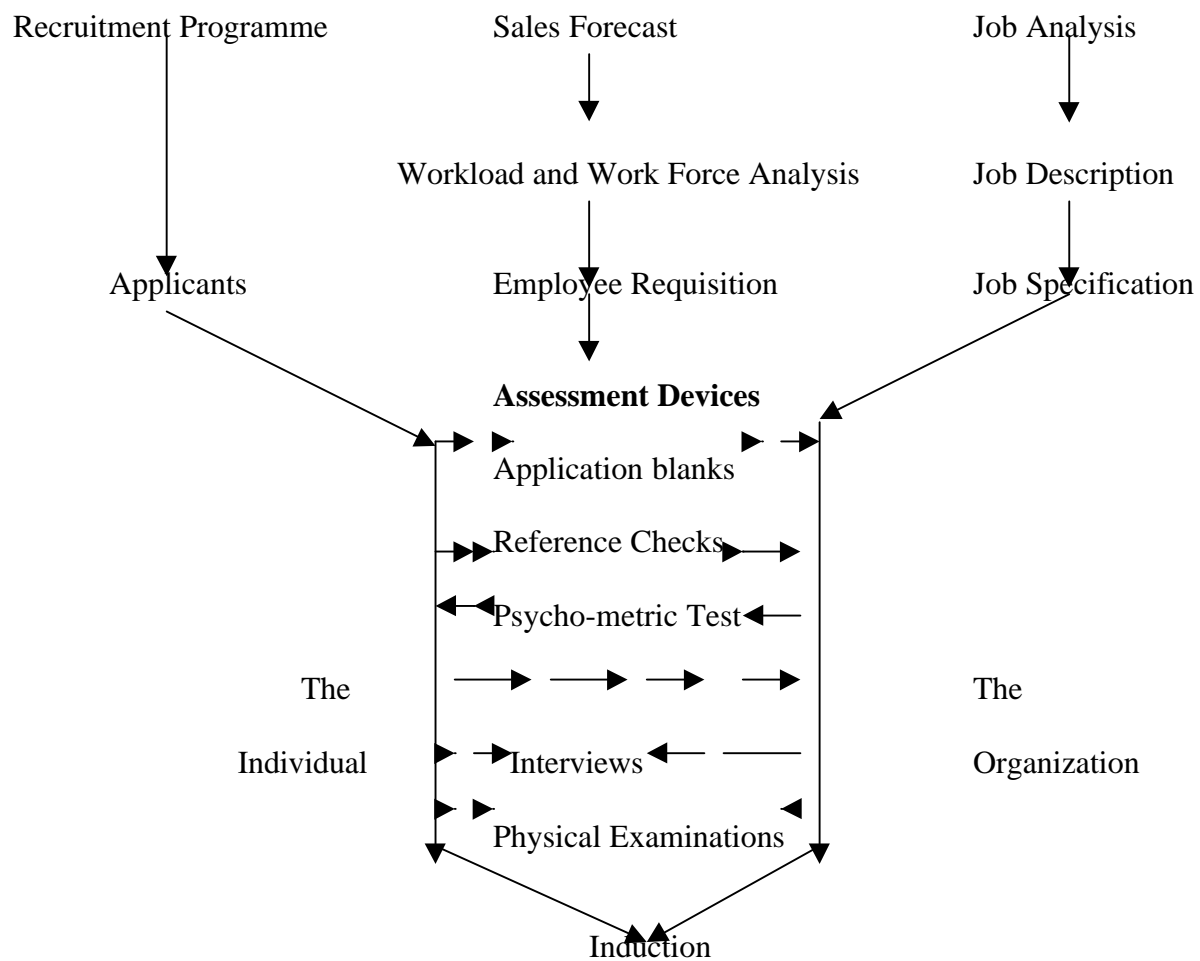


Figure 2.5 – Framework for Personnel Recruitment

The framework for personnel recruitment is conceptualized in Figure 2.5. In order to initiate the hiring process, three preliminary requirements must be satisfied. First, there must be an authority to hire employees; the authority must have been informed by employees' requisition from various departments within an organization. Second, there must exist a job specification, which serves as the standard documentation of the job duties of the prospective employees. Finally, there must be applicants for jobs from whom to select the person to be hired. The employees' hiring process is,

indeed, a series of pipelining activities whereby the results obtained from one activity serve as input to the next activity. For example, employee's requisition may lead to advertisement and this leads to short listing of applicants; the short listing, in turn, leads to a series of written and oral interviews.

The conventional method of personnel recruitment is characterized by a lot of paper work, high risk of accident during the transportation of both applicants and members of interview panel to and from the venue of interview. In a developing society where the postal system and

telecommunications system are not reliable, there is the attendant risk of loss of mails between the applicants and prospective employer on one part, and between the members of interview panel and prospective employer on the other part for purposes such as the invitation for interview and call to take up appointment. Moreover, in a developing society where there is high rate of unemployment and abject poverty, there is often the element of bias in the choice of applicants to be short-listed for interview. In some cases, applicants to be employed might have been marked up, thus the advertisements for job vacancies put up in some selected daily newspapers, magazines and electronic media put some good applicants at a serious disadvantage. The overhead cost of advertising job vacancies, short listing and interviewing applicants can be very high because it is not uncommon to find out that no applicant is found qualified for appointment after series of interviews have been held.

3. FRAMEWORK FOR IT BASED PERSONNEL PROCUREMENT

The framework proposed for IT based personnel procurement is conceptualized in Figure 3.1. The major components of the framework are the following:

- a. Knowledge base.
- b. Inference engine.
- b. Decision support system.

3.1 Knowledge Base

The knowledge base is composed of quantitative (structured) and qualitative (unstructured) knowledge of the applicants and jobs. The knowledge base is, indeed, a network of semantically and logically related

static and dynamic objects, each of which is modeled in relational form [Codd 1970]. By convention, a relation is described by:

$R[A_1, A_2, A_3, A_4, A_5, \dots A_k, A_{k+1} \dots A_n]$

where R represents the name of the relation, $\{A_j\}$ $j = 1, 2, \dots n$ represent the attributes, properties or decision variables of R.

The set of relations that are currently being considered in our research are the following:

- a. APPLICANT-PERSONAL-DATA [applicant-no, surname, other-names, date-of-birth, sex, nationality, state-of-origin, marital-status].
- b. APPLICANT-REGISTRATION-DATA [applicant-no, date-of-application, job-code, organization-of-interest].
- c. APPLICANT-ACADEMIC-QUALIFICATION [applicant-no, date-of-award, certificate, place-of-award, major-subject, minor-subject, class-of-award].
- d. APPLICANT-PROFESSIONAL-QUALIFICATION [applicant-no, date-of-award, status, awarding-body].
- e. APPLICANT-JOB-HISTORY [applicant-no, date-employed, date-disengaged, job-code, status, employer, last-salary, condition-for-leaving].
- f. JOB-REQUIREMENTS [organization-no, job-code, job-title, vacancies, academic-qual-reqd, professional-qual-reqd, experience-reqd, minimum-age-reqd, maximum-age-reqd, relevant-position, tools-used, salary, benefits].
- g. ORGANIZATION [organization-no, name, address, telephone-no, line-of-trade].
- h. PROFICIENCY [applicant-no, job-code, aptitude test, physical-test, intelligence-test, other-tests, average-score].

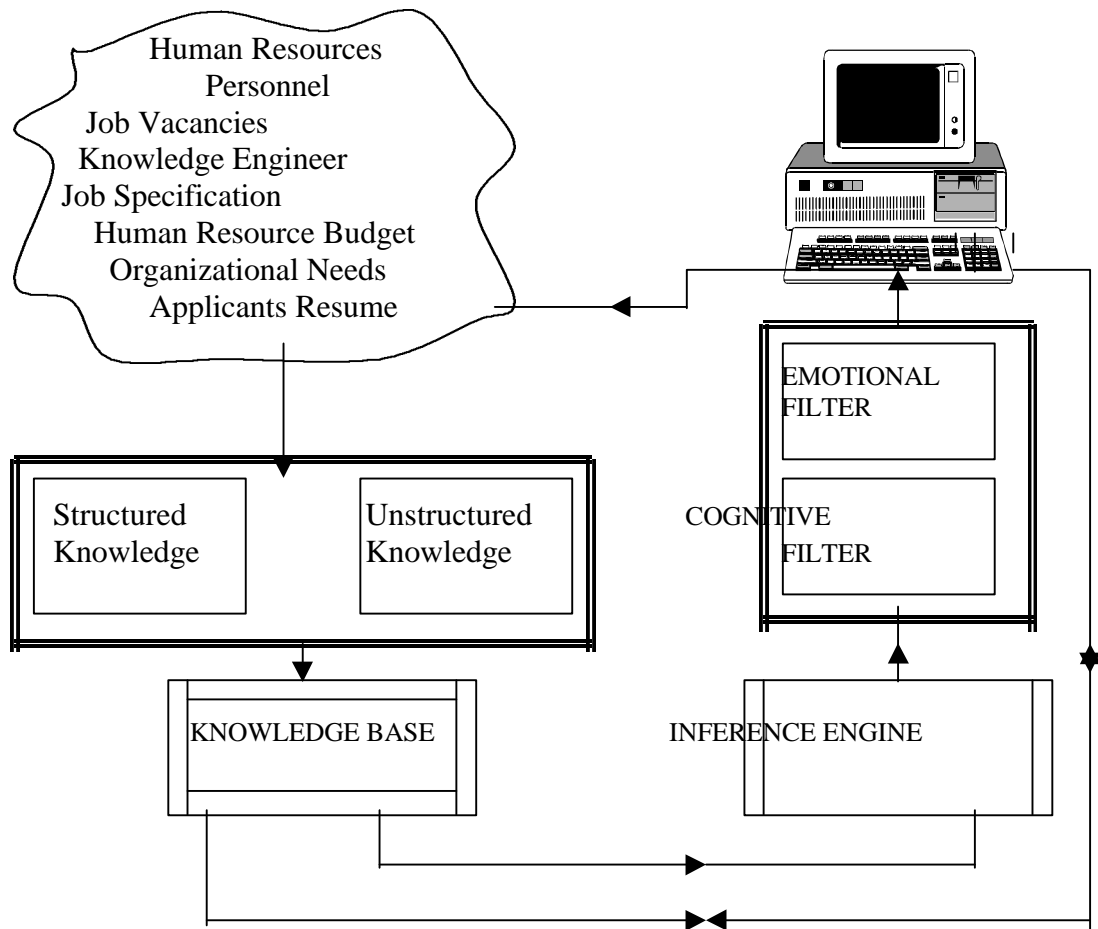


Figure 3.1 - Knowledge Based System Architecture

3.2 Inference Engine

The inference engine is composed of some semantically and logically related modules or procedures. The inference technique adopted in each module or procedure is the forward chaining type, that is, some conclusions are drawn based on some available facts obtained through the combinatorial analysis of two or more sets of corresponding decision variables.

The main module is conceptualized in Figure 3.2. The knowledge about personnel

is composed of the following:

- a. Applicants' personal data.
- b. Applicants' academic qualification.
- c. Applicants' professional qualification.
- d. Applicants' job history.
- e. Applicants' performance in psychometric test.

The knowledge about job is composed of the following:

- a. Job requirements.
- b. Applicants' registration.
- c. Organization requirements.

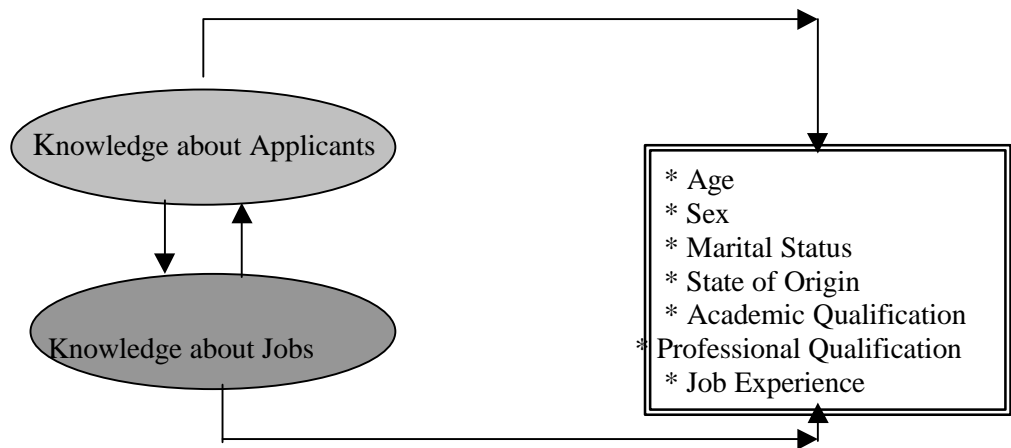


Figure 3.2 – Main Module

The inferences to be drawn are broken into phases because of the large number of the decision variables and combinatorial analysis of the decision variables of the corresponding knowledge, such as that of personnel and job requirements to be carried out. At the first phase, the analysis of the decision variables is carried out and a set of decision variables are clustered such that a successful matching of the corresponding clustered decision variables will lead to the

matching of another corresponding clustered decision variables. Consequently, there are sub-modules which match a set of decision variables of the knowledge about personnel with the corresponding set of decision variables of the knowledge about job requirements. The sub-modules are related to one another and run in parallel. The sub-modules are conceptualized in Figure 3.3 through Figure 3.7.

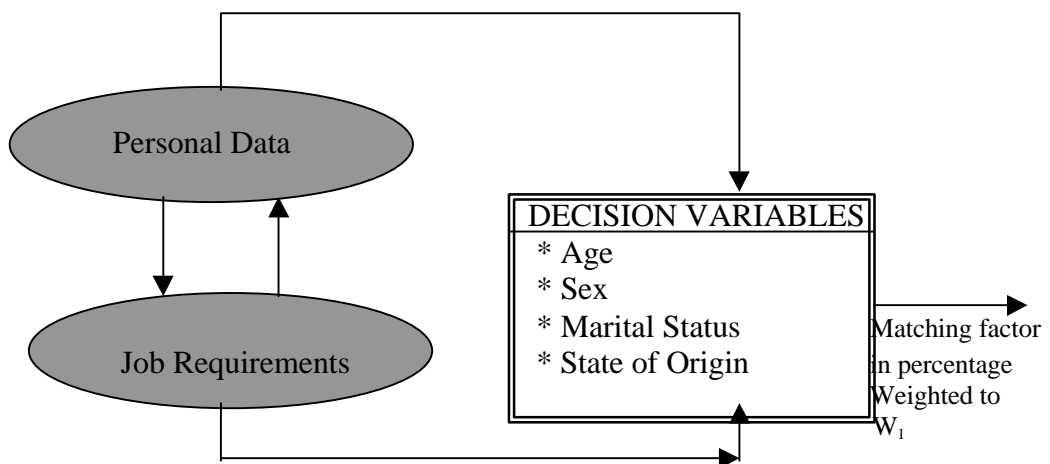


Figure 3.3 – Matching Applicants with Job Requirements

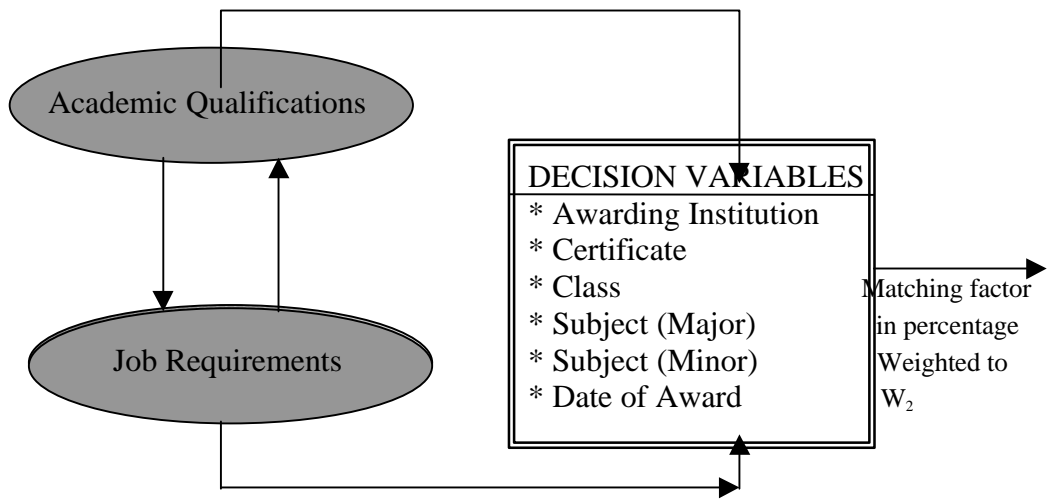


Figure 3.4 – Matching Academic Qualifications with Job Requirements

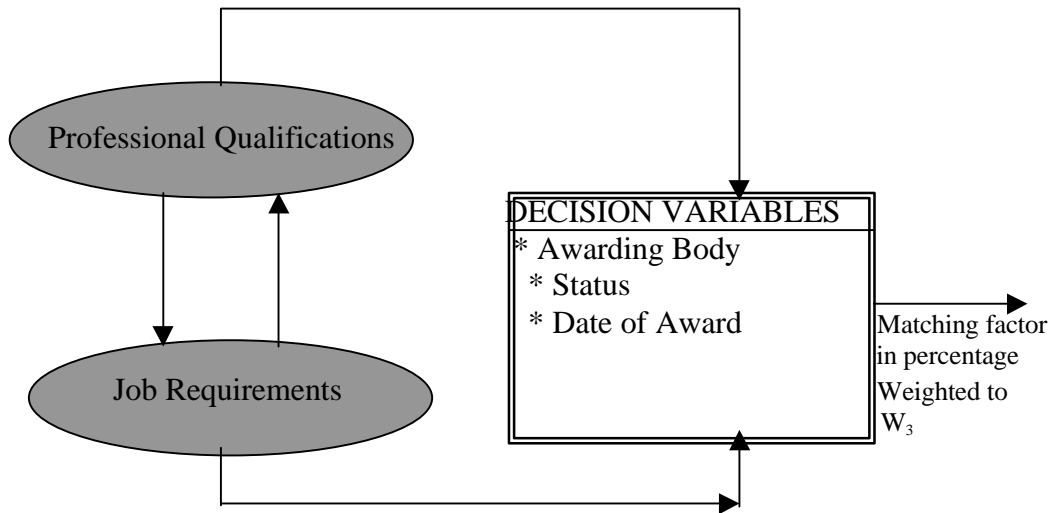


Figure 3.5 – Matching Professional Qualifications with Job Requirements

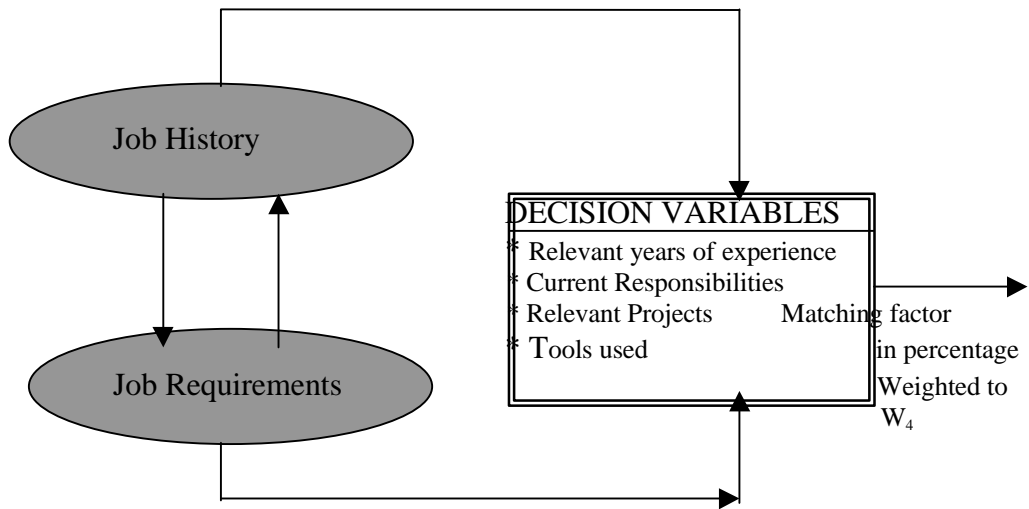


Figure 3.6 – Matching Job History with Job Requirements

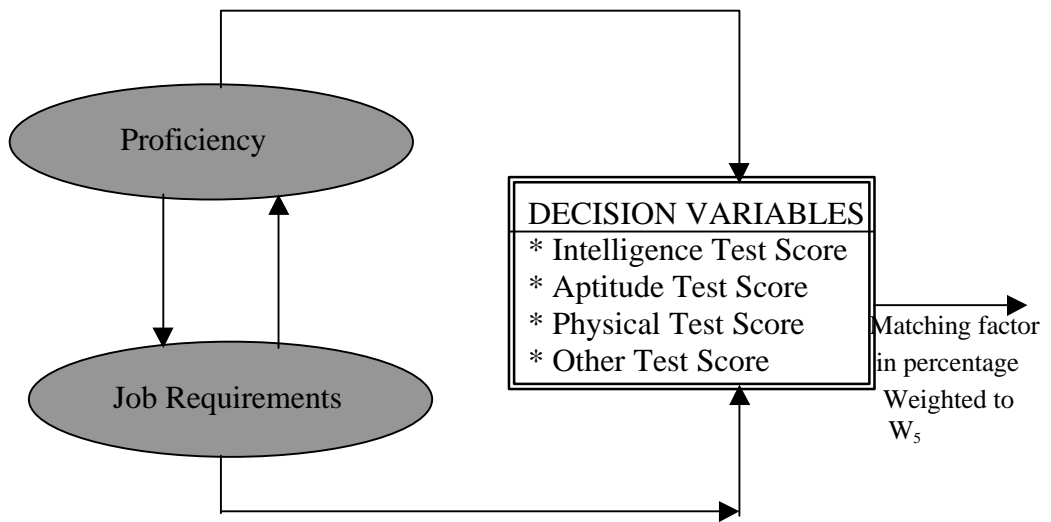


Figure 3.7 – Matching Performance in Psychometric test with Job Requirements

The inferences drawn by the sub-modules are in two parts. One part is designated by:

$$\{T_k\}; k=1, 2, 3, 4, 5$$

and this represents the matching factor of the kth. sub-module. The weight attached to the clustered decision variables involved in each sub-module is presented in Table 3.1. The $\{T_k\}$ and $\{W_j\}$, $j = 1,2,3,4,5$ serve as the input parameter to the terminal module, which produces the list of the applicants to be invited for oral selection interview. The

interrelationships of the main module, sub-modules and the terminal module is conceptualized in Figure 3.8.

Suppose S_{ij} represents the weighted score of the jth. decision variable of ith. sub-module. Then we have the following logical relations:

$$0 \leq S_{ij} \leq W_i \dots\dots\dots \textcircled{1}$$

$$\text{Therefore } \sum_{i=1}^5 \sum_{j=1}^5 S_{ij} \sum_k W_k \leq 1 \dots\dots \textcircled{2}$$

MATCH PARAMETER	POINT	TOTAL POINT	WEIGHT
Age	01	04	0.0482
Sex	01		
State of Origin	01		
Marital Status	01		
Academic Qualifications	10	26	0.3133
Class	10		
Subject	06		
Professional Qualification	02	03	0.0361
Status	01		
Relevant Experience	05	20	0.2410
Current Responsibility	05		
Relevant Projects	05		
Tools Used	05		
Psycho-metric Test	30	30	0.3614
Total	83	83	1.0000

Table 3.1 – Weight of Decision Variables

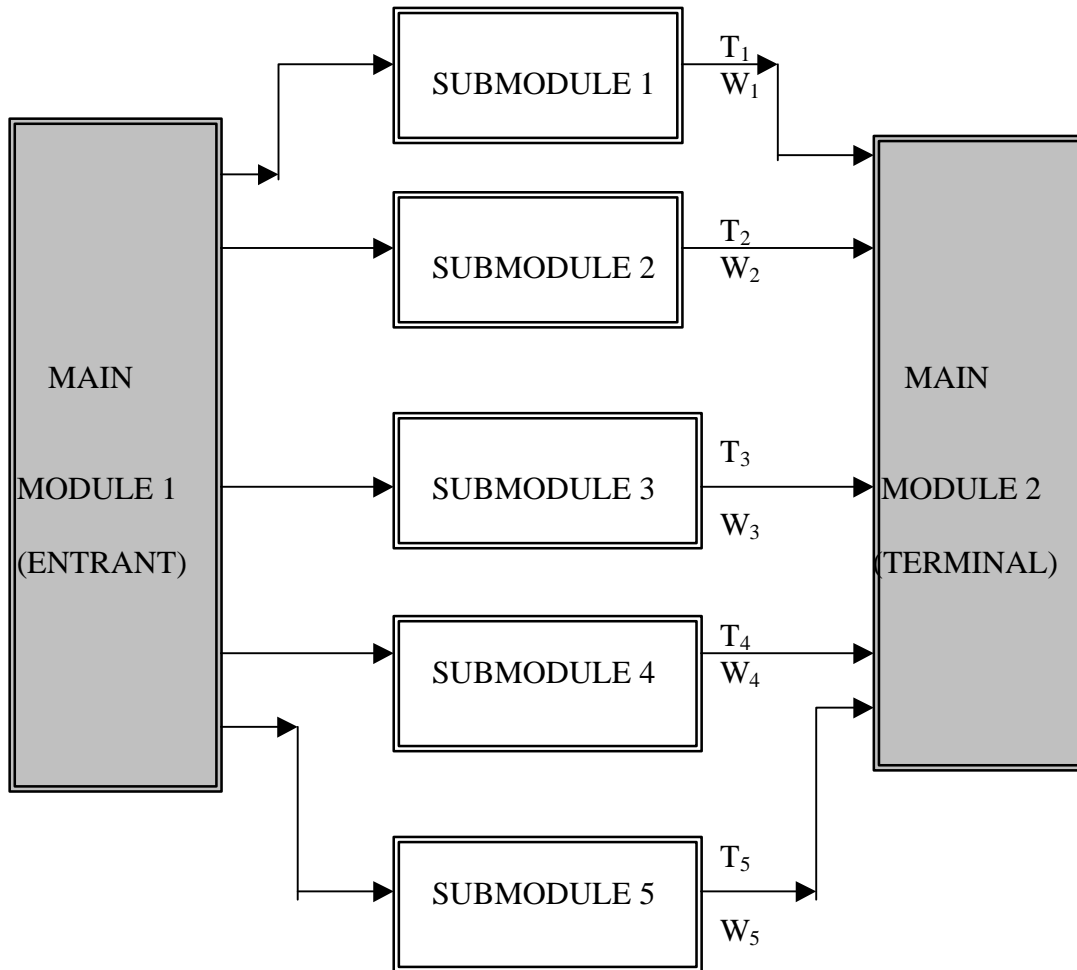


Figure 3.8 – Logical Relationships of System Modules

Let $KB(P)$ and $KB(J)$ represent the personnel knowledge and job requirements knowledge respectively. Then we have:

$$KB(P) = \{F_1, F_2, F_3, \dots, F_n\} \dots\dots\dots \textcircled{3}$$

$$KB(J) = \{G_1, G_2, G_3, \dots, G_m\} \dots\dots\dots \textcircled{4}$$

where $\{F_i\}$ $i = 1, 2, 3, \dots, n$ represents the set of objects of $KB(P)$ and $\{G_k\}$, $k = 1, 2, 3, \dots, m$ represents the set of objects of $KB(J)$.

$$F_i = \{u_{i,1}, u_{i,2}, u_{i,3}, \dots, u_{i,n}\} \dots\dots\dots \textcircled{5}$$

$$G_k = \{v_{k,1}, v_{k,2}, v_{k,3}, \dots, v_{k,m}\} \dots\dots\dots \textcircled{6}$$

where $\{u_{i,1}, u_{i,2}, u_{i,3}, \dots, u_{i,n}\}$ and $\{v_{k,1}, v_{k,2}, \dots, v_{k,m}\}$ represent the decision variables or attributes of F_i and G_k respectively. Let M represent the function that maps F_i into G_k . Then we have:

$$M(F_i) \longrightarrow G_k \dots\dots\dots \textcircled{7}$$

That is,

$$M(\{u_{i,1}, u_{i,2}, u_{i,3}, \dots, u_{i,n}\}) \longrightarrow$$

$$(\{v_{k,1}, v_{k,2}, v_{k,3}, \dots, v_{k,m}\})$$

3.3 Decision Support System

The inference engine assists in matching the decision variables of the personnel knowledge with the corresponding decision variables of the job requirements knowledge and reports a list of applicants that are selected for some specific jobs. The decision support system has two sub-systems, namely: cognitive filter and emotional filter.

The cognitive filter carries out the inductive and deductive reasoning on the information contents of the list of applicants appointable for a given job produced by the inference engine. The following could form the basis for cognitive filtering of the list of selected applicants:

- a. The decision on whether, say, Institute of Chartered Accountants of Nigeria (ICAN) qualification is more suitable for a job, based on the HRP judgement of the syllabi of the professional body.
- b. The decision to employ, mostly, people of a particular age bracket based on the nature of the job.
- c. The decision to employ a staff who currently works in a similar company, and in the required position.
- d. A company may have a bus service for its staff. Based on this, members of staff may be clustered within a particular location to make the bus system effective, among the new applicants, who are found qualified, there are some who live in the same neighbourhood as the members of staff. Such an applicant may be employed instead of an applicant who lives far away from the neighbourhood because of the inconveniences and extra cost of transportation.
- e. The decision to employ somebody who has a second class (lower division) in place of somebody who has first class because of the former's

past experience on the job, despite the fact that both of them have the same aggregate score.

The emotional filter carries out the inductive and deductive reasoning on the information context of the list of applicants selected for a given job. The following could form the basis for emotional filtering of the list of selected applicants:

- a. The decision to employ an applicants because he is related to a senior member of staff of the organization and his referees are credible personalities in the society.
- b. The decision to employ somebody because of his state of origin, based on the feeling of the HRP, that applicants from that state have drive and determination.
- c. The decision to drop a candidate because he was dismissed from his former place of work, even when he makes a good aggregate score in the matching process.
- d. A job may not have sex restriction, but because of the stress involved in the job, the HRP may feel that a male would do the job better than a female; as such, employs a male, rather than a female.
- e. An applicant may have indicated that he is a sports man and the claim verified and validated. If the company in question has a sports club, the tendency is there that the applicant may be employed based on the feeling that he would make good contributions to the company's sports programme.
- f. From the medical records of an applicant and his or her physical appearance, he or she may be found disabled in a way, but because of the very high intelligent quotient of the applicant, he or she may be employed

and deployed to an office where his or her physical contact with clients or customers would be very remote.

4. CASE STUDY OF FRAMEWORK

In our research, an attempt has been made to develop and implement a prototype of HRS. The package is developed in Ms Access and Visual Basic Application environment. It is implemented in a LAN environment which is characterized by Compaq Proliant as the server, eight Compaq Deskpro 2000 as workstations and MS NT Backup as the distributed operating system. The prototype has been tested using the knowledge of some sampled applicants, jobs and corporate organizations.

An HRP views the knowledge base component of the package in a top down manner and gains access to it by supplying a valid user name and password both of which serve as the access right control mechanism.

If the access right is granted, the system presents the scenario of easy to understand menu and submenus. Any option of the menu or submenu selected by the HRP shall call an inference procedure or module of a particular step in the personnel recruitment process. An inference procedure is interactive in nature and guides the HRP intelligently but always leaving the final decisions to the HRP. The system supports three menu sessions and three dialogue sessions.

4.1 Dialogue and Menu Sessions

The first dialogue session takes the HRP through the login procedure. At the Windows 95 main menu of any of the workstations, “kbsmaj” icon is double clicked with a mouse which calls into the screen a banner and shortly later the login screen which is depicted in Figure 4.1. The user name and password are entered, subject to verification and validation, authorization is granted and the system main menu depicted in Figure 4.2 is displayed on the screen.

YOU ARE PLEASE WELCOME TO KBSMAJ
Please enter the following: USER NAME: PASSWORD:

Figure 4.1 – Login Screen

MAIN MENU
<ol style="list-style-type: none">1. File Maintenance2. Consultation3. Exit <p>Please Select an option</p>

Figure 4.2 – Main Menu

FILE SUBMENU
<ol style="list-style-type: none">1. Personal Data2. Registration Data3. Academic Qualifications4. Professional Qualifications5. Job History6. Job Requirements7. Applicant's Proficiency8. Exit <p>Please enter an option</p>

Figure 4.3 – File Submenu

FILE MAINTENANCE SUBMENU
<ol style="list-style-type: none">1. Insert New Records2. Delete3. Modify Existing Records4. Exit <p>Please Select an option</p>

Figure 4.4 – File Maintenance Submenu

APPLICANT'S PERSONAL DATA			
App. No.	<input type="text"/>	Registration Date	<input type="text"/>
Names	<input type="text"/>		
Address	<input type="text"/>		
Date of Birth	<input type="text"/>	State of Origin	<input type="text"/>
Nationality	<input type="text"/>		
Marital Status	<input type="text"/>		

Figure 4.5 – Form View of Applicant's File

The first menu session begins when the option "File Maintenance" is selected in Figure 4.2. A file maintenance can be carried out by an authorized HRP, hence the access right of the HRP has to be verified and validated. If the access right is granted, the file submenu depicted in Figure 4.3 is displayed on the screen. The selection of any of the files will cause the submenu depicted in Figure 4.4 to be displayed on the screen. The selection of any of the options in Figure 4.4 will cause the form or screen view of the file selected in Figure 4.3 displayed on the screen. The transcript of the form view of applicant's file is presented in Figure 4.5.

The second menu session begins when the option "Consultation" is selected in Figure 4.2. The access right of the person selecting this option has to be verified and validated. If the access right is granted, the submenu depicted in Figure 4.6 is displayed on the screen. Suppose the option 'vacancy' is selected in Figure 4.6, an inference module is activated which produces the list of the vacant jobs and the qualifications required for the jobs. The system allows the HRP to send the list to the screen for the purpose of viewing, file for future

reference, or printer for hard copy production. The relational form of the output report is given by:

VACANCY [organization-id, date-of-report, name-of-organization, job-description, no-of-vacancies, academic-qualification-reqd., professional-qualification-reqd., minimum-class-of-degree-reqd., minimum-year-of-experience]

Suppose the option 'organization' is selected in Figure 4.6, an inference module is activated which produces an output report which is of the relational form:

ORGANIZATION [organization-id, date-of-report, name-of-organization, address-of-organization, telephone-no, line-of-business]

The output report obtained by selecting the option 'applicant' is conceptualized thus:

APPLICANT [applicant-identifier, date-of-application, date-of-report, name-of-applicant, job-of-interest, organization-of-interest]

CONSULTATION SUBMENU	
1.	Vacancy
2.	Organization
3.	Applicant
4.	Qualified Applicant
5.	Exit
Please Select an option	

Figure 4.6 – Consultation Submenu

DECISION SUPPORT SUBMENU	
1.	Selected Applicant
2.	Cognitive Filter
3.	Emotional Filter
4.	Exit
Please Select an option	

Figure 4.7 – Decision Support System

The third menu session begins when the option 'qualified-applicant' is selected in Figure 4.6. The access right of the HRP selecting this option has to be verified and validated. If the access right is granted, the submenu depicted in Figure 4.7 is displayed on the screen. The selection of the option 'Selected applicant' activates an inference module which produces the list of the selected applicants per corporate organization per job description.. The relational form of the output report is as follows:

SELECTED-APPLICANT [identity-of-applicant, date-of-report, rank of applicant, no-of-vacancies, name-of-applicant, address-of-applicant, sex-of-applicant, date-of-birth, academic-

qualification, professional-qualification, year-of-experience]

Suppose the option 'cognitive filter' is selected, the second dialogue session is initiated between the system and HRP. At this instant, the list of the selected applicants forms the primary input; the logic of the reasoning or basis for the dialogue takes into consideration the HRP objective view, understanding and interpretation of the existing corporate rules and regulations on personnel recruitment, appointment, development and promotion.

The option 'emotional filter' constitutes the third dialogue session and it is initiated between the system and HRP after the cognitive filter has been concluded. Thus, the output report of the cognitive filter forms the primary input to the emotional filter. The

logic of the reasoning or basis for the dialogue takes into consideration the circumstances surrounding the corporate organization and personal or subjective view of the existing corporate rules and regulations on personnel recruitment, appointment, development and promotion held by the HRP.

The ultimate goal of the cognitive and emotional filters is to get the HRP actively involved in the selection of the best candidates for a given job. During the dialogue sessions, it is noted that the system is open to the acquisition of further rules prescribed by the HRP based on his experience, intuition and realistic sense of judgement.

5. CONCLUSION

A knowledge based system assists human experts in solving problems in a given domain. It employs the use of experiential knowledge in arriving at decisions in problem areas where straight forward enumeration of possibilities tends to prove explosive. The knowledge engineer acquires the knowledge of the human experts in a specific problem domain to build a knowledge base and draw inferences based on some rules concerning the static and dynamic knowledge of the problem domain.

In this paper, an attempt has been made to develop and test run a knowledge based system in the domain of human resources management, with specific focus on the human resources procurement exercise. The main objective is to build a system that is capable of assisting the Human Resources Department in procuring staff without necessarily going through the problems associated with the conventional manual method of procuring staff. The applicants are

also saved the problem of endlessly pursuing jobs which may not even exist.

The system is implemented in a LAN environment characterized by two Compaq Proliant (one serving as a dedicated server and the other serving as a backup server), eight Compaq Deskpro 2000 as workstations and Microsoft NT Backup as the distributed operating system. The prototype is developed in Microsoft Access Database Management System and Visual Basic Application environment. The environment is characterized by user friendly, menu driven, interactive and intelligent features. The development of the prototype takes cognisance of the fact that the HRP may not be an expert in computer programming; consequently, it is only the end-user knowledge of the computing system that is required to effectively operate the prototype. The sample knowledge used in the case study of the prototype were hypothetical in nature. However, the results obtained demonstrate the practical use of the prototype and good enough to arouse the confidence of the HRP in its ultimate and realistic use.

The prototype is currently being improved upon so that it can generate, periodically, employment statistical reports which could be used to monitor and control unemployment, carry out comparative analyses of the costs of maintaining employment in both the private and public sectors, and relate the sectors needs to each other on one part and the curriculum development in institution of higher learning on the other part. We note that the prototype is a phase in the overall application of IT in HRS which is the ultimate focus of our research being sponsored by First Bank Nigeria Plc. Therefore, the future of our research shall focus on how IT can be employed to:

- a. Monitor and control personnel development, productivity and behaviour patterns.
- b. Carry out the comparative assessment and evaluation of the performance and productivity of peer personnel. Take the case of an environment where there are five Managers and the position of a General Manager or Managing Director is vacant and need to be occupied by one of the five Managers. The choice may require the multidimensional analysis of some factors.
- c. Carry out the assessment and evaluation of the performance of personnel in both the private and public sectors. This study is desirable when it is weighed against the background of what obtains in the developing countries where the productivity of personnel in the private sector is much higher than that of the public sector. We may want to know the reasons for the differential productivity and suggest the ways and means of enforcing uniform productivity in both the private and public sectors. The attempt shall aim at making suggestions on the redistribution of human resources and moderating the existing practice of personnel endlessly shuttling for jobs which has adverse effect on good personnel productivity, commitment to corporate goals and loyalty to supervisors.
- d. Carry out the study of the effect of human resources profile on the cost and benefits of the investment portfolio of corporate organizations.

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The most basic information technology definition is that it's the application of technology to solve business or organizational problems on a broad scale. No matter the role, a member of an IT department works with others to solve technology problems, both big and small. There are three primary pillars of responsibility for an IT department: IT governance: This refers to the combination of policies and processes that ensure IT systems are effectively run and in alignment with the organization's needs. IT operations: This is a catchall category for the daily work of an IT department. This includes HRIS stands for Human Resources Information System. The HRIS is a system that is used to collect and store data on an organization's employees. In most cases, an HRIS encompasses the basic functionalities needed for end-to-end Human Resources Management (HRM). It is a system for recruitment, performance management, learning & development, and more. An HRIS is also known as HRIS software. Strengthening Human Resource (HR) practices and adopting HR technologies such as Human Resource Information Systems (HRIS), that can collect, store and report workforce data are often described as a potential solution to this problem. Indeed, examples from other industries show that HRIS can help to launch or manage, as well as provide ongoing insights concerning the whole career cycle of an employee. Information system, an integrated set of components for collecting, storing, and processing data and for providing information and digital products. Many major companies are built entirely around information systems. Learn more about information systems in this article. A woman taking a driver's license test on a computer, an example of a government using an information system to provide services to citizens. © Oregon Department of Transportation (CC BY 2.0). As major new technologies for recording and processing information were invented over the millennia, new capabilities appeared, and people became empowered. The textile industry in Yogyakarta is one of the industries that manage human resources in the field of information technology. As one way to achieve organizational goals that have human resources that are able to develop and provide benefits for the organizations. This study focuses on the attendance information system in the textile industry located in Yogyakarta, which aims to get an overview of how far the industry provides a timely and effective response to user requests of all types of incidents. Problem found by the researchers is the occurrence of inaccuracies data on the attendance, w