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DESIGN AND IMPLEMENTATION OF ENHANCED PENSION SCHEME MANAGEMENT SYSTEM FOR CIVIL SERVANTS

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ABSTRACT
The former pension plan, which was established in early 1970 and completely implemented in the year 1979, was replaced with the 2004 Pension system as a result of persistent complaints from the general public. Top Pension Board officials' fraudulent actions were one of the grievances from the prior pension plan. It was challenging for the government to make payments because of the growing cost of pension payments in the public sector, which placed a heavy burden on the government. Introduced in 2004, the financed, contributory pension plan was funded. The 2004 Pension Scheme was created with the intention of raising retirees' standards of living and preventing old age poverty. Even though various organizations were established to handle various tasks, retirees' funds have yet to reach their proper locations by the deadline. Incomplete data collection, the loss of important data, double registration, delays, and going from one location to another for verification without attaining one's goal are a few of the issues that were discovered while studying the existing system. Our goal in this work is to design and implement an improved pension scheme management system that can conduct online registration and verification exercises, reducing stress and ensuring that money reaches its destination on time, as well as to provide security in the database to prevent insiders and outsiders from manipulating data in the system. The development of a shared database where the user, the Admin, and the Super Admin share some common data. Object Oriented Analysis and Design Methodology is the adopted approach (OOADM). For this project, ASP.NET was combined with HTML, Java Script, and Cascading Style Sheets (CSS) at the front end and C Sharp at the back end.

INTRODUCTION

Traditionally, there are ways to protect and care for those who have given meritorious service to the country. This outcome is evident on the extended family system, where the younger ones who have been previously assisted will in return take care of the old ones in providing food, clothing and health facilities. The system became jeopardized as the outturn of the so-called modernization and western civilization took over the system. In the early 1970s, the government introduced a pension scheme which was fully implemented in the year 1979. Provision of the decree was a pension scheme that was funded and non-contributory. Its benefits were largely related to earnings and relied on the replacement ratio. It provides while in service, the pension benefits and gratuities were functions of the number of pensionable years and the income earned. The pension benefits are paid by the government from the consolidated revenue fund. The 1979 Pension Decree increased the retirement age to 60 years or 35 years in service, which was subjected to 3 months' notice in writing or payment of 3 months' salary in lieu of notice. The consideration is thereby given to those in the higher institutions of learning, as their retirement age was increased to 65 years or 35 years of service.

The pension scheme provided a structure of pay as you go (PAYG) with specified benefit, which indicates that it is mainly funded, signifying that the benefits paid within a certain period were financed by the government from the consolidated fund and not the employees.

Among the areas covered by the 1979 pension scheme were professions and bodies such as the Police, Federal and State Ministries and Departments, National University Commission, University Teaching Hospitals, Public Teaching Service, Local Governments and other Parastatals of the government.

Despite the commendable principles for which the pension scheme was provided for, it has not had a significantly positive impact on the welfare of pensioners. This was as a result of problems such as the inflation rate, which has drained the core merit of the benefits; the high dependency ratio in the country; fraudulent activities of the Pension Board, inadequate Pension coverage, and erratic budgetary allocation and so on. Because of these difficulties, pensioners constantly dissented to the authorities against their necessitous conditions and welfare, and called for a prompt reform in the pension scheme. As the pressure persisted on the government to reappraise the current pension scheme, the Federal Government of Nigeria introduced a reform to the pension scheme called the '2004 Pension Scheme', duly supported by an Act of the parliament known as 'The New Pension Reform Act 2004' of the Federal Republic of Nigeria which established a funded system based upon personal accounts.

The main goal of the 2004 Pension Plan is to ensure that everyone who has worked in federal government service, the federal capital area, or the private sector would get adequate retirement benefits when they are due. A "financially viable, simple, transparent, less burdensome, and cost-effective pension system" is what the plan calls for (Demaki & Dedekuma, 2006).

Abayomi, Ahmed, and Nureni (2016). According to their interpretation, the new pension plan will be fully financed and will generate the necessary funds by a set percentage of monthly earnings contributions made by both the employee and the employer in the form of savings.

Another goal of the new pension plan is to emphasize lump-sum gratuity payments, remove pension administration from government control, and place it under the direct control of financial companies. Structured pension administration today depends on the effectiveness of Nigerian financial institutions and calls for well-positioned banks, insurance firms, pension fund administrators, custodians, and a functional regulatory framework in the financial and capital markets. (2014) Moses and Okoroafor

According to the research by Alicia, Jean-Pierre, and Caroline (2015), members should be held accountable for their investing strategy. This demonstrates that some people struggle with exorbitant fees and poor performance while investing their own money. The question is whether the evidence supports this premise. As a result, they were able to draw the conclusion that defined benefit plans outperformed contribution plans based on investment returns.
Basically, what needed to be addressed remains whether what is provided of the 2004 pension reform Act has any effect in integrating adequate safety

ground as opposed to the perceived deficiencies of preceding pension schemes with the challenges that adversely affecting the scheme?

Ojo and Meribole (2006) noted the declining economic condition of the country and examined the rising cost of pension payments in the public sector, which is placing a significant weight on government overtime. The contributory pension program was seen by (Umar & Tasdo, 2012) as a tool for economic development in Nigeria.

Because of the workers' modest salaries, contributory schemes are found to have a negative impact on worker investment in Nigeria.
Kalu and Nick (2015).
Rob (2009) discussed the effects of saving for retirement, and the new program allowed retirees the chance to do so. Contributions to the 2004 pension plan have been made, but they revealed that the plan for how retirees will get their money in a timely manner without stress has not been fully executed.

Some of the challenges of the 2004 pension scheme have been revealed in few areas: incomplete data capturing, fraudulent activities of Pension Board, non-enrolment of eligible pensioners into the payroll, irregular payment of pension, non-payment of pensions and omissions and short payment of monthly pension. Therefore, to ease the payment of retirees and making sure that these monies will get to its rightful destination as at when due, an enhanced pension scheme management system will be designed to be capable of enrolling and verifying Pensioners online, to store adequate and correct data in the database (Ogbonnia & Brooke, 2022), create of a common database where the user (employee/retiree)admin (PFA) and super admin (Pencom) can share common information, together with the user trail which can store activities in database in order to be transparent and can only be seen by the super admin (Pencom) but cannot be modified in any way. This certainly will help to monitor fraudulent activities in the inner house or from an outsider.

The system is set up so that retirees can visit a site verification using their user ID and password log and also be confirmed using fingerprint authentication from anywhere.

The effectiveness of the new scheme will largely depend on the effectiveness of the Commission's regulatory and supervisory functions because the absence of an all-encompassing regulatory framework for the pension industry was a major factor in the failure of previous schemes in both the public and private sectors (Urhoghide and Ogiedu 2008).

Statement of the problem

The delay in the system payment of pension and gratuities in Nigeria has brought boiundless deprivation and death to many retirees, making retirement dreaded vision by workers. This problem is further compounded by lack of planning and management of post-retirement epoch and conditions. Among the major concern are non enrolment of eligible pensioners into the payroll, irregular payment of pension, non- payment of pensions and omissions and short payment of monthly pension. There is therefore the need to develope an enhanced pension scheme management system to take care of the problems and improve on the available scheme.

Aim and objectives of the Study
The aim of this study is to design and implement an enhanced Pension scheme Management System that will:

a. Enrol employees and capture data of retirees online using data from personnel department of each institution.
b. Store the passport photo/fingerprints of each employee
c. Verify employee/retiree using their unique USER ID and PASSWORD
d. Allow retirees to be verified online at their base location
e. Provide a common database for employee,employer and pension regulators which will ease information sharing
f. Provide improved/enhanced security features that will block out manipulation and corruption.

LITERATURE REVIEW

Review of Pension Scheme

In order to guarantee that an employee will have income to fall back on after retirement, a pension is defined as an amount that is either pledged by the employer or employee, or both.
Fapohunda (2013) (2013)

According to Odia & Okoye (2012), a pension is a sum of money given to an employee by a government agency or business after they have worked for a while, are deemed too old or ill to work, or have reached the legal retirement age. As a result of the person's employment with the organization that is paying the amount, it is also perceived as the monthly aggregate paid to someone who is retired till death (Adams, 2005).

When an employee leaves active duty, a significant amount is paid to them as a pension.
He asserts that payments are frequently made in installments each month.
Pension plans can also be single-employer or multi-employer, insured or trusteed, fixed or variable benefits, group or individual, insured or trusteed, private or public, and non-contributory (Ozor, 2006).

The two reform approaches Nafisat (2014) observed—the "parametric" and "paradigmatic" styles—were discussed in both European Union and EU candidate countries. The Parametric reform, which was implemented in a few nations, including the Czech Republic, France, Germany, Greece, and Slovenia, aimed to streamline the pension system by increasing optional private pension arrangements and decreasing expenditures. The paradigmatic reform, sometimes known as a "three-pillar reform," aims to break the PAYG pillar's stranglehold on the statutory social security system.
A paradigmatic reform is also a significant adjustment to the fundamentals of pension provision, usually brought about by the addition of a funded pension pillar that is required, as well as a severely revised PAYG pillar and expanded opportunities for voluntary retirement savings.
In countries such as Bulgaria, Croatia, Denmark, Hungary, Latvia, the Netherlands, Poland, Sweden, and Chili, it is still used.

Nevertheless, the experience of the Nigerian pension reform does not inspire enlarged pool of pension funds through tax advantages by motivatinging voluntary pension contribution as indicated by the elements of parametric reform. Instead, the Pension Reform Act puts 'voluntary contribution' above the statutory rates of contribution to taxation at the point of withdrawal.

Old Pension Scheme

The old pension scheme introduced in the early 1970s by the government was implemented in the year 1979. The composition of this pension scheme is pay as you go (PAYG) with specific interest, showing that it is mainly funded, becuase the benefits paid during a certain period were financed by the government from the consolidated fund and not the employees. Over a period, there has been significant attention received by pension and other social benefit matters in many countries. The challenges associated with the existing pensions in these countries led to changes in the ways pension assets and benefits were managed and distributed to the target groups, especially retirees and 'senior citizens'.

Challenges of the old pension scheme

Its reliance on government budgetary provisions for funding was one of the challenges that came with the defined benefit. Lack of substantial and timely budgetary provisions caused the program to become mostly implausible. Additionally, pension administration was weak, ineffective, and time-consuming due to inadequate staffing and issuing, which resulted in inadequate record keeping, forcing pensioners to wait years before their retirement benefits were paid (Smart, 2012)

Due to ineffective rules and systemic supervision, the private sector schemes might be distinguished by their low or nonexistent compliance rates. As a result, many employees in the private sector were not covered by any kind of pension plan (Omoni, 2013).

A significant amount of resources were expended on yearly verification exercises because there were insufficient reliable records of pensioners, which prevented the timely and efficient distribution of pensions. On the other hand, a small percentage of employees were not protected by the private sector pension plans that their employers had established, and many of these plans lacked funding. However, given how the plans were funded, there were several instances of improper behavior on the part of the pension fund trustees and fund administrators. This tragic situation necessitates reconsidering pension management in Nigeria by the government of former President Olusegun Obasanjo because the country's previous pension plans were plagued by a variety of issues (Eme & Uche 2014)

Nigeria joined the reformist countries in 2004 to adopt the Direct Contributory scheme. Prior to this, the country had practiced the Direct Benefit Scheme in the public sector in which the government at all levels shouldered the full cost of pension and gratuity payment of workers.

The New Pension Reform scheme

On the 23rd March 2004, the senate passed the bill for Pension Reform and was signed it into law by the President on the 25th of June 2004. The Nigerian government introduced Contributory Pension System (CPS) in July 2004 in order to replace the old Defined Benefit (Pay-As-You-Go) system. Tsado & Gunu (2011) assessed investment decisions in Nigerian PFAS'based on both qualitative and quatitative factors. The study as a result indicated that three factors were considered by PFA managers when making investment decisions, including economic, risk and security of real estate factors. It is concluded that national pension commission should be flexible in its regulatory restriction of investment areas of PFAs to enhance a better investment decision making process. According to Edogbanya (2013) the Pension Reform Act 2004 was established in order to address the manifested loopholes in the old defined benefit pension scheme and provide adequate resources to retirees after retirement from the service.

The Act's implementation commenced on July 1st, 2004. The Act made significant adjustments to the way leaving service benefits are structured and funded. Section 1 of the Act creates a contributory pension scheme for every employment in the Federal Republic of Nigeria. The plan's goals are to create a unified set of regulations for the administration and payment of retirement benefits, ensuring that employees (public or private) receive retirement benefits at the proper time, and assist those who are underprepared for retirement. No employee shall maintain a Retirement Savings Account (RSA), have access to the account, or engage in any transactions with the custodian with respect to the Retirement Savings Account other than through the Pension Fund Administrator (PFA) of his choice.
Employers must make deductions at the employee's source of monthly contributions and remit an amount that includes both employee and employer contributions to the custodian designated by the employee's pension fund administrator to that administrator's exclusive order no later than seven working days after the employee is paid. The custodian must inform the pension fund administrator, who must then credit the employee's retirement savings account.

The 2004 Pension Reform Act streamlined and combined the two characteristics of pensions and retirement plans that had previously predominated the two industries. It also makes a dramatic change that would fundamentally change how the country manages pensions. Both employees in the public and commercial sectors can participate in the fully paid contributory plan. Employees of all businesses with five or more employees are covered inside the private sector. The new pension reform's overarching goal is to guarantee that everyone who has worked in federal government service, the federal capital territory, or the private sector receives their retirement payments at the appropriate time. It aims to implement a retirement program that is "financially sustainable, straightforward and transparent, less burdensome, and cost effective" (Demaki and Dedekuma 2006). The nagging question of whether the contributory system has successfully eliminated the possibility of a failed pension plan in the nation has persisted despite the reform's promises. How well has it addressed the major issues of the prior programs, including ineffective management, insolvency, the provision of a poverty pension, and unethical practices, to name a few? (Oscar 2012).

In his study, Mausibau (2012) uses the public employees of Oyo state as a case study to assess the effect of the contributory pension on employee savings in Nigeria in 2010. It aims to find out how much public sector employees are aware of the Contributory

Pension Scheme and how much of an influence it has on their savings. A substantial correlation between respondents' levels of awareness and their savings was found via empirical study. Savings, however, do not significantly correlate with the Contributory Pension Scheme.

Both the method used to keep track of retirees in the public sector and the process used to pay pensions provides avoidable issues. In certain institutions, there is no reliable record of the actual pensioners. In the lack of data and facts, corruption thrives greater. When 23,000 phony pensioners were found on the Army pension roll after a military pension account verification led to their discovery, this assertion was portrayed in stark perspective. The system in the public sector also has a problem with how less-than-honorable the treatment of the elderly is. One notices how feeble and frail-looking senior individuals must travel far to receive their pensions on a regular basis. Even worse, they are forced to wait days or even longer to receive their stipends while exposed to bad weather. There have been reports of retirees passing while while in line to get their pension payments.

Major Players in the New Pension Reform Scheme

Pension lfund administrators (PFAs)
PFAs are limited liability firms that have been legally granted a special purpose vehicle license by Pencom to conduct only pension transactions. The PFAs set up retirement savings accounts for workers, administer the person fund as the commission may occasionally direct, and keep records of all financial transactions involving the pension fund that is under their supervision.

Pension fund custodians (PFCs)
PFCs are appointed by PFAs. They are responsible for the warehousing of the pension fund assets. The employer sends the contributions directly to the custodian, who notifies the PFA of the receipt of the contribution and the PFA subsequently credits the Retirement Savings Account of the employee. The custodian would execute transactions and undertake activities relating to the administration of pension fund investments upon instructions by the PFA.

Closed pension funds administration (CPFAs)

In addition to the approval for continuation of the existing schemes, organizations who would like to manage their existing schemes shall apply to National Pension Commission for license to operate as CPFAs. The asset of the pension fund must be at least N500 000,000. In case the assets of the scheme are less than N500 000,000, such scheme should be managed by a PFA.

Challenges of the new scheme
Therefore, due to a lack of transparency, poor funding, incomplete or wrong enrollment, and double enrolment, corruption in the old scheme is already looming in the new scheme. A scam in the head of service pension fund of #151 billion naira was recently detected by the pension reform task force team and the Economic and Financial Crime Commission (EFFC) (Mohammed, 2013). The Chilean experience of 1981 served as a model for Nigeria's 2004 pension reform legislation in the hopes that the Defined Contribution plan will address social and economic development goals. The literature has nonetheless shown that Nigeria lacks the prerequisites, such as well-regulated financial markets, for assimilating pension savings.

Pension Fund Custodians (PFCs) and Pension Commission (PFAs) do not have the regulatory authority to control PFAS and PFCS excesses. According to (Herskovit, 2007), it is unlikely that a single regulatory authority like PENCOM could prevent fraud by PFAS and PFCS given the amount of corruption in the nation. More importantly, pensioners continue to experience inconsistencies and delayed disbursement of their benefits across the nation. The PFAS' must be of exclusive dedication and involved in no other activity save the custody and management of pension funds in order for the 2004 pension scheme to be improved in 2005 (Akintola). According to Kojusola (2015), the pensioners covered by the current plan are not doing better because the Pension Fund Administrators are mismanaging their contributions, and the regulatory agency (PENCOM) did nothing to stop it. He claimed that although a pensioner under the former pension plan would have earned 80% of his final wage as a monthly pension, contributory pensioners would only receive 20 to 25% of their last pay. In essence, the purpose of introducing the new pension plan was to resolve the issues and snags that surrounded the old plan. Unfortunately, the new pension plan appears to lag behind several aspects of the old pension plan, as anomalies in the pension payments to retirees and a lack of knowledge about the new pension plan's whole process cause the pensioners to have concerns about the plan. The majority of those working in the unorganized sector of the economy have not even accessed the program, which raises more concerns about the degree of knowledge and sensitization surrounding the new pension plan. More crucially, (Ahmad 2010) observed that due to lack of understanding, the majority of companies and employees have yet to comply with the new program. He believed that the private sector was the biggest offender.

To increase the country's Gross Domestic Product (GDP), Ojiya (2017) said in his study that the management of pension assets in the capital market should receive more attention in addition to government bonds, real estate, and investment trusts (Nigeria). A fast reconciliation between Pension Fund Administrators (PFAs) and Pension Fund Custodians is also necessary. This will increase the system's accountability and openness.

A study on the contributory pension system as a tool for economic growth was done in 2012 by Gunu and Tsado. He discovered that contributory pension schemes boost economic growth using descriptive statistics. Nwanne (2015) used chi square analysis and simple percentage to examine the effect of contributory pension on economic growth. The majority of the research we analyzed used descriptive statistics, which might not provide a reliable and clear picture of how contributing pension funds affect GDP.

Mahmud, (2014) was able to outline a number of issues with Nigeria's new pension program and produced a number of recommendations for how to fix them. The National Provident Fund (NPF) was established in 1961 to address pension difficulties in the private sector. Pension in Nigeria may be traced back to the 1951 Pension Ordinance, which was the first legislative Act (Ayegba, James & Odok2013). According to Ugwu (2006), there are four primary categories of pensions in Nigeria. Which are:

- **Pension for Retiring:** This kind of pension is typically given to an employee who is allowed to retire after completing a set amount of quality service, typically 30 to 35 years, or at reaching the age of 60 to 65 for Nigeria's public service and 70 years of age for academics and judges. The least educated, Black people and older women suffer from the worst financial literacy (Lusardi and Mitchell, 2007). Since data on older adults suggests that the financially illiterate appear to be unable to calculate how much they need to save for retirement and they also have less wealth, this is a concern to those who are focused on retirement saving.
- **Compensatory Pension:** This type of pension is granted to a worker whose permanent post is abolished and government is unable to provide him with suitable alternative employment.
- **Superannuating Pension**: This type of pension plan is given to a worker who retires at the prescribed age limit as stated in the condition of service.
- **Compassionate Allowance:** This is given when a public employee is terminated from employment due to misconduct, insolvency, incapacity, or inefficiency and a pension plan is not admissible or permitted as a result. Amujiri (2009).

Ahmed (2005) talked about the special characteristics of the new program that offers contributions to both companies and employees. According to Olurankinse (2010), a pensioner under the previous defined benefit pension regime endured neglect in obtaining their gratuities and pensions. Before they could access a fair amount of their pension payments, many people passed away. He suggested that both the public and commercial sectors utilize a single pension plan and that retirement benefits be paid for by both the employer and the employee.

Ikeanyibe and Osadebe (2014) evaluate the Nigerian pension system of 2004 using a descriptive historical methodology. It compares the reform's promises to the prior crisis-ridden pension system in both the public and private sectors. They were able to highlight some of the new scheme's advantages, particularly in the areas of regulation, third-party administration by professional institutions, and funding, but they were also able to point out some of its disadvantages, including corruption, spread, and the slow pace of adoption by lower levels of government. James, Ayegba and Odoh (2013) examines the degree to which labor unions are complying with the new contributory pension plan in Nigeria's mandate that employers finance their employees' retirement savings accounts (RSAs) in order to evaluate pension fund administration in Nigeria.

According to Fapohunda (2013), the management of pension schemes in Nigeria has been plagued by a variety of issues over the years, including inadequate funding, poor documentation and filing in the pension office, accumulated pensioner arrears, an inability to determine the right investment portfolio, a lack of accountability, corruption, and money embezzlement, among others. It should be noted that several states in the nation have not yet signed up for the current Contributory Pension Scheme (CPS).

Edogbanya (2013) investigates the impact of Nigeria's contributory pension system on the country's GDP. The Nigerian government ought to launch greater education and outreach efforts regarding the workers' retirement-focused contributions (2009).

In order to address the aforementioned issues, the proposed system is designed to enroll retirees' online using data from each institution's personnel department. This will help to eliminate inaccurate data documentation, provide a common database to facilitate information sharing, and improve security features. The suggested system will also be able to verify retirees online at their base of operations, which will streamline/eradicate the incidence of excessive travel, queuing, and stress on the part of retirees and regulators.

According to Raphael and Reuben's (2014) comparison of the old and new pension plans, under the Pensions and Gratuity Act of 1979, employees are eligible for gratuities after five years of service and for pensions after ten. An employee covered by the 1979 Pensions Act will thus be entitled to 100% of his annual emolumentas gratuity in the year following five years of service, should he decide to leave his position with the employer. According to the Pension Reform Act of 2004, the "pension" and "gratuity" that a retiring employee would get will be based on the total contributions made up to that point. According to the Act, 25% of the cumulative contributions will be paid as a lump sum (as a gratuity) and the remaining 75% will be used to buy annuities from insurance companies or other financial institutions and would be paid as pension.

METHODOLOGY

Methodology Adopted

The new system was designed using the Object Oriented Analysis and Design Methodology (OOADM). The approach of object-oriented analysis is used to describe new or changed objects that will be integrated with existing objects to create useful computing applications. It is used to determine whether current objects may be reused or adopted for new uses (Otuu & Aguboshim, 2022). To identify the objects that make up the system environment and their relationships with one another, object modeling (OM) is utilized. The following terms would be defined for clarification.

The major phases of software development using object oriented methodology are:

1. Analysis Stage
2. Design Stage
3. Implementation Stage

Analysis Phase: This covers the analysis of the existing and proposed system, dataflow diagrams of the systems as well as the advantages and disadvantage of the existing and proposed system.

Design Phase: In this phase, the actors and the major events initiated by the actors are identified. The drawing of diagrams with stick figures representing the actors and arrows showing how the actors relate. This is called the use case diagram and it represents the standard flow of events in the system. A use case scenario which describes in words the steps that are normally performed is shown. Activity diagrams, sequence diagram, state diagrams, class diagram are drawn here.

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Implementation phase: In this stage, the design model developed in the object design is translated into code in an appropriate programming language.

Data flow diagram of the existing system

Data flow diagram (DFD) is a graphical representation of the flow of data through an information system. It shows where the data will come from and go to, and where the data will be stored.

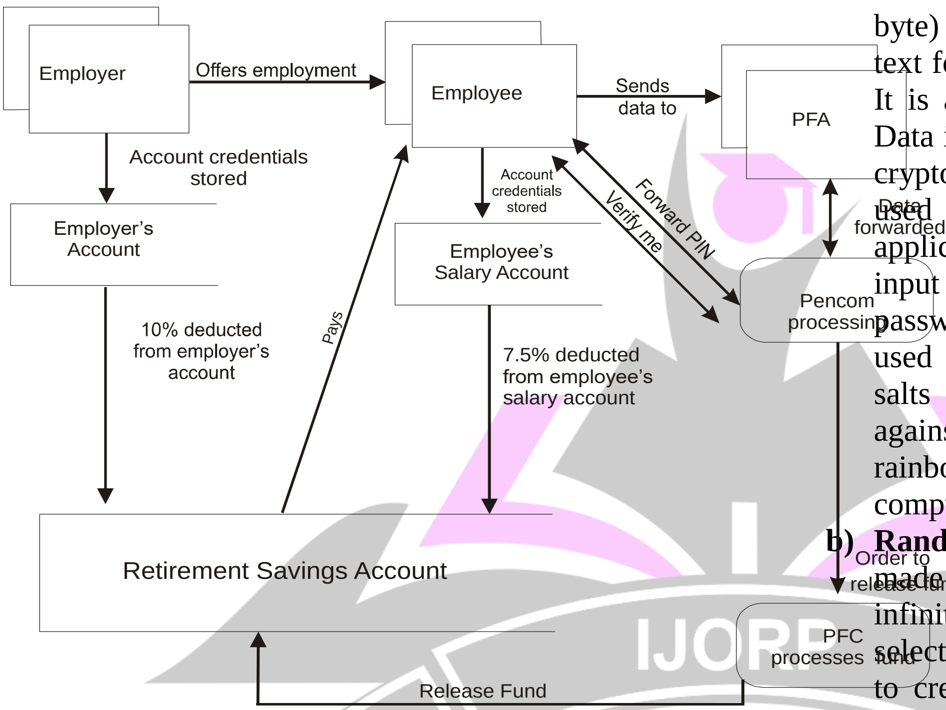

Figure 3.2 Dataflow Diagram of the existing System

SYSTEM DESIGN

Objectives of the Design

The notion raised in the study's analysis is to be structurally implemented in this design. In order to implement this study and create an improved pension plan management system, the design must address the drawbacks of the current system.

The implementation of this work will be able to solve all the problems encountered while using the existing system. The objectives include;

1. **Security:** The system being developed is largely online and because we want to make sure that is it secure from outside manipulation adequate security measures must be put in place to reduce the vulnerability level of the solution. We also want to prevent security lapses originating from unauthorized internal manipulations. With this in mind, the objective of the new design is to provide as much security at different levels and modules of the application. This new design has thus required that we employ the following security measures:

   a) **Salted Message-Digest Algorithm (MD5):** The MD5 algorithm generates a 128-bit (16-byte) hash value that is commonly written in text format as a 32-digit hexadecimal integer. It is a popular cryptographic hash function. Data integrity is frequently checked using the cryptographic algorithm MD5, which has been used in a wide range of cryptographic applications. (IETF, 1992). As an additional input to a one-way function that hashes a password or passphrase, a salt is random data used in cryptography. The main purpose of salts is to protect against dictionary attacks against a set of password hashes and against rainbow table assaults that have already been computed.

   b) **Random PIN Generator**: This is a custom made random text generator that can create an infinite number of passwords. It randomly selects letters from A to Z and numbers 1 to 9 to create passwords that are used as digital signatures.

   c) **Two-Step Authentication**: Two-step verification (also known as Two-factor authentication, abbreviated to TFA) is a process involving two stages to verify the identity of an entity trying to access services in a computer or in a network (Stanford, 2013). This is a special case of a multi-factor authentication which might involve only one of the three authentication factors (a knowledge factor, a possession factor, and an inherence factor) for both steps.

   d) **User Trailing:** The system has incorporated within itself a hidden module that monitors and logs every action that internal users of the system make. From login to logout every move is stored in the database and the Super Admin who cannot perform any action, has a read-only access to the user trail for auditing purposes.

2. Modularity: One of the goals of the design for the new system is to break the solution down into smaller, more manageable components that can be tested and routinely maintained independently of one another (Ogbonnia, 2017). This is crucial since it ensures that other components of the solution won't be impacted if one module malfunctions or fails. Second, issues can be promptly identified and fixed since they can be readily confined to a single module.

2. Reusability: Each module in the suggested system needs to be created and developed to carry out just one distinct task. Since the various modules should be reusable in other circumstances to do the same work without having to completely rebuild the solution or module.

3. Extensibility: Given how quickly technology is evolving in general and software development in particular, it is our goal to design a system that can be easily upgraded by adding and eliminating features without having to change the solution's entire architecture.

CONCLUSION

Conclusively, the Enhanced Pension Scheme Management System is built to be able to conduct registration and verification exercises online, which relieves stress and enables money to arrive at its destination when it is due. It also provides security in the database that will prevent manipulation and corruption. At their base, retirees will have their eligibility checked online. Providing a unified database for employee, employer, and pension regulators will lastly make it easier to share information.

RECOMMENDATION

However, there are difficulties in reaching small businesses, particularly those in the unorganized private sector, which have the potential to hire more workers, and the problem of corruption, which has been crucial to effective and efficient management in the nation. Lower tiers of government are also slow to switch to the scheme. In recommendations, the following suggestions would improve the management of the pension funds in order to support the long-term development of Nigerian public civil servants. The National Pension Commission (PENCOM) Pension Fund Administrators should host more seminars and raise public knowledge about the need of understanding how to calculate benefits.

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