

MANAGEMENT INFORMATION SYSTEM FOR HUMAN RESOURCE ALLOCATION

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Declaration

I, Mulyanga Rachel, do hereby declare that this Project is original and has not been published and / or submitted for any other University before.

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Approval

This Project Report has been submitted for Examination with the approval of the following supervisor

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Dedication

This study is dedicated to the family of Mr. and Mrs. Mulyanga of Lungujja, Zone 8.

Acknowledgment

My acknowledgement is first and foremost to God the Almighty father who has enabled me overcome the obstacles I have met in this programme.

I would like to thank my supervisor, Mr. Peter Nabende for the guidance,patience and time accorded to me which have enabled me complete this project.

I wish to thank Mrs. Margaret Sevume for having availed me with reading material, which enabled me pass my exams.

I am very gratefull to management and staff of Mukasa, Yiga and Company Certified Public Accountants for the information provided.

I thank all respondents for your co-operation and information provided.

I thank my lecturers for the knowledge i have acquired, and my course mates for the time and ideas shared, in particular, members of group ten and group five in semister 1 and 2 respectively.

THANK YOU.

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List of Abbreviations

DBMS	Database Management System
EIUR	Economist Intelligence Unit Report
FCIT	Faculty of Computing and Information Technology
GUI	Graphical User Interface
HR	Human Resource
HRM	Human Resource Management
HTML	Hyper Text Mark - up Language
ICPAU	Institute of Certified Public Accountants of Uganda
MFM	Modified Frequency Modulation
ODBC	Open Data Base Connectivity

Abstract

A Management Information System for Human Resource Allocation has been designed to provide objectivity in employee - job allocation in indigenous audit and accountancy firms in Uganda. The system in place, of employee - job allocation lacks objectivity in that it is based on management's conviction on an employee's capability to execute a given job, a method which creates bias and compromises competitiveness.

The system designed overcomes the above problems by matching jobs to qualified and competent employees basing on data stored in the database relating to job details and employee details.

This project has highlighted the importance of Management Information Systems, and in particular, Human Resource Management Systems. It has addressed an area in human resource management which had previously been overlooked.

The study was limited to indigenous audit and accountancy firms in Uganda, using Messrs Mukasa, Yiga and Company Certified Public Accountants as a case study.

The designed system was implemented using MySQL as the Data Base Management System (DBMS) with Java servlets as the scripting language. Hyper Text Mark-up Language (HTML) was used in designing Graphical User Interface (GUI).

Chapter 1

Introduction

1.1 Background to the Study

In Uganda, firms offering audit and accountancy services are regulated by the Institute of Certified Public Accountants of Uganda (ICPAU).

ICPAU is a professional accountancy body which is the regulatory body of accountants in Uganda. It was established by The Accountants Act, Cap. 266. The mission of ICPAU is to develop and promote the Accountancy Profession in Uganda and beyond through an internationally recognised qualification ensuring high ethical standards and professional accounting and auditing standards.

According to The Uganda Accountants Newsletter(2006) [15], ICPAU had dully authorised 96 Certified Public Accountants [CPA(U)] firms and 11 Associate Accountants (U) firms as at 31 December 2005. Indigenous firms form more than ninty five percent of the authorised firms and these fall under Small and Medium Enterprises (SMEs).

SMEs usually employ skeleton staff, mainly because of limited jobs. These firms rely on the skills of their human resource to execute jobs effectively and efficiently. Like in any organisation, human resource in SMEs is the most precious asset. They represent the most crucial weapon in their rally for competetive supremacy. However, inspite of the importance of competence and skills of human resource in executing jobs, employee - job allocation is not done objectively.

The researcher has carried out a study on employee - job alloction in indigenous audit and accountancy firms in Uganda. The research was carried out in three firms, namely: PIM + CO. Certified Public Accountants; Data, Figure and Company Certified Public Accountants

and Mukasa, Yiga and Company Certified Public Accountants.

Messrs Mukasa, Yiga and Company Certified Public Accountants has been used as a case study. It was formed in 2001 and is duly authorised by ICPAU. The firm, which employs 12 professional and 3 support staff provides Audit, Accountancy, Tax and Management Consultancy Services to a clientele of 35 organisations. This number is expected to double in the next five years. Professional staff and in some cases consultants are allocated to jobs by selecting those who are not engaged on any job at the time, and are known personally to management to be competent to do the required job. This criteria creates favouritism, perks and unfair fast-tracking and compromises on competency and competitiveness.

According to Flanagan(1997) [8], If you want the staff in an organisation to treat customers well, then "the organisation" must treat the staff well. A motivated staff is more committed to the job, performs better and hence gives the organisation a competitive edge which is essential in a global market.

It is with this background that a Management Information System for Human Resource Allocation has been designed to have in place a system which is not dependent on management instincts but on skill and competency. The system developed matches jobs to qualified and competent employees basing on data stored in the database relating to job requirement and employee details.

1.2 Definition of Key Terms

1.2.1 Management Information System

Management Information System is defined by Que's Computer User's Dictionary (1992) [13] as a Computer System designed to provide management personnel with up-to-date information on an organisation's performance. These systems output information in a form that is useable by managers at all levels of organisation: strategic, tactical, and operational.

1.2.2 Human Resource Allocation

Human Resources is defined by Oxford Advanced Learner's Dictionary (2000) [12] as people's skills and abilities which can be made use of by an organisation. Human Resource Allocation can therefore be taken to be the matching of employee skills and abilities to particular jobs.

1.3 Statement of the Problem

The allocation of staff to jobs in indigenous audit and accountancy firms is not done objectively, but is based on management conviction as to which employee can competently do the job, a method which is not only based on management instinct, but also creates mistrust among employees and has a negative effect on competency and competitiveness.

This project was therefore designed to provide an empirical method of employee - job allocation, promoting competency, competitiveness and equity(fairness and justice).

1.4 Objectives

1.4.1 General Objective

The general objective of this project was to develop a Management Information System for Human Resource Allocation in indigenous audit and accountancy firms that is not dependent on management instincts, but on employee's qualification and skill .

1.4.2 Specific Objectives

The specific objectives for this project were:

1. To carry out a study of human resource allocation in indigenous audit and accountancy firms in Uganda and design a Management Information System for Human Resource Allocation basing on requirements specification identified in the study.
2. To implement a prototype of a Management Information System for Human Resource Allocation.
3. To test and validate the system so as correct errors and to ensure it produces desired results.

1.5 Scope

The scope of the project was limited to employee -job allocation in indigenous audit and accountancy firms in Uganda with Messrs Mukasa, Yiga and Company Certified Public Accountants used as a case study. The system designed matches jobs to employees with the required skills and qualifications, thus enabling managers utilise human resource effectively.

1.6 Significance of the Project

The project highlights the importance of Management Information Systems , and in particular Human Resource Allocation Systems.

It has addressed an area in Human Resource Management which had previously been overlooked thereby contributing to the existing knowledge on human resource management.

The project may act as a model to other organisations and provides reference material to scholars doing research on Management Information Systems, in particular, Human Resource Allocation Systems.

Chapter 2

Literature Review

2.1 Introduction

This chapter examines literature on various aspects concerning Information Systems, Management Information Systems and Human Resource Management.

2.2 Information System

Whitten (2001) [16] describes an Information System as an arrangement of people, data, processes, and interfaces that interact to support and improve day-to-day operations in business as well as support the problem-solving and decision-making needs of management and users. The tool developed therefore qualifies to be an Information System since it will be used to support problem-solving and decision-making needs of management in employee-job allocation.

2.3 Human Resource Management

Losey (1994) [10] defines Human Resource Management(HRM) as " Business, Science and Art of helping people, and group skills when working together for a shared purpose."

According to Armstrong (1990) [1], HRM is essentially a business oriented philosophy concerning the management of people by line managers in order to achieve competitive advantage.

The above definitions clearly show that Human Resource Management today involves much more than fulfilling job requisitions. It goes further to include attracting, recruiting, retaining, developing, motivating and optimising the best talent in order to provide a major

strategic advantage to businesses.

The human resource management systems in place today therefore center around recruitment management, performance management, payroll, HR and Benefits Administration and Time and Attendance.

According to a survey found in Society of Human Resource Management(2000) [14], it was found that nearly five out of every eight hours of an HR professional's time is spent doing administrative work, and on average only 15 hours are spent on high value work such as workforce planning, strategic recruiting, organisational development and compensation and benefits analysis. In recent years, projects to implement automated personnel management systems have been a prominent feature of the IT effort of many civil services in Africa. Improved human resource management is central to current development thinking.

Baruch and Peiperl(2000), [2] in an Environment of change, observe that the focus on human resource practices can have a major positive impact on business results. This can happen in a way of improved record keeping, faster retrieval of information and hence making timely informed decisions. Organisations need to assess changing skill requirements for different types of jobs and at different levels of the hierarchy, revise training programs and design new procedures for development based on changing needs.

The development of a Management Information System for human resource allocation will go along way in optimizing staff talents and skills and facilitating decision making.

2.4 Criteria for Human Resource Allocation.

According to Bennet (2003) [3], firms are putting the success of IT projects at risk by using cost rather than employee skills as the main criteria for determining how projects are staffed. In a survey of UK IT directors carried out by the Fluid Business Team of Brunel University, less than a quarter of firms make team skills the deciding factor for staffing IT projects. Most firms assign employees on the basis of how they are paid and whether they happen to be available, and not whether they have the skills that the projects require most. But while cost and availability of staff tended to be the overriding factors, many IT directors said they were aware of the importance of having the right people for the job.

Lycett (2003) [11] in a survey on how businesses can adapt quickly to change, said the

evidence showed the firms understand the importance of people to projects. He goes on to state that "Deciding who will work on which project is usually a case of who is free at the time. But those who are free may not necessarily be the best people for the job".

Bowen [2004] [4] recognizes that having technical staff is not enough. Organisations need to have many skilled staff and making use of these skills in order to have a competitive edge.

Byaruhanga (2005) [5], states that internationally, outsourcing has come to be considered as one of the strategies suggested of improving on the Team Skills to maintain a competitive advantage, but hastens to add that there has to be a competitive cost-benefit analysis to ensure that the advantages are apparent to every one affected. This is particularly true where redundancies may arise, with possible adverse 'lay off - survivor syndrome consequence'.

In the Economist Intelligence Unit Report (EIUR) on ICT [7], It was shown that finding technical skills is not the problem , it is the difficulty in finding the managers who can turn skills to business advantage that are lacking. Although the EIUR report and the survey carried out by the Fluid Business Team relate to IT, the findings are in agreement with Bowen and the researcher's view that it is important to identify human resource skills and use them to the business's advantage. I believe the project developed will go along way to achieve this.

2.5 HR Software

The process of managing people is not easy, whether they are few or many. Management of firms of accountants and consultants need to be certain that the right team of specialists is in the right place at the right time, over and over again.

Information internal to the organisation is important for enabling the organisation to attack the opportunities in the environment. If it is not available, managers take uninformed decisions which are likely to lead to poor achievement of goals. Ready access to accurate and timely information for decision making is a fundamental requirement for managers.

In today's competitive global market environment, successful organisations know that the use of Information Technology is a critical factor in maintaining their competitive edge and enhancing the growth, profitability and efficiency of operations.

The increasing use of computerised systems however, does bring with it risks which need to be managed. In particular , organisations must ensure :

1. The system they use can be relied upon to produce and report accurate information, and that
2. Valuable corporate information which reside on computerised systems is adequately protected against unauthorised access and / or manipulation.

HR Software is a powerful management software for streamlining and coordinating an organisation's human resources department. Making use of a human resource software can help to ensure the sort of well managed and serviced engagement which is a critical component of a profitable audit / consultancy work. Spreadsheets can help, but they become cumbersome, complex and time - consuming quickly.

One way of increasing the hours spent on high value work for an organisation is the automation of routine "administrivia" using a Human Resources Management System (HRMS) solution. Such an application not only enables organizations to streamline and automate recruiting processes, but also handles heavy regulatory burdens, payroll taxation and change corporate complexion more effectively.

A key benefit of human resource management system is that it provides a single source of information, eliminating the effort of maintaining and co-ordinating individual databases within different departments.

Lesley (2005) [9], gives one example of HR software as the Retain. He goes on to state that the Retain is a dedicated resource planning system which can be used to manage the human resource much more efficiently and effectively, saves time and increases the quantity and quality of information available to managers. Retain system has several modules and is being used by firms such as Kingston Smith to manage resources in areas such as audit, overseas secondments, holidays and training. KingStom Smith was using spread sheets to book jobs for staff, but now uses Retain System because of its enormous advantages such as graphical user interface which simplifies the process of finding the resources that meet the job requirement. It is available in a variety of editions - provides for both small and large scale and allows for the use of SQL databases, and therefore would be applicable to SMEs. Users of Retain include firms like Ernst and Young, Grant Thornton, Barclays Bank, and British Telecom .

2.6 Conclusion

The literature review shows that the Human Resource Management systems in place today centre around recruitment, performance, payroll management, Benefits Administration, and Time and Attendance Management. The review also shows that organisations are using cost rather than employee skills as the main criteria for determining staffing of jobs. The system developed addresses the area under human resource management which had been overlooked, that of human resource allocation. However, the system developed does not provide for outside sourcing (consultants) in job allocation. It allocates employees to jobs basing on job requirements and employee job details stored in the database. The system needs to be expanded to include outsourced personnel(consultants).

Chapter 3

Methodology

3.1 Introduction

This section describes the methods that were used to achieve the objectives stated in 1.4 above. The methods used were in conformity with the standard stages of System development, which include Requirements collection and Analysis , Design , Implementation and Testing and Validation.

3.2 Requirements collection and Analysis

This phase involved the collection and analysis of information about the system in place and future systems of job allocation to identify the user's requirements of the new system. It also involved collecting general requirements for the system so as to create a System Specification that describes the features to be included in the new system like performance requirements , networking , security required, backup and recovery of data. During this stage, the commonly used fact - finding techniques were used to collect data. These included Examining documentation, Interviewing, Observing and Research.

1. Examining documents

This technique was used to gain an insight about the organisation, the current system and why there is need to design a new system. This involved examining performance review reports, minutes of staff meetings.

2. Interview

This involved holding face to face interviews with Partners and senior staff of three se-

lected indigenous firms namely:PIM + CO. Certified Public Accountants; Data, Figure and Company Certified Public Accountants and Mukasa,Yiga and Company Certified Public Accountants. The objective was to find out facts about the system in place, verify facts , identify requirements and gather ideas and opinions and also get the end user involved in identifying requirements for the new system.

3. Observation

The researcher, on selected days had the opportunity to observe how the job allocation was done and compared the findings with the information obtained during the interviews.This helped to identify what was missed out at the interview.

4. Research

This method was used to research on human resource management systems and intelligent systems by reading journals,reference books and surfing the internet. These provided information on what systems are in place.

The Information collected was analysed to identify the features to be included in the Requirements Specification. The good features of the current systema were maintained. The obective of system study was thus achieved through collecting and analyzing information.

3.3 Design

In designing the system, the Architectual Design was used to represent the three levels at which data items are descried,namely: Extenal level, Conceptual level and the Internal level. The Graphical User Interface (GUI) was designed to represent the extenal level. This decribes that part of the database that is relevant to a particular user.

The Conceptual level involved identifying Entities, Relationships and the associate Attributes. The Entity Relationship (ER)model was used to show the relationships between entities and to facilitate communication about the information requirements. The Conceptual model was designed independent of database physical features such as DBMS software, programming language.

The Internal Level involved the design of the physical lay out of the data storage. The design described the base relations, file organizations and indexes to achieve effient access to data. It also described the security measures for the database such use of username and password

to access the system.

Thus, the objective of designing a new system was achieved.

3.4 Implementation

The system was implemented using Mysql as the DBMS. Mysql was used because it is fast, can handle large volumes of data, easy to learn , is open source and goes well with Java. Java servlets were used as the scripting language to enable communication between the database and the browser. Hyper Text Mark-up Language(HTML) was used in the designing of the Graphical User Interfaces (GUI).

Thus, the objective of implementing an Intelligent system for Human resource allocation was achieved.

3.5 Testing and Validation

After implementing the system, it was run to see whether it was operating as expected. Errors were identified and corrected. The system was validated with test data to ensure that it produces desired results.

Hence, the objective of testing and validating the system was achieved.

Chapter 4

System Study and Analysis

4.1 System Study

4.1.1 Introduction

The study was carried out in three indigenous auditing and accounting firms namely: PIM + CO. Certified Public Accountants, Data Figure and Company Certified Public Accountants and Mukasa, Yiga and Company Certified Public Accountants. Interviews were carried out with the managing partner and senior staff of the firm.

The results of the study helped the researcher to establish how employee - job allocation is done in these firms.

4.1.2 Current System of Employee - Job Allocation

When a job is secured, the partner or manager (incase the partner is away) identifies the nature of services required. The employee to do the job is then selected, basing on the partner's instincts and conviction of the employee's ability and availability to execute the required job.

In most cases, an employee would be allocated the same job, year in, year out.

4.1.3 Weaknesses in the current system

The major weaknesses of the current system are:

- (i) Job allocation is based on management's instincts and conviction of an employee's competency which may not necessarily identify the best employee for the job.
- (ii) In most cases the system sidelines new staff who have not had an opportunity to show their skills and prove competency.

(iii) It relies on learning curve; the more number of times one does the same job, the more experienced and competent one becomes.

(iv) An employee can be engaged on the same jobs for several years without getting a chance to work on other jobs, depriving of new ideas from other employees.

(v) The system creates favouritism and comprises competency and competitiveness in execution of jobs.

4.2 System Analysis

4.2.1 Requirements Specification

The system is designed to satisfy the following requirements.

4.2.2 User Requirements

The system designed :

1. Should be Installed on a computer with a web browser.
2. Gives access to authorised computer users, and denies access to to unauthorised users.
3. Is easy to learn with a user-friendly interface.
4. Is fast.

4.2.3 Functional Requirements

The system designed performs the following functional requirements.

1. Restricts access to only authorized users by use of username and password.
2. Captures and stores data relating to employees and jobs.
3. Provides for add, delete, update, retrieval, edit functions.
4. Provides Queries for choice selection, for example employees with a particular skill.
5. Produces reports basing on queries fed in the system.

4.2.4 Non Functional Requirements

The system has the following non-functional requirements.

1. Provides security to the database by use of passwords.
2. Provides Forms for data capture
3. Ensures that data captured is complete.
4. Ensures that Data stored is secure and accessed by only authorized personnel.
5. Easy to maintain and adapt to by users.

4.2.5 System Requirements

This section specifies the requirements for the Management Information System for Human Resource Allocation. These requirements serve as a basis for the acceptance of the system.

4.2.6 Hardware Requirements

The system needs a computer with at least Random Access Memory (RAM) of 256MB , a CD drive, USB , a UK/US keyboard system and a hard disk of Modified Frequency Modulation (MFM). In addition , the system requires a coloured monitor screen with a minimum processing speed of 1000MHz, a printer preferably a laser jet 6P, network card, sound card, mouse and pad; Back up media such as CD ROM, USB port for flash.

4.2.7 Software Requirements

The interface with the database system is run on a Linux-based/ windows 2000 operating system. Mysql data manipulating language was used as the query language and the implementation of the code was developed using java servlets as a scripting language to link the database and the web browser. Client Computer requires Linux /Windows 2000/XP/NT.

Chapter 5

System Design

5.1 Architectural Design

The design of the system was done using the Three-level Architecture. The Architectural Design (figure 5.1) represents the three levels at which data items are described, namely: External Level represented by Graphical User Interface (GUI), Conceptual Level and the Internal Level represented by the Database.

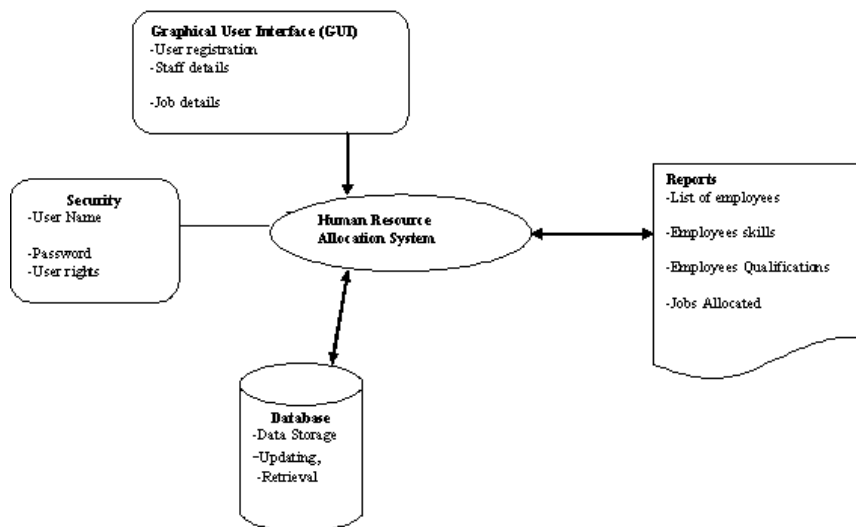


Figure 5.1: Architectural Design for designed Management information System for HR Allocation

5.2 Detailed Design

The detailed design describes in detail the various components of the Architectural Design.

5.2.1 Graphical User Interface

The Graphical User Interface represents the user's view of the database. It is the front end to the user which is used for submission of queries to the database.

5.2.2 Security

This describes the security measures for the Database which include access and use of the database at the system level by use of username and password, and Data security by assigning user rights.

5.2.3 Database

The database represents related data which is stored logically. It comprises entities, attributes and relationships. Data stored can be retrieved, updated, edited or deleted.

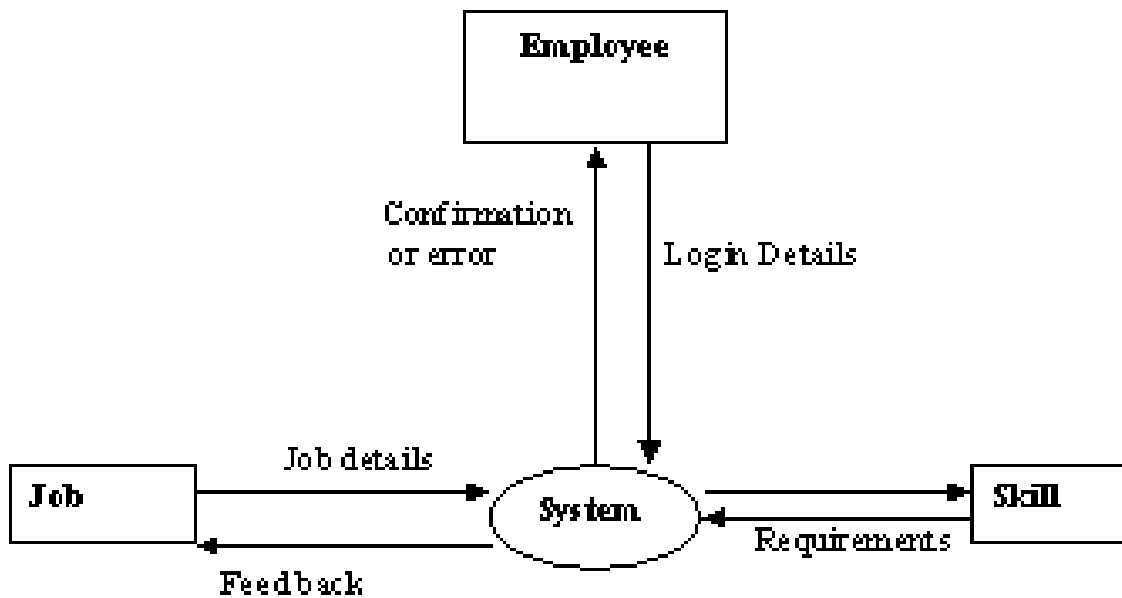
5.2.4 Reports

Reports can be retrieved from the database using queries and viewed on the interface . Reports include list of jobs allocated, list of Employees with their skills and qualifications.

5.3 Conceptual Level

The conceptual model was designed independent of the physical features of the database such as DBMS software and programming language.

The Context Diagram (figure 5.2) was used to show the general function of the entire system in relation to external entities.



Key



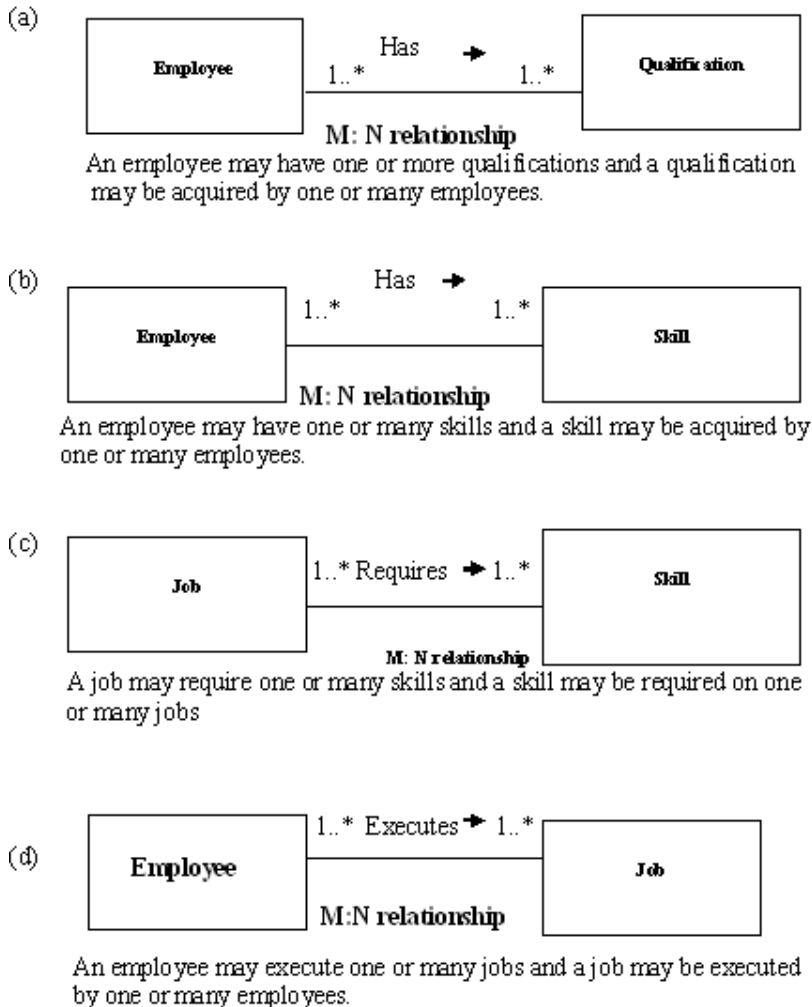
-  - Entity
-  - System

Figure 5.2: Context Diagram for designed Management Information System for HR Allocation

5.3.1 Relationship Diagram for the designed Management Information System for HR Allocation

The Relationship Diagram (figure 5.3) shows the relationships between the different Entities in the system. The Entities were identified using information documented in the users specification and are: Employee, Qualification, Skill, Job. Entity Relationships can be One to One, One to Many, and Many to Many.



Key


-  Entity
- 0..* Multiplicity

Figure 5.3: Relationships in the designed Management Information System for HR Allocation

5.3.2 Entity Relationship Diagram for the designed Management Information System for HR Allocation

The Entity Relationship Diagram (figure 5.4) shows the overall logical structure of a database graphically. It shows a graphical representation of Entities and the relationships to each other. The diagram highlights the conceptual data model of the system.

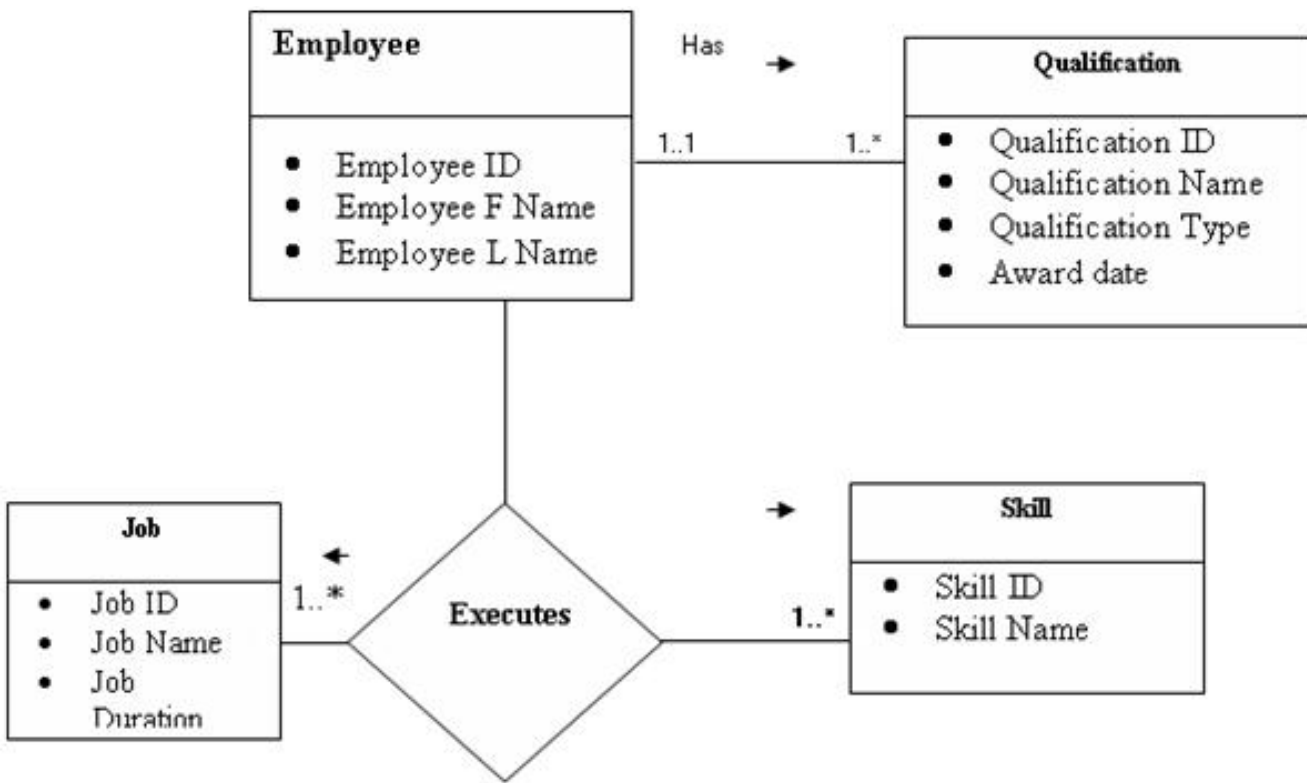


Figure 5.4: Entity Relationship Diagram for the designed Management Information System for HR Allocation

5.3.3 Level 1 Data Flow Diagram for designed Management Information System for HR Allocation

The Data Flow Diagram (figure 5.5) is a representation of Entities, processes, data flow and data storage in the system. It shows activities which transform data within the system, and how data flows into, out of, and within the system.

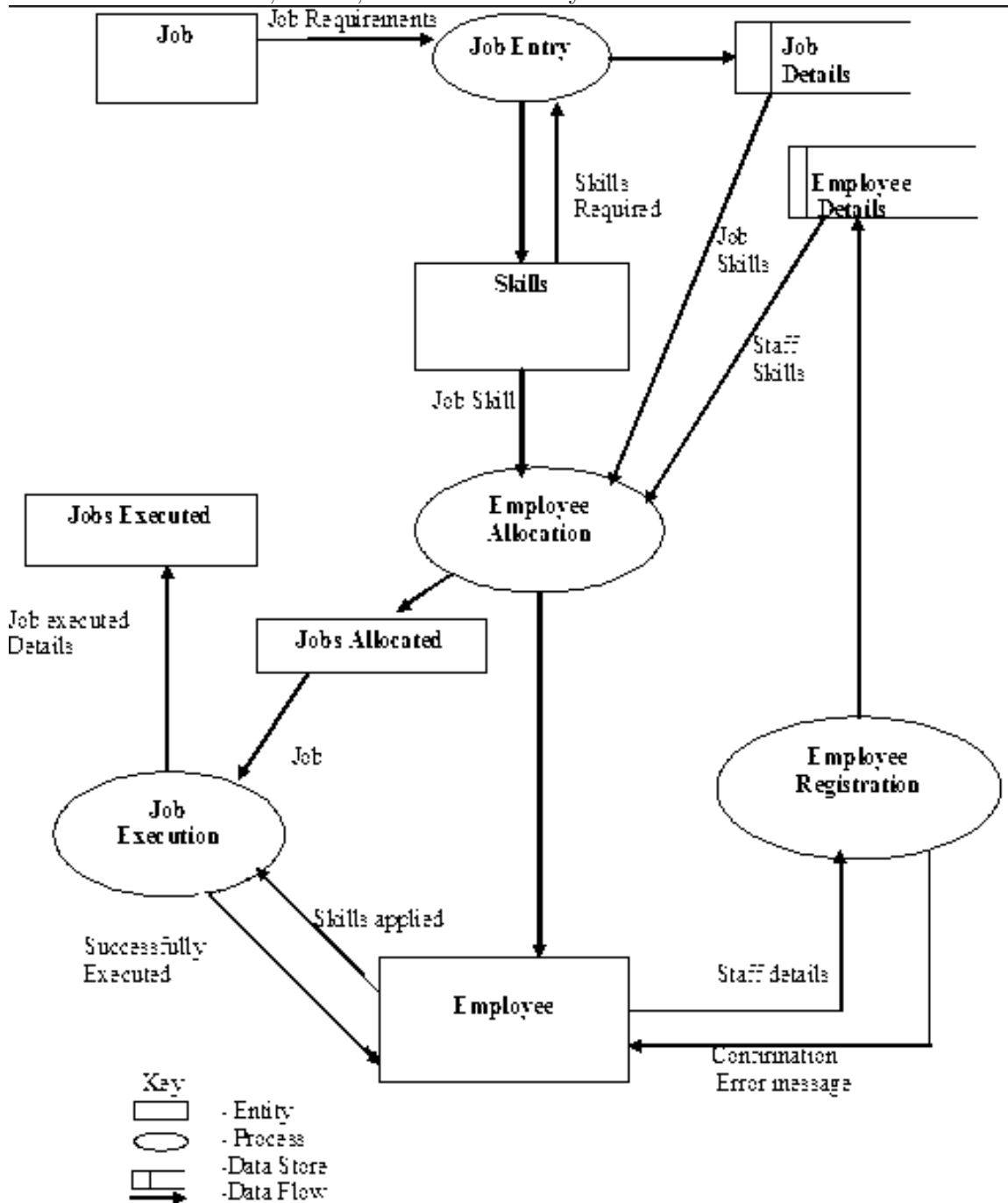


Figure 5.5: Level 1 Data Flow Diagram for designed Management Information System for HR Allocation

5.4 Internal Level

The Internal level represents the database. This phase involved the design of the physical layout of the data storage. The Data Dictionary was designed to show Tables which display Entities and associated Attributes (Tables 5.1 - 5.4).

The design was tailored to Mysql which was used as the DBMS. It described the base relations, file organization and indexes used to achieve efficient access to data. It also described the security measures for the Database which included use of username and password and of assigning user rights.

5.4.1 Data Dictionary

Data Dictionary contains metadata which provide accounting of all tables within the database. It describes in detail the attributes of the entities used in the various relations of the database.

5.4.2 Entity Tables

An Entity table shows an Entity (distinct object) ,its Attributes (data items), Data Type, Length and Key. The Key helps define Entity relationships(one, one to many, and many to many). The primary Key is the main identifying attribute of an Entity. The Primary Key of one table appears again as the link (Foreign Key) in another table.

The desigined system has the following Entities shown in the tables below, and their Attributes.

Employee Table

Employee table (Table 5.1) shows the Entity 'Employee' and associated attributes namely: Employee ID (Primary Key), LastName, FirstName, Date of Birth, Sex, Marital Status, Title and Date of Entry in Firm.

ATTRIBUTE	DATA TYPE	LENGTH	KEY	DESCRIPTION
Employee ID	AutoNumber	5	Primary	Employee identification number
LName	Text	15		Last name
FName	Text	15		First name
Date of Birth	date	10		Date of Birth
Sex	Text	10		Sex
Marital Status	Text	10		Marital Status
Title	Text	5		Title
Date of Entry in Firm	date	10		Date of Entry in Firm

Table 5.1: Employee Table

Qualification Table

Qualification table (Table 5.2) shows the Entity 'Qualification' and associated Attributes namely:

Qualification code (Primary Key) and Employee ID (Foreign Key).

ATTRIBUTE	DATA TYPE	LENGTH	KEY	DESCRIPTION
Qualification code	Auto/Num	5	Primary	Qualification code
Employee ID	Auto/Num	5	Foreign	Employee identification

Table 5.2: Qualification Table

Skill Table

Skill table (Table 5.3) shows Entity 'Skill' and associated Attributes namely:

Skill code (Primary Key) and Employee ID (Foreign Key).

ATTRIBUTE	DATA TYPE	LENGTH	KEY	DESCRIPTION
Skill code	Auto/Num	5	Primary	Sub county identification number
Employee ID	Auto/Num	5	Foreign	Employee identification

Table 5.3: Skill Table

Job Table

Job table (Table 5.4) shows Entity 'Job' and associated Attributes namely:

Job code (Primary Key), Duration, Skills Required (Foreign Key), and Number of Staff.

ATTRIBUTE	DATA TYPE	LENGTH	KEY	DESCRIPTION
Job code	Auto/Num	10	Primary	Job code
Duration	Auto/Num	15		Duration
Skills required	Auto/Num	15	Foreign	Skills required
Number of Staff	Auto/Num			Number of Staff

Table 5.4: Job Table

Chapter 6

Implementation

6.1 Introduction

This chapter gives an overview of project implementation. It highlights the major components and the operation of the system.

6.2 Major Components

6.2.1 User Interface

The interface was designed using Hyper Text Markup Language(HTML.)

HTML marks up the overall User Interface to display database results or can be static incases like Login or Access screens. HTML was used to design the interface because it can be interpreted by all available web browsers, thereby making the system accessible to all.

The User interface has capability of retrieving reports from database by using queries, and can capture data on employees and jobs by use of forms.

For the user interface to work, the User needs a modern web browser such as Internet Explorer (IE 6 and above) which also supports java scripts; Application link `http://servername:port no.` For example: `http://localhost:9090` , where local host is on the same machine. This would bring out the configured application home page.

6.2.2 Database

In designing the database, Mysql was used as the DataBase Management System (DBMS) and Java Servlets used as the scripting language to specify actions stated by user.

Mysql was used as DBMS because it is easy to use, portable and goes well with java servlets

which is portable as well.

Open DataBase connectivity (ODBC) was used for connecting java servlets to Database using Mysql commands.

6.3 Operation of the System

6.3.1 Home Page

The system is accessed through the Home page (figure 7.1) which requests user to click on login to view the Access Screen which enables the User to enter details such as username and password (figure 7.2). If login details are correct, the user is allowed to access the system. Users have different permissions.If the login details are invalid, user is advised so and requested to re-enter the correct details.Failure to enter the correct details will prevent user to access the system. The home page and Access screen have a quit button to exit the program.

6.3.2 Main Menu

The Main Menu (figure 7.3) enables the user to navigate through the system. It is used to access forms for data entry and to request for reports for decision - making. Navigation through the system is facilitated by use of a mouse.

6.3.3 Forms

New Employee

New Employee form (figure 7.4) captures Employee bio-data such as FirstName, LastName, Date of Birth, Sex, Marital Status, Title and other details like date of joining the firm, Skills and Qualifications when a new employee Joins the firm.

New Job

New Job form (figure 7.5) captures details relating to a new Job. These include Job Name,where to be done,Duration,Number of staff required, Skills and Qualifications required.

6.3.4 Reports

Reports can be accessed through the Main Menu by clicking on Reports. The system uses queries to enable the user to select reports for viewing such as list of Jobs allocated, List of employees, their qualifications and skills.

6.4 Testing and Validation

The System was run to see whether it was operating as expected. Errors were identified and corrected. The System was validated with test data to ensure that it produces desired results.

Chapter 7

Discussion, Conclusion and Recommendation

7.1 Discussion of Achievements

The Study was carried out to address the problems in human resource allocation in indigenous audit and accountancy firms in Uganda.

The main objective was to develop a Management Information System for Human Resource Allocation which would carry out employee - job allocation basing on employee qualifications and skills and matching them to job requirements.

The objective has been achieved. The system developed:

- (i) Captures Employee details such as bio-data, qualifications, skills.
- (ii) Captures Job details such as name, duration, skills required.
- (iii) Matches job requirements with the right employee(s).
- (iv) Can display a list of jobs allocated, list of employees with their Qualifications and.
- (v) Guaratees system and data security by requiring username and password to gain access to the system and by assigning user rights.
- (vi) It provides for limited user rights.

The System designed however, does not provide for hired consultants and is not integrated to other Human Resource Management Systems.

7.2 Conclusion

The study involved developing a Management Information System for Human Resource Allocation which was designed to meet the employee - job allocation requirements for Indigenous

audit and accountancy firms in Uganda.

The system designed is fast, allocates employees to jobs basing on job requirements and employee details stored in the database, resulting in increased competency and competitiveness.

The system also highlights to management staff training requirements.

7.3 Recommendation

The System designed uses the information stored about job requirements and employee skills and Qualifications to match employees to jobs, and does not provide for some features like hired consultants. The the system should be expanded to provide for hired consultants and should be intergrated with other systems, in particular, Human Resource Management Sytems to achieve an intergrated solution.

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APPENDICES

Appendix I. Interview guide

TOPIC: MANAGEMENT INFORMATION SYSTEM FOR HUMAN RESOURCE ALLOCATION

Dear Sir / Madam, I am a student from the Faculty of Computing, and Information Technology, Makerere University. I am carrying out a research study on Management System for Human Resource Allocation. You are kindly requested to participate in answering the following questions. Any information provided will be used for academic purpose only and will be treated in strict confidence.

Thank you.

MULYANGA RACHEL

2004/PGD18/116U

INTERVIEW QUESTIONS

Section A

Establishing Current System

1. What system is in place for allocating employees to various jobs?

Section B

Evaluating the Current System

2. Are you comfortable with the current system of employee job allocation?

3. How good is the current system?

Section C

Improvement in Human Resource Allocation System.

4. How do you think the current system can be improved?

5. Do you think computerizing of the current system will cub down the weaknesses highlighted above?

Appendix II. Screen Shots

Login Sreen for designed Management Information System for HR Allocation

The Login screen (figure 7.1) enables the user to login on to the system or to exit from the system.

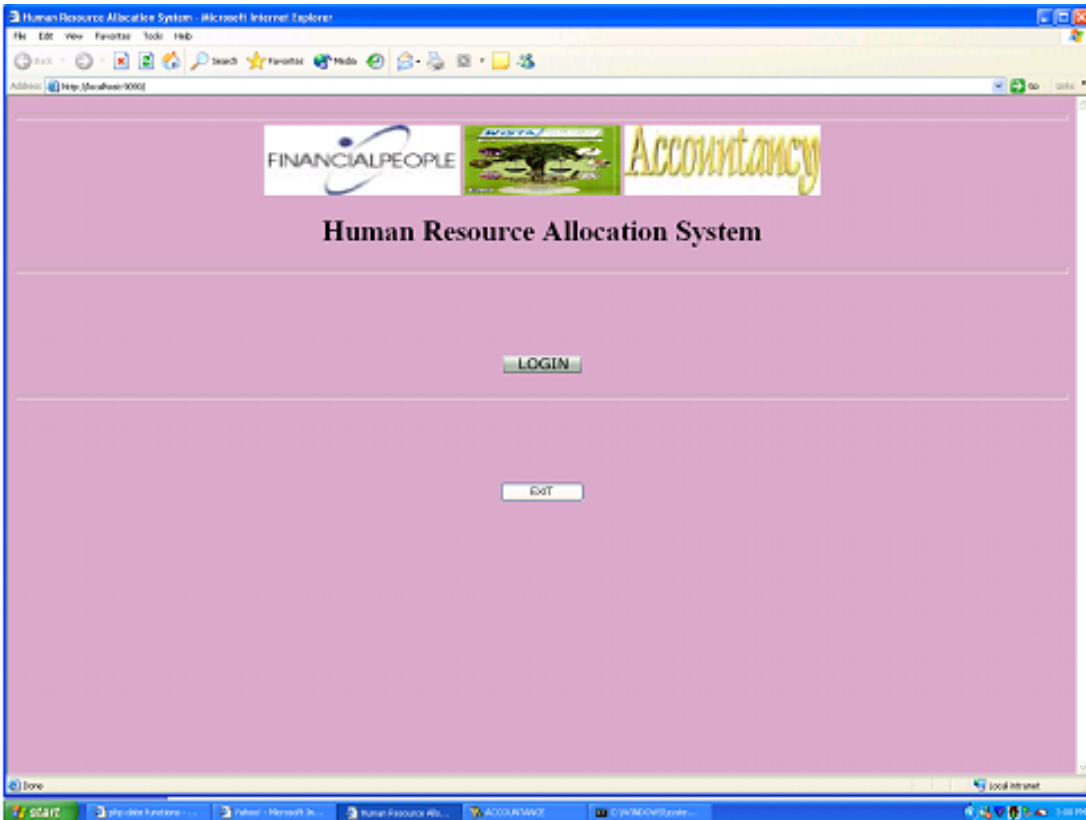


Figure 7.1: Login Sreen for designed Management Information System for HR Allocation

Access Screen for designed Management Information System for HR Allocation

The Access Screen (figure 7.2) enables the user to enter Username and Password in order to access the system.

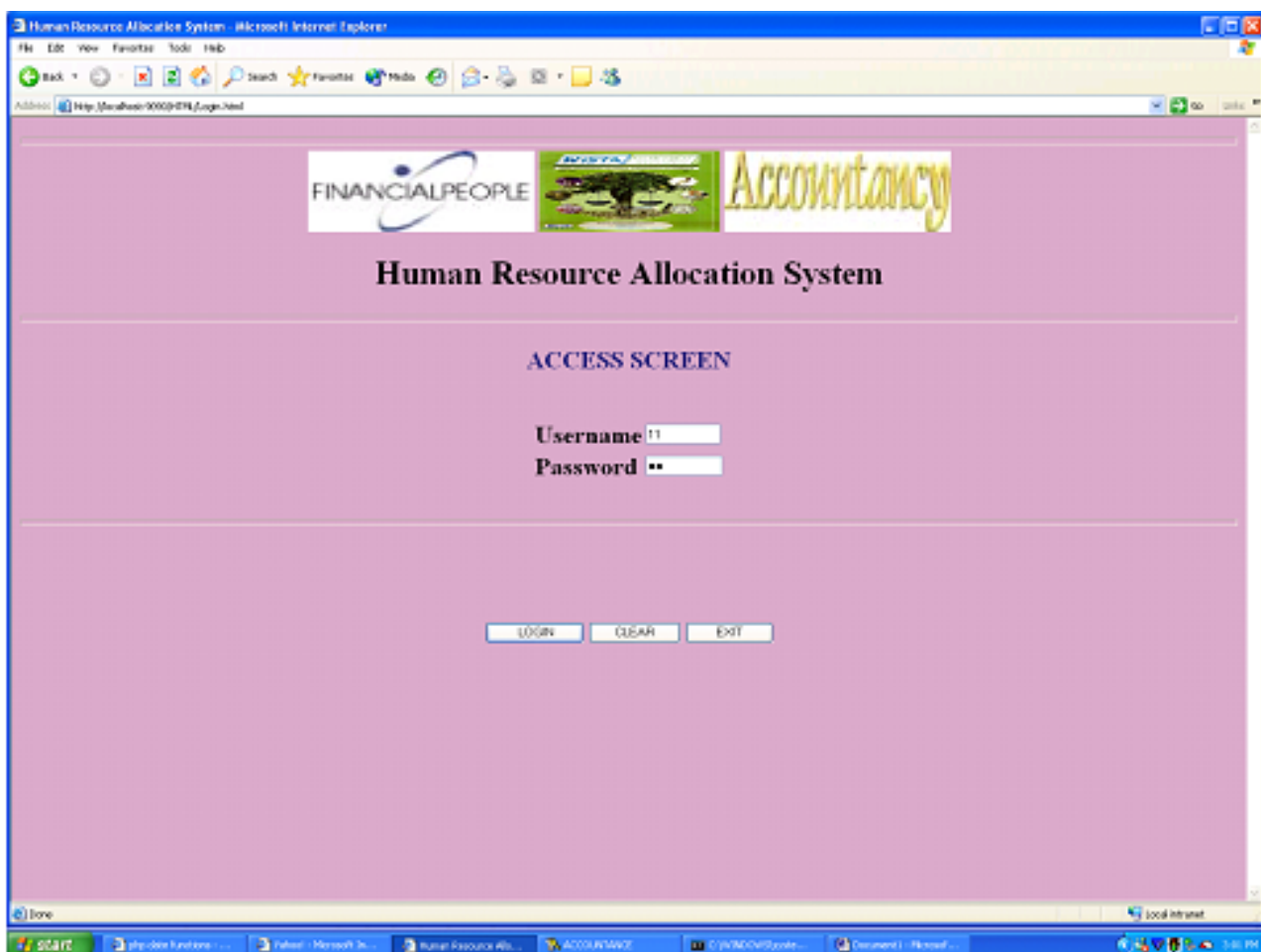


Figure 7.2: Access Screen for designed Management Information System for HR Allocation

Main Menu Screen for designed Management Information System for HR Allocation

The Main Menu Screen (figure 7.3) displays the options available to the user after accessing the system. It enables the user to navigate through the system.

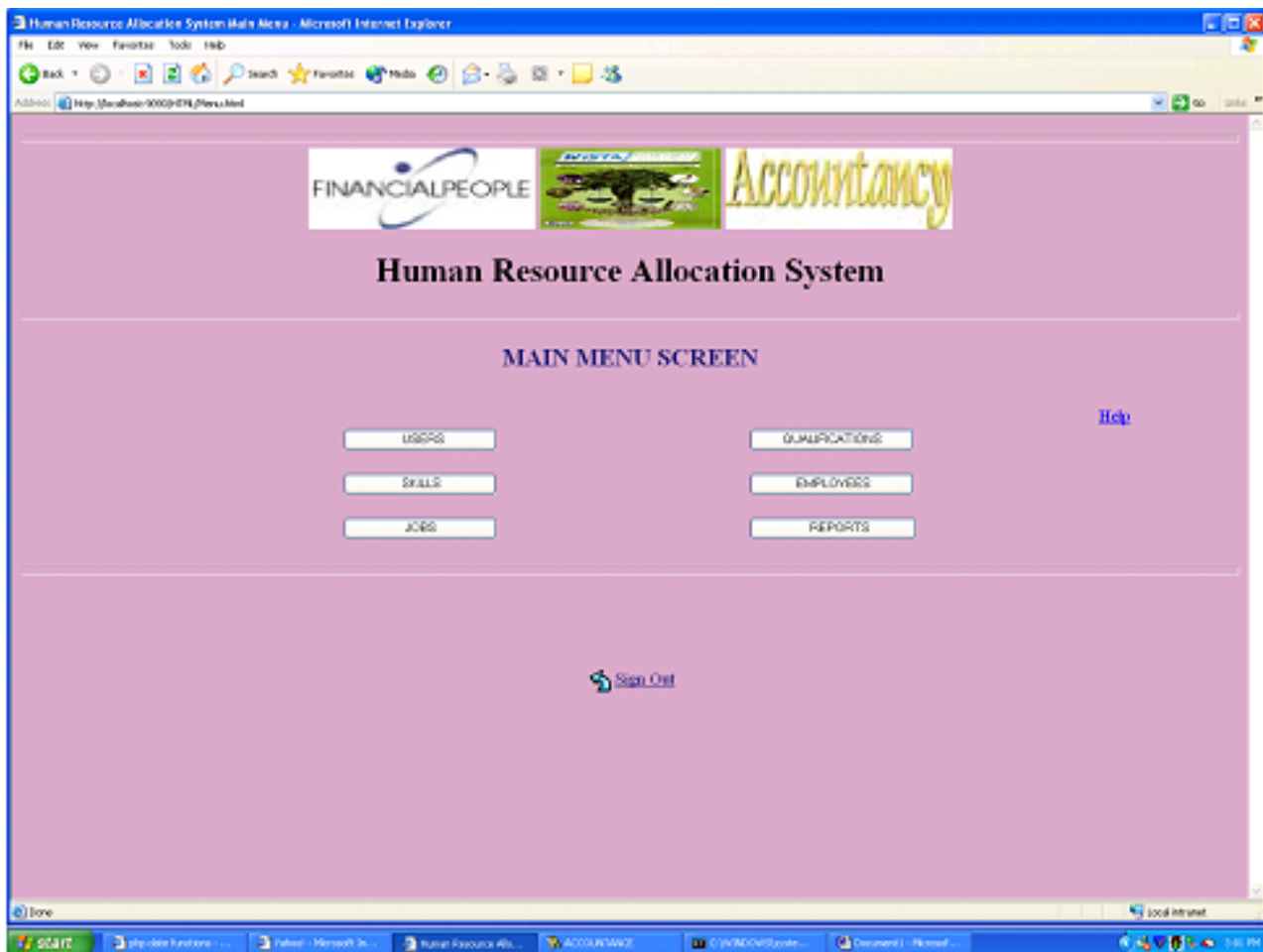


Figure 7.3: Main Menu Screen for designed Management Information System for HR Allocation

New Employee Form for designed Management Information System for HR Allocation

The New Employee Form (figure 7.4) displays the form used to capture data relating to a New Employee.

The screenshot shows a web browser window titled "REGISTER EMPLOYEE PAGE - Microsoft Internet Explorer". The address bar shows "http://localhost:9090/serve/HR/NewEmployee". The page has a purple background and features a header with logos for "FINANCIALPEOPLE", "Accountancy", and "Human Resource Allocation System". Below the header, the form is titled "NEW EMPLOYEE".

Form Fields:

- First Name:
- Last Name:
- Sex:
- Marital Status:
- Title:
- Date of Birth:
- Date of Joining (Firm):
- Joined Profession:

Skills:

- AUDITING
- FINANCIAL TRAINING
- REPORT WRITING
- CAN WORK UNDER PRESSURE
- ACCOUNTING
- SYSTEMS ANALYSIS AND DEVELOPMENT
- IMPLEMENTING OF ACCOUNTING SYSTEMS

Qualifications:

- MBA
- DIP EDUCATION
- CPA LEVEL 3
- CPA(E)
- BBA
- UACE
- ACCA LEVEL 2

Other Qualifications:

Buttons: RETURN, SAVE, RESET

Figure 7.4: New Employee Form for designed Management Information System for HR Allocation

New Job Form for designed Management Information System for HR Allocation

The New Job Form (figure 7.5) displays the form used to capture data relating to a New Job.

The screenshot shows a web browser window titled "REGISTER_JOB PAGE - Microsoft Internet Explorer". The address bar shows "http://marahar/9000/jar/JobNewJob". The page content includes a header with logos for "FINANCIALPEOPLE", "Accountancy", and "Human Resource Allocation System". Below the header, the title "NEW JOB" is centered. The form consists of several sections:

- Week Required:** A text input field.
- Where To Be Done:** A dropdown menu.
- Duration:** A text input field with "week(s)" as a label.
- Number of Staff:** A text input field.
- Required Skills:** A list of checkboxes with the following items:
 - AUDITING
 - FINANCIAL TRAINING
 - REPORT WRITING
 - CAN WORK UNDER PRESSURE
 - ACCOUNTING
 - SYSTEMS ANALYSIS AND DEVELOPMENT
 - IMPLEMENTING OF ACCOUNTING SYSTEMS
- Qualifications:** A list of checkboxes with dropdown menus for "WEIGHT 1":
 - MBA
 - DEP. EDUCATION
 - CPA LEVEL 3
 - CPA(0)
 - BBA
 - UACE
 - ACCA LEVEL 2

At the bottom of the form, there are three buttons: "RETURN", "SAVE", and "RESET".

Figure 7.5: New Job Form for designed Management Information System for HR Allocation