



Design of an Employee Management System (A Case Study of National iron Ore Mining Company, Itakpe)

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ABSTRACT

Most of the contemporary Information systems are based on the Database technology as a collection of logically related data, and Database Management System (DBMS) as a software system allowing the users to define, create, maintain and control access to the database. The process of constructing such kind of systems is not so simple. In this paper, A database management system was developed to manage the staff data of the National Iron Ore Mining Company, Itakpe, Kogi State, Nigeria. The system developed is called Employee Management System. It consists of functionally related GUI (Graphical User Interface) and a database. The application programme is between the users and the database, where the data is stored for reliability, flexibility and functionality. The programming tool includes Microsoft visual studio 2010 platform and C-Sharp (C#) as the language. It involves a mutual development of application program and a database. The software was tested and found effective for the company. It is recommended for large organizations and establishments.

Keywords: *employee management system, information system, database management system, records, Itakpe,*

1. INTRODUCTION

Studies have shown that the workforce of a company is the most important part of any company irrespective of its size and type of business they are into. Success ratio of a company is highly influenced by the employee management. Companies who understand the importance of employee management often use employee management system (EMS).

Companies are challenged daily by the need to manage and integrate data information needs of the human resources, payroll, and accounting functions using the computerized employee management system. This has necessitated the need to design and implement an employee management system for National Iron Ore Mining Company, Itakpe in Kogi State of Nigeria.

The management system will consist of an application program that communicates with a database which generates several reports from queries that are issued by the user. It works on the same principle as manual system only that the computer automates the process, so it is fast and more accurate; there is an assurance of accurate and updated information in case the need of accessibility of an employee's data is required. It would be user friendly with aesthetic user interface design and would be intuitive. This insures that the user or administrator would spend less time learning the system and hence increase their efficiency.

1.1 Problem Statement

It has been observed in the National Iron Ore Mining Company, Itakpe (NIOMCO) that the way the personnel (employee) records have been handled had been manually, i.e. using paper work and most recently, excel sheets. This has been observed to be inefficient and cumbersome thereby increasing loss time and reducing productivity. It is the objective of this research work therefore to seek ways to improve the system and make it more efficient by using the Structured Query Language (SQL) management server as the database and C sharp (C#) programming language to write the code of the employee management system being proposed.

1.2 Objectives of the Research

The aim of this research is to design an employee management for National Iron Mining Company, Itakpe. It is expected that on delivery, the proposed management system would create an improved and early method of keeping employee records, provide for a quick retrieval of employee records, and due to

the speed of computer, it is expected to provide fast and efficient responses to management employee data needs.

2. LITERATURE REVIEW

Several works have been carried out on the design of an employee management system for various industries and establishments. Although no EMS has been developed for NIOMCO, Itakpe. Due to its peculiarity and association with the author, an EMS will be designed. For the purpose of this paper however, several definitions of an employee management system from different authors and how such EMS can be applied will be reviewed.

Employee Management System lies at the centre of any computerized personnel department in an organization; without them other modern technologies such as decision support system cannot be effectively integrated into routine personnel work-flow. This type of system would require a computer program that captures data of employees such as: employee number, salaries wages information, skills and qualifications etc. This would enable employee information to be readily available at all times to assist with decision on skills acquisition, training needs, deployments, among others.

Management is the process of using an organization's resources to achieve specific goals through the functions of planning, organizing, leading and controlling (ISO, 2001).

Yusof and Chell defined employees management as the field of management that is responsible for the

proper creation, receipt, maintenance, use, and disposal of records to achieve efficient, transparent and accountable governance and management. Gunnlaugsdottir, J. also defined employees management system as "record that contain initial application forms, results of physical examination, interviewers notations, test scores, periodical appraisals, transfer and promotions, disciplinary actions, releases and retiring wages, salaries, taxes paid, contributions and similar items". Gunnlaugsdottir, while elaborating on this definition, opined that employee record management system may also include some or all the following information: full name, address telephone number, age and sex, nationality, ethnic origin, religion, membership in trade union etc. In many organizations these records are poorly organized and under-utilized despite the vital or important information contained there. Emwere, J.C argued that personnel records pose a particular problem because of their "bulk, longevity, and sensitivity." ISO 15489 defines a record as follows: information created, received, and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business. The ISO 15489 document went on further to say that records are not just any document an organization produces or receives; they also include the editing, saving, reviewing, copying, deleting and tracking of these documents. Some experts estimate that of all the documents an organization creates; only 10 to 15 percent qualify as records. Records management procedures for each organization specify which documents or

information become records based on classification of records.

From the foregoing definitions, one can conclude that the authors acknowledge the argument that records management is a core function of an organization in the same way that human resources or financial services are and that as such should be required to demonstrate a return on investment. Penn supporting this asserting stated that 'records management programme must exist because the function of managing employees information is a necessity.' The authors agree that the importance of, and benefits to be derived from sound records management practices to an organization are not in doubt, but just because such views are (understandably) commonly held by information professionals this does not necessarily mean that they will be automatically shared by everyone – especially as employees records management is a far less generally understood concept than the work of the human resources or finance departments. Moreover it should be recognized that measuring the benefits of a function need not question its validity or its status; and it should also be seen as a standard management practice to understand the value added to the organization from the expenditure of its resources.

3. STUDY AREA

The National Iron Ore Mining Company, Itakpe is located at KM 15, Itakpe, Okene-Lokoja Road, Kogi State of Nigeria. Itakpe is a town in Kogi State, Nigeria. The Itakpe Hills in and around the town of Itakpe contain very pure deposits of iron

ore. The company is a federal parastatal under the Federal Ministry of Mines and steel Development, saddled with the responsibility of exploring and upgrading Iron Ore deposits for Nigerian steel industries.

Kogi state is found in the central region of Nigeria. It is popularly called the Confluence State because the confluence of River Niger and River Benue is at its capital, Lokoja, which is the first administrative capital of modern-day Nigeria.

The company consists of several departments and units of which the administration unit is the key study area in this research. This is because the unit is saddled with the responsibility of database records keeping system for the company. And it is for this unit that the software for the database management system is being designed.

3.2 Design Methodology

The researcher consulted the administration department of the company for which the system is being developed. This consultation was for the purpose of studying the system in detail to understand its functionality and requirement in the new system and probably introduce new features that will establish an improved system. Various tables were designed showing the data to be captured, the flow chart system for the program was developed. From this flow chart, the software program for the data capture of each employee was developed and test run in order to make sure it performs the function for which it was so developed.

The program was therefore critically analyzed and recommendations proffered for future research and development.

3.3 Database Design

The relational database model was used in the design of the database for the EMS application. According to Lit win P., “The basic idea behind the relational model is that a database consists of a series of un-ordered tables (or relations) that can be manipulated using non – procedural operations that return tables”. The benefits of a database that has been designed according to the relational model are:

1. Data entry, updates and deletions will be efficient.
2. Data retrieval, summarization and reporting will also be efficient.
3. Since the database follows a well – formulated model, it behaves predictably.
4. Since much of the information is stored in the database rather than in the application, the database is somewhat self – documenting.
5. Changes to the database schema are easy to make.

Normalization was used to simplify the design of the database in order to bring it to optimum structure.

3.4 Table Structure Design

Personal Details	Previous Employers	Next of kin	Holiday Info	Qualification
Personnel_id_no	Company_Name	First_Name	LYDALD	Qualification experience
Surname	Company_Address	Surname	PYDALD	
First_Name	Company_Phone	Phone	NDPPY	
Middle_Name	Start_Date	Address	CLDE	
Day_of_Birth	End_Date		CLDT	
Month_of_Birth			CLDL	
Year_of_Birth				
City				
Postal_Code				
Address				
Gender				
Marital_Status				
Mobile_Phone				
Home_Phone				

Table 1: Employee Registration Table

KEY

LYDALD = last_year_due_annual_leave_date

CLDE = casual_leave_days_entitled

PYDALD= present_year_due_annual_leave_date

CLDT = Casual_leave_days_taken

NDPPY = number_of_days_permitted_per_year

CLDL = Casual_leave_days_left

Earnings	Deductions	Allowances
Basic_Salary	SNR_Union_Dues	Transport_Allowance
Shift_Allowance	Cont_Pension_Due	Housing_Allowance
Call_Duty_Allowance		Hazard_Allowance
Contract_Addition		Utility_Allowance
		Meal_Subsidy
		Omo_Incentive
		Furniture_Allowance

Table 2: Employee Salary Information

3.5 Hardware/Software Specification

The software will require a computer system with the following recommended minimum specifications to run.

1. Pentium IV
2. A RAM size of at least 512 MB
3. 80GB Hard Disk Capacity
4. CD Writable
5. Printer
6. Un-interrupted Power Supply (UPS)
7. Operating System (Windows)

Software Requirement

1. Microsoft Visual Studio 2010
2. Java Runtime Enterprise 6.5

4. RESULTS

4.1 Coding

By design, C-Sharp (C#) is the programming language that most directly reflects the underlying Common Language Infrastructure (CLI). Most of C#'s intrinsic types correspond to value-types implemented by the CLI framework. However, the C# language specification does not state the code generation requirements of the compiler: that is, it does not state that a c# compiler must target a Common Language Runtime (CLR), or generate Common Intermediate Language (CIL), or generate any other specific format. Theoretically, a C# compiler could generate machine code like traditional compilers of C++ or FORTRAN; in

practice, all existing C# implementations target CIL. C# differs from C and C++ as much as it resembles Java, including. There are no global variables or functions. All methods and members must be declared within classes. It is possible however, to use static methods variable within public classes instead of global variable functions. C# also provides direct support for deterministic finalization with the using statement (supporting the resource acquisition is initialization idiom).

4.2 Microsoft SQL Server 2010

This is the application server used in the implementation of the work. This is a database platform for large-scale online transaction processing (OLTP), data warehousing, and e-commerce applications; it is also a business intelligence platform for data integration, analysis, and reporting solutions.

The Microsoft SQL Server 2010 database engine is the core service for storing, processing and securing data. The database engine provides controlled access and rapid transaction processing to meet the requirements of the most demanding data consuming applications within any organization. The database engine also provides rich support for sustaining high availability. The attendance record database of the workers resides on this server. It also helps in storing workers record during the registration phase of the individual worker and also responsible for authenticating the admin when logging in. It also displays the summary of data to calculate the payroll of every worker.

4.3 Admin Manager

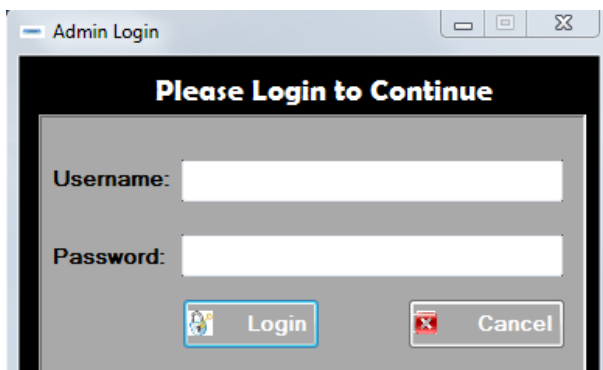


Fig 1 Admin Manager

The first encountered interface on launching the application is the “Admin Login”. The admin Manager is a human being working at the head-office and he is responsible for managing and entering of employee data into the Employee Manager Software. He is solely responsible for how data are entered and stored, manipulated as the case may be. He has a complete statistics of each registered staff of the organization and prepares monthly payment slip for each employee based on their level which can only be done after successfully logging into the application interface via this login environment. This in a way serves as a form of security.

4.4 Application Interface

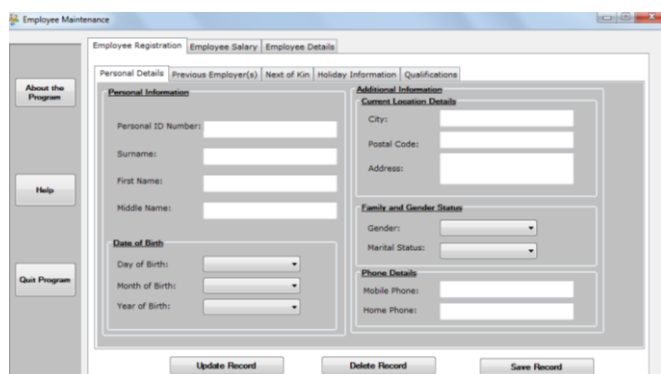


Fig 2: The Application Interface

When the Admin successful logs in, this interface is made available for employee data to be stored for new staff, updated for existing staff or deleted if required and viewing/generating of payroll slip per staff.

If there is any part of the software that needs further clarification, the Help button is used as well as the About the Program button gives basic information about the software, the Quit button is used to close the program.

4.5 Payroll Slip

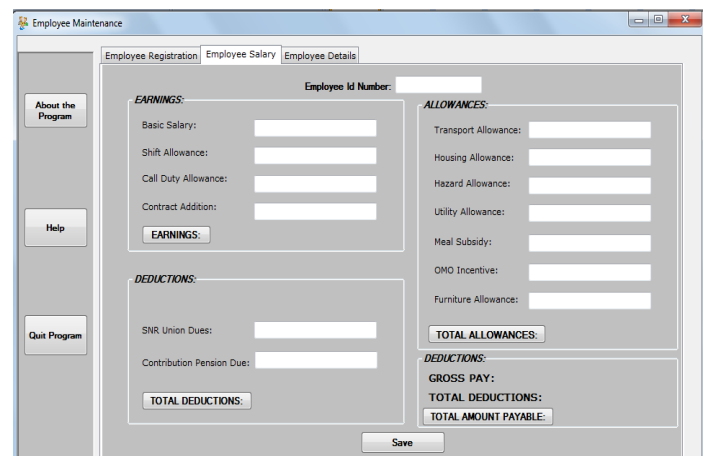


Fig 3: Generating Payroll Slip

This interface continues to accept information for the staff whose records (personal detail record) has just been stored in the database. This interface accepts and stores data for an employee based on the Employee ID entered (which can be acquired from the Employee Details Tab). Click Save to store record.

4.6 Viewing Entire Employee Database and Record

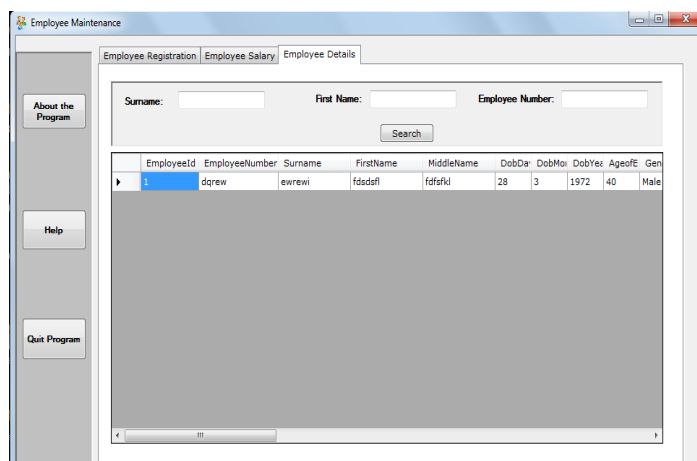


Fig 4: Viewing all Records

The interface is used to view the entire staff record and if need be to view more details about a staff, such a staff employee number is entered in the employee number box and the search button is clicked or the surname or first name of such as employee is used to search. If such a record exist, a new page containing a comprehensive detail of the staff is shown, else a 'no record found' message is flagged.

5. DISCUSSION

The research work has been able to identify that the database records management software have proven to be a far better approach to documentation than conventional, paper-based systems.

The research has also come with the findings that the challenges of manual system are

1. Records can't be retrieved if lost as a result of fire outbreak.
2. No security measures are taken in order to protect the files from unauthorized access.
3. The documents can easily be destroyed by water etc.

4. Error in pay-rolling, resulting from manual computation.

It has also been able to establish that despite the fact the Database Records system improves the efficiency of Admin records keeping, specialist staff will need to be employed to ensure the software is kept, updated and running smoothly.

5.1 Recommendation

The researcher recommends this work to the management of National Iron Ore Mining Company, Itakpe that this software be given the proper attention it deserves. If possible, management should employ the service of an expert in the art of software development to look into the need of making the software complete product with high utility.

To achieve the set goals of this work, the following is also recommended.

1. Staff Training Requirement: The Personnel that will be in-charge of the new system should be given adequate training on the use of the system. The staff should be trained or given orientation on the objectives of an automated system. They should be made to understand that the computer is not here to replace them, but to reduce the fatigue and increase the efficiency of the staff in the delivery of their services.
2. Changeover Method: For the implementation of this system, the researcher suggest the use of parallel changeover method, which involves running both the old and the new systems simultaneously for a "test period" during which performance of the new system, will be observed meticulously. The major reason for choosing this method is that it gives the management or personnel that will be

using the new system to get used to the system before the old system is discontinued.

3. The office should be marked “Out of bound to unauthorized personnel”.

4. Un-interrupted Power Supply (UPS) should be installed along with the computer system.

5.2 Suggestion for Further Studies

The researcher suggests that further studies should be carried out on employee records management system for larger organizations, noting the uniqueness of the organizations and also the implementation, maintenance and challenges of such systems designed.

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