**STAFF PERFORMANCE APPRAISAL PORTAL**

**CASE STUDY: BUSINESS DEVELOPMENT FUND**

**(BDF) RWANDA**

**By**

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**Research project submitted in partial fulfillment of the requirement for the award in Bachelor Degree with honors in Information Technology (BIT) submitted to School of Computing and Information Technology of the University of Kigali.**

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# DECLARATION

This research study is my original work and has not been presented to any other Institution. No part of this research should be reproduced without the authors’ consent or that of University of Kigali.

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# ABSTRACT

*Performance appraisal is a periodic evaluation of an employee's performance of assigned duties and responsibilities, where there should be the recognition of their efforts by giving promotion, salary bonuses, Capacity building or any other stated reward just for thanking and encouraging employees based on their feedback. The main focus of this project is to build STAFF PERFORMANCE APPRAISAL PORTAL for BDF’s employment evaluation processes to enhance and upgrade the current manual system into more efficient and effective processes. The current system is leaky because the users record data on printed papers which may be lost and damaged at any time because sometimes the activities’ forms are filled and kept in filing cupboard. The proposed portal needs two main users such as Supervisor and Local user (Staff). After the management meeting composed by Board members, Human Resource Manager and Senior Managers that prepare the key highlighted duties to be implemented by employees, the supervisors break down into details of assigned duties (Milestones) based on each section and record them into the portal where each staff is required to formally agree and sign the performance objectives and criteria for measurement for the upcoming year (Performance Contract). In mid-term, local users record the accomplished activities, provide different feedback if any, and supervisor evaluates the activities done by grading them according to the level at which were done, and which are supposed to be done. At the end of year, the supervisor checks all activities and give the final grades to the users. By the new system, all the activities will be recorded using the portal which is going to be developed where the supervisor will enter them into portal and make discussion (referrals for correction, comments and signing) if required with local users during grading their achievements, Local users will record what they have achieved on the assigned activities, he/she will Sign the final evaluation in system and the final reports will be viewed also by Human resource manager who will present them to the management board for further future decision making. The world is growing too fast in ICT technology, it’s a shame to keep the records in papers based in this century. I recommend to BDF Rwanda that after testing this system should have to host it for easy way getting access and coordinating data.*

***Keywords****: Staff performance appraisal portal, Performance appraisal, Employee’s performance, Milestones, Business Development Fund.*

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# CHAPTER ONE: INTRODUCTION TO THE STUDY

## Introduction

This chapter provides an introduction of staff performance appraisal portal, within the background of this study, problem statement, objective of the study, research questions, scope of the project, significant of the study, limitation of the project and the organization of the project.

## Background of the project

The objective of every organization apart from providing goods and services and making profit within the environment that they operate is to also have an efficient and effective manpower or human resources. It is a well-developed, efficient, and effective manpower that will help in achieving its objectives. The survival of most organization depends on its ability to take stock of its manpower with regards to its present performance, likes, dislikes, strength, failure, expectations of every individual or employee and also his/her potential for growth. (researchclue, 2022) [1]

The long term success of an organization is related to its ability to measure how well its employees perform within a predetermined period, and how effectively it uses that information to ensure that performance meets set standards, and also improves over time (Fisher, Schoenfeldt and Shaw, 2003). Performance management helps direct and motivate employees to maximize their efforts on behalf of the organization (Lugalia, Nebert, 2011). [2] [3]

To gain a competitive advantage in a rapidly changing global economy, multinational firms are increasingly promoting high levels of employee performance through conducting effective performance appraisals. Performance appraisal is therefore a critical and strategic human resource practice adopted by many Multinational corporations to evaluate and continuously improve the performance of employees and the organization. (Mariti, Elizabeth Wanjiku, 2019). [4]

Performance Appraisal is known by other terms like employee appraisal, performance review. It is a method by which the job performance of an employee is measured in terms of quality, quantity, cost, behavior, and time. A performance appraisal is a part of measuring, comparing, finding, guiding, correcting, and managing career development of the employees. It is the process of gathering, recording and critically analyzing information about the relative importance of employees to the organization. Performance appraisal is also defined as study of present achievements, and failures, personal strengths and weaknesses, and suitability for incentives, rewards and recognition, increased pay scale, promotion, or further training. (Gaba and Monisha, 2017) [5]

Performance appraisal has become a strategic tool for improving organizational effectiveness. Performance appraisal exercise is often used interchangeably with performance assessment, evaluations, and performance review or employee appraisal. The significant role of performance appraisal in any establishment or organizations has become indispensable in terms of organizational success. The success of any organization is dependent on how well the performance of every employee is effectively appraised and managed. The performance appraisal is a unique and very important aspect of career development which entails a regular review of the performance of employees in the organization but doesn’t stop there but goes further to communicate feedback to the employees (researchclue, 2022) [6]

Well-designed employee performance appraisal instruments assume great importance by providing agencies with information that can guide administrative and developmental decision-making about their most important asset their human resources. Administratively, performance appraisals serve as the formal evaluation tool used by managers when making decisions about the distribution of pay increases and the promotion and demotion of an employee. Developmentally, performance appraisals assist agencies in identifying issues such as employee training needs and cross training opportunities. (Michael A. Mulvaney; William R. McKinney; Richard Grodsky, 2012) [7]

In any evaluation of the condition necessary for the growth and survival of an organization, the role of performance appraisal is a strategic factor. It is believed that both the individual and the organization need to know how well actual performance is contributing to the accomplishment of the job plans, the staffing plan, and ultimately the overall strategic plan of the organization. In addition, the individual employee requires feedback relative to his or her own goals development, as well as that relative to management’s expectations. Performance appraisal is a formal and systematic assessment of an employee to determine the degree to which the employee is performing his/her job effectively. It is usually made in a prescribed manner of specific intervals such as quarterly, bi-annually, or even annually. Each employee at one time or the other wants his immediate boss or more still his employer to assess his on the job performance, and where necessary give him guidelines or advice for improving his efficiency. (researchclue, 2022) [8]

Employee performance appraisal software presents an innovative, progressive approach to overseeing the employee performance online. Such systems are not only a computerized review; however, it also helps creating a good relationship between the management and the employees as they will be rated fairly and objectively. This will guide to better productivity, an effective tool for change and behavior modification and development of competences among the employees (Uni Assignment 2022). [9]

Additionally, Performance Appraisal is especially critical to the success of performance management. Although performance appraisal is but one component of performance management, it is vital, in that it directly reflects the organization’s strategic plan. Although evaluation of team performance is critical when teams exist in an organization, the focus of PA in most firms remains on the individual employee. Regardless of the emphasis, an effective appraisal system evaluates accomplishments and initiates plans for development, goals, and objectives. However, many studies have shown that performance appraisal serves many purposes, especially in a world were improved results and efficiency are increasingly critical in today’s globally competitive marketplace (HR Web Wisdom, 2022). Therefore, the challenge remains determining how performance appraisal can be channeled to improve employee’s productivity and performance. [10]

Furthermore, employees have opined that manager are subjective in their appraisal reviews which have rendered it purpose ineffective (Andersen & Pedersen, 2012). Performance appraisal is often a negative, disliked activity and one that seems to elude mastery. (Russell, Russell, 2010). The emotional aspect involved in such processes makes it difficult to attain accurate results. Also, performance appraisal procedures are often unfair creating dissatisfaction among employees which ultimately affects their productivity. Therefore, when the performance appraisal systems are ineffective, it causes a reduction in the performance of employees. Controversy therefore exists on the influence of perceived appraisal effectiveness on employee performance (Elizabeth W. Mariti, 2019). [11] [12] [13]

Managers do not like giving them and employees do not like receiving them (Houghton & Di Liello,2010). Therefore, it is one of the most dreaded phenomena that occur in a company. Selvarasu & Sastry (2014) discovered in their study that majority of the performance appraisals in companies did not accurately measure employee performance. This has therefore led to suggestions by many scholars and Human resource experts alike that performance appraisals need to be replaced by a more effective measurement of employee performance. (Sendawula, Kasimu, 2018). [14] [15]

According to Meyer most managers don’t derive any benefits of performance appraisal process as it is always full of errors, and only do it because of administrative pressures. Meyer argues that employees do not think that the appraisal represent their true performance, which reflect in the administrative decisions taken on critical issues like the salary or demotion ultimately affecting the employees’ motivation and performance (Meyer, H. Herbert, 1991). Furthermore, many workers feel their performance appraisals are biased and do not put employees on a level playing field (Kolawole, Komolafe, Adebayo & Adegoroye, 2013). [16] [17]

The inability of organization to install an effective performance appraisal strategy has hindered them from achieving competitive advantage which they require more now than ever before. It is further pointed that appraisal processes are not systematic and  regular  and often characterized by personal influences occasioned by organizations preoccupation to use confidential appraisal system which hinders objectivity and fairness. Effective performance management is essential to ensure that a business is operating effectively and is on track to achieve strategic goals. On this note, this study seeks to assess the casual relationship between appraisal performance and organization growth. (eduprojecttopics, 2022) [18]

Justice is the main element in performance appraisal system experts may use our results to support their efforts to train managers in fair treatment during appraisals, as well as how to increase levels of apparent support, rather than just focusing on the reality of a fair appraisal procedure (Byrne, Pitts, Wilson, & Steiner, 2012). Employee’s performance increased than they perceived and feel their work performance results are fair and accurate. Performance evaluator must be cooperative in performance appraisal give feedback to employee that will obviously increase the work performance and finally organizational performance will increase and the profitability and perception of fairness will be created in the employees of organization (Muhammad Imran, 2014). [19] [20]

Staff performance appraisal portal as a solution will help to justify all above clarifications to each employee with paperless just only using the information technology system. This portal will allow the supervisor to record the tasks of each employee, evaluate the performance of employees and allow the local users to approve the activities assigned. The system will be web based application means it will be accessed via online where the user can use it everywhere easily.

BDF Rwanda as the targeted institution, it has the objective of assisting SMEs to access to finance, particularly those without sufficient collaterals to obtain credit from traditional financial institutions at reasonable rates. BDF’s role was to promote alternative financing avenues at reasonable costs to help small businesses access credit by providing credit guarantees, Quasi-Equity support to start-up, managing matching grants, Sacco Refinancing, and business development advisory services. The Government also consolidated the different funds provisioned for SME financial support that had been spread across various ministries and agencies under BDF. These included the SME Guarantee Fund, the Agricultural Guarantee Fund, the Rural Investment Facility, the Women’s Guarantee Fund. [21]

BDF has 30 branches in country, one per each district as designation as the key implementing agency for NEP Pillar 2 but now the only one targeted is located in Huye district and the system will be used by employees who work in that branch. (Business Development Fund "BDF", 2022)

## Statement of the problem

Nowadays, technology is growing too fast around the world where everyone needs to accomplish a lot of tasks in a short period, accessing his/her data in any location without carrying them as burden and other queries which need to be solved at any time. On the side of institution or companies, their services must be expanded where they are not only locally applied. This cannot be done without using information system which is intended to serve many users in different area.

The performance appraisal manual system has long been practiced in the company and has been used as an integral part of managing. It is of course, important to management development because if an employee's strengths and weaknesses are not known, it is only accidental if development efforts were aimed in the right direction.

BDF Rwanda at the specified branch, they use manual system which faces the following problems:

1. **Insecurity of data:** The employee’s assigned activities are stored on the papers which may results to the loss of data once the papers are destroyed and may encourage the unauthorized users to easily access the documents.
2. **Data redundancy:** Sometimes the supervisor duplicates the activities several times on one employee.
3. **Evaluation delays:** In middle term and on the end of year, supervisor ranks manually the employees’ activities for the purpose of evaluation which consumes the time.

## 1.3 Objectives of project

### 1.3.1 General objective

This study is aimed to develop Staff performance appraisal portal which will be used in BDF Rwanda specifically in Branch of Huye District.

### 1.3.2 Specific objectives

Staff performance appraisal portal is aimed:

1. To record and manipulate employees and activities’ information in database.
2. To display the roles and responsibilities of each employee.
3. To evaluate the employees’ performance by ranking for the purpose of allocating rewards.

## 1.4 Research questions

To do research helps to figure out what others did relate to what you are going to deal with. Sometimes we state the questions which guide us in fulfillment of our objectives. The questions I stated are:

1. In which way the employees’ information and their activities have to be recorded?
2. How are the roles and responsibilities of employees displayed?
3. How will the system evaluate the employees’ performance or rank them?

## 1.5 Scope of the project

### 1.5.1 Content scope

The main intention of this project is to solve the issues encountered in the current system while reproducing Staff performance appraisal portal that can provide convenience to the institution.

The new system can do the following scopes:

* Improve working relationships and communication between supervisors and subordinates.
* Increase commitment to organizational goals; develop employees into future supervisor
* Assist in management decisions such as promotions or allocating rewards.
* Allow time for self-reflection, self-appraisal, and personal goal setting.

### 1.5.2 Geographical scope

Staff performance appraisal portal will be used in BDF Rwanda specifically in one branch located in southern province, Huye District, Ngoma Sector. But as the technology has no geographical limit, every authorized user (Staff) in entire BDF, anywhere through internet connection may login into the system and gain its functionality once it has been hosted.

### 1.5.3 Time scope

This project will be done in four months so that it can be tested and used. All tasks in a project are divided into different phases as shown below:

**The first phase** will take One month to do my own research concerning reading books and searching via the internet.

**The second phase** is analysis and organizing all data and correct them together. This will take one month.

**The third phase** is a phase that I will start for designing and implementing staff performance appraisal portal by coding. It will take one month.

**The last phase** is to collect well the book, debugging the system and presenting it to the campus. According to how research will be conducted, and the system development activities are scheduled, the entire work will be completed in the period of 4 months.

## 1.6 Significance of the project

As the year changes, the need for technology increases. Now a day, people are pretty much using technology in every aspect of their lives. The technology industry is growing rapidly, and they keep exploring their service to meet the new requirements of people’s needs.  
A web application is the development of website features, systems, and programs. The question is why is the best web app development company over growing? It’s because of people’s love for the ease that makes them keep searching for something on websites to ease their life or makes their life more entertaining.

We cannot close our eyes that people today need web applications more than before. After what we face at the beginning of 2020 until now, the advantages of web application development in 2020 will be the most helpful technology ever found by the human race. Why? Because after all these years, we finally realize that everything could be more comfortable with technology, such as web applications. (Singh and Hemendra, 2020) [22]

### 1.6.1 Personal interest

Personally, I am benefiting new skills and knowledge on web technologies, how to develop the web application, and having a new experience on how to face and handle errors from the system which are found by the institution.

After having these skills and knowledge, I must use them to develop more applications related to my system for better competing on the labor market in ICT field. Also, it will be an additional experience which can motivate and encourage me in my career.

This project is established in order to fulfill the conditions required to obtain a bachelor’s degree of Information and Technology in the school of Computing and Information Technology of the University of Kigali.

### 1.6.2 Institutional interest

BDF Rwanda will benefit a lot after having this portal. Staff performance appraisal portal will help in collecting metric data throughout the year and use a formula created by the human resources department to come up with a performance evaluation number. This can all be done instantly without the supervisor needing to take time to compile reports.

Additionally, Staff performance appraisal portal will emphasize the interaction between local users and their supervisor where all parties may access the online forms after or before filling them according to the results from discussion made in first meeting of term.

### 1.6.3 Public interest

Many people are reflecting their eyes to the web technologies. This is a wonderful kick because staff performance appraisal portal is one of them. On the hand of public researchers, they will refer on it to develop related innovative system or upgrading this system. On the side of others, maybe they are other institutions, they will be satisfied by this system depends to its functionalities and how the problems were solved where the system is currently being used.

## 1.7 Limitations of the project

This research is targeted on developing Staff performance appraisal portal which will have only four different users (System Administrator, Human Resource, Supervisor and Local user). It will help all users to interact with each other depends to their roles in the system.

The admin will register all users (Human resource, Supervisor and Local users), the credentials set, and reset will be done by Admin in case of security or by users themselves. The supervisor will record the milestones (activities) to be done and classify them to the employees according to their position and responsibilities. Supervisor will evaluate the activities termly by marking them according to how they are accomplished and will publish and sign the results. Local user will act as the employee or staff who is under the supervisor and his/her role in the system is to approve the assigned activities or provide the feedback to the supervisor for any clarification. This user will check the assigned tasks and complete the achievements on assigned tasks before being evaluated by supervisor. Human resource will sign on the final report or give comment where required.

## 1.8 Organization of the project

This study “Staff performance appraisal portal” contains more contents which divided into three chapters as shown:

**Chapter one: Introduction:** This chapter has some parts as background of the project, statement of the problem, project objectives, research questions, scope of the project, significance of the project, limitation of project and organization of the project.

**Chapter two: Literature review:** It has introduction, definition of key terms, review of past studies, conceptual framework, critical review, and summary.

**Chapter three: Research design and methodology:** It has some parts as introduction, Data collection techniques, Documentation, internet research, interview, and observation, software engineering methods, System specification, Functional and non-functional requirements, Context (Level 0) diagram, Data flow diagram (Level 1), Entity relationship diagram, Physical data model (PDM), Tools and languages to be used in software development, and data dictionary.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

In the past few years, researchers and analysts didn’t have the same understanding on the performance appraisal issue. Some took it as an important progress in daily work, others considered as wasting time or money.

Positively, they said “Organization is run and steered by people and their labors. It is through people that goals are set, and objectives realized depend on the performance of the employees. The performance of an organization is thus dependent upon the sum of the performance of its members. The success of an organization, depend on its ability to measure accurately the performance of its members and use it objectively to optimize them as a vital resource and strength.” (Sanjay, Karak and KrishnenduSen, 2019) [23]

Performance appraisal must be done fairly and consciously to avoid employees’ claiming and negative biases in an institution. Process of evaluating consumes time right, but it results the positives like motivating employees and controlling personal ethics to prevent the conflicts with the professional ethics. That is a reason why this system is needed to reduce time taken while appraising the performance.

Staff performance appraisal portal is new system in BDF Rwanda especially to the specified branch, it will replace the existing manual system which is used currently to record the activities to be done by employees and record the appraisal results after evaluating the performance.

There are more systems which appraise the employees’ performance that I referred on, but according to the operation of my case study, some dissimilarities and contrasts have to be cared on. This chapter describes the working principles of some selected similar a bit system and show how some of their features are imposing this new one.

## 2.1 Definition of key terms

### 2.1.1 Performance

Employee performance is defined as how an employee fulfills their job duties and executes their required tasks. It refers to the effectiveness, quality, and efficiency of their output. Performance also contributes of how valuable an employee is to the organization based on the level accomplishment of assigned duties to employee. (Ciner Lia, 2019) [24]

### 2.1.2 Performance Appraisal

The term appraisal refers to the regular review of an employee's job performance and overall contribution to a company. Also known as an annual review, performance review or evaluation, or employee appraisal, a performance appraisal evaluates an employee’s skills, achievements, and growth, or lack thereof. (Adam Hayes, 2021) [25]

This systematic process assesses an individual based on a predetermined set of criteria. It looks at factors such as an employee's attitude, work ethic, attendance, and mastery of their role. Typically, a supervisor or manager conducts the performance appraisal twice a year (mid-term and End year).

### 2.1.3 Staff

A staff is an individual who was hired by an employer to do a specific job. In each institution there are the employees who must handle the tasks for the goals of achieving the mission and vision of that institution. (Susan M. Heathfield, 2021) [26]

### 2.1.4 Portal

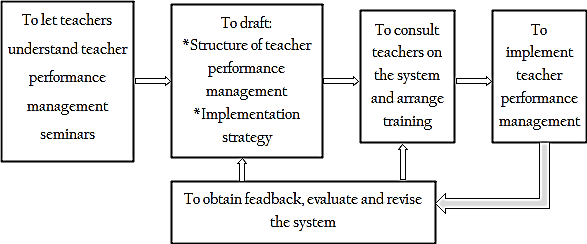
A portal is a web-based platform that collects information from different sources into a single user interface and presents users with the most relevant information for their context. (Alex Abrams, 2021) [27]

## 2.2 Review of past studies

### 2.2.1 Teacher performance management

Teacher performance management is a continuous process for identifying, evaluating, and developing the work performance of teachers, so that the goals and objectives of the school are more effectively achieved, while at the same time benefiting teachers in terms of recognition of performance, professional development, and career guidance.

**Figure 1 Shows the procedures for establishing Teacher Performance Management system**



On the starting the school make the performance contract which contains all activities to be done by teachers. Then, they make preliminary interview about appraisal to be sure that the teacher is agreeing the activities. (Education and Manpower Bureau, 2003) [28]

Technically, the system is divided into minimized five phases as shown in the figure above. It emphasizes in collecting the evidences according to the view of the task and upload them in the system where they have to be evaluated. Also, this system provides the feedback to the teacher by showing the results after performances’ appraising.

### 2.2.2 Result Based Performance Management (RBM) Policy for Rwanda Public Service

RBM is a modern management strategy which compels actors in an institutional context to direct their efforts towards achieving a common set of results.

In the context of Rwanda, this should maximize the value of services delivered by the public service to citizens. The policy had provided for stronger rules for cascading results in institutional action plans down to programs, sub-programs and to individuals. Prioritization ensures that individuals provide more attention to actions that will have the highest impact on results of institutions and ultimately, on national level outcomes.

Accordingly, employees, and their managers are compelled to continuously focus on executing performance contracts throughout the period. A mid-year review of institutional and individual action plans had been introduced. This process will allow institutions, and individuals together with their supervisors, to review progress in the implementation of their action plans, to consider adjustments in order to accommodate changes that will be necessary to improve execution of these plans or take on new assignments. This mid-year review will take place at the same time as and will be designed to complement the mid-year budget revision.

Technically, the RBM system allows the supervisors to fill the performance contracts (Imihigo) and the employees fill the milestones on the start of each year. At the end of each quarter employees back in the system and fill again the milestones to the finalized activities. After that, the supervisor ranks the employee according to how h/she knows the performance of the fetched employee to the highlighted milestone.

At the end of year, all milestones have to be appraised by the supervisor and return the ranks to the employee. The marks to pass are 70%, if the employee has not got the pass marks, the government rules have to be reviewed with advice or punishments. (Ministry of Public Service and Labour; Ministry of Finance and Economic Planning, 2015) [29]

## 2.3 Conceptual framework

The following diagram presents the conceptual framework which was used to have a complete system:

**Figure 2 Shows Conceptual framework: Source: Own drawing, 2022**

Diagram

Description automatically generated

* **The Admin** has the role of managing the Supervisors, Human resource and staff members in the system and give them the credentials to use while log into the system.
* **The Supervisor** interacts with the system while recording and ranking milestones of performance contracts for each position and responsibilities.
* **The Staff** interacts with the system when h/she needs to view the assigned tasks and agreeing the assigned performance contract, completing the achievements, or giving feedback where necessary.
* **The Human Resource:** Interact with the system by Signing all staff ranked milestones and provide feedback where necessary

## 2.4 Critical review

This part shows some critical reviews in some selected system and their findings as shown below:

### 2.4.1 Teacher performance management

There are some errors which were highlighted in teacher performance management system as they are stated in the next points.

#### 2.4.1.1 Leniency / Severity bias

Leniency error occurs when individuals are given ratings that are higher than actual performance warrants. Leniency errors most often occur when performance standards are vaguely defined. That is, an individual who has not earned an excellent rating is most likely to receive one when “excellent” is not clearly defined.

There are many reasons why raters distort their rating in an upward or downward direction. Some people do it due to political reasons, that is, they manipulate the ratings to enhance or protect their self-interests. This can be backed up by Longenecker who believes that organizations are political entities and few, if any, important decisions are made without the key actors attempting to protect their own interests. However political distortions become possible because raters are not held responsible for inaccurate ratings. If they are held accountable, they would become less lenient in rating. In other instances, it is done because of rater allows their personal feelings to affect their judgement. Sometimes a lenient rating may be given because the rater likes the employee.

Managers feel the need to manipulate ratings for the best interest of themselves, the employees, and the institution. Because performance appraisals exist in the context of an organization, the process often becomes a means of supporting personal or departmental agendas. Executives admit that rating accuracy is not always a goal; however, the main goal is exercising discretion as well as ensuring effectiveness and survival of the organization.

Managers may increase performance appraisal ratings to increase subordinate loyalty or to avoid airing the department’s dirty laundry if ratings are made public. When performance appraisal ratings are assigned to achieve personal or departmental goals, the goal of organizational effectiveness may be compromised, as this does not give a true picture of how the employee is actually performing. (Akrad & Adam, 2021) [30]

#### 2.4.1.2 Performance management

Effectiveness in undertaking performance appraisal depends on the skills of the raters. Effective performance evaluation requires many skills in the areas of communication, counseling, problem solving and planning. In order for managers to acquire these skills, training is important. In most instance, raters are given an orientation on the system that includes a brief review of the design steps, procedures, deadlines for completion of forms and thorough instructions in form completion. However, training for users is far more complex.

Carroll and Schneier emphasized that the training helps raters to develop skills in areas such as communication and coaching, so that the performance appraisal can be used effectively. Other important areas of focus that would help to enhance appraisals are training on techniques of appraisal and ways to evaluate employees and it is essential that raters acquire these skills.

To consider the collected documents as evidences it’s a good strategy to use in evaluation as the way this system uses. The problem is that it may causes the leniency bias where the employee can get the marks which are higher or lower than his or her skills because the supervisor can make an error while checking all evidences. Moreover, the lack of trainings on teachers about making those evidences may cause the loose of marks where h/she is best worker. (Stephen J. Carroll and Craig Eric Schneier, 1982) [31]

### 2.4.2 Result Based Performance Management (RBM) Policy

This system requires the employees to fill the milestones on each performance contract on the starting of the quarter and on the end. If there is an employee who commit an error the marks reduce on the end of quarter or year. This is unfair!! It consumes time while entering those milestones which seems like data are being duplicated for the reason that the supervisor has entered some milestones and employees repeat them just only tenses which are changed.

## 2.5 Summary

Generally, even the current system in BDF Rwanda is manually where milestones are filled on the forms, it seems like there are other computerized system which contains some unneeded modules on the side of users.

The Staff performance appraisal portal is differed from them because it requires the supervisor participation in recording the milestones to each performance contract for each employee depends on their position and the local user has to agree the assigned responsibilities only without typing anything and approve the finished task in mid-term only except if h/she needs to share an advice or giving a comment.

# CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

## 3.0 Introduction

Research methodology is the path through which researchers need to conduct their research. It shows the path through which these researchers formulate their problem and objective and present their result from the data obtained during the study period and the research design is intended to provide an appropriate framework for a study. (Sileyew; Jilcha, Kassu, 2019) [32]

In the period of conducting research, researcher uses different techniques and methods to gather data and allocating them. The researcher has to show the specifications of hardware and software to be needed while compiling the system which is developed yet, the functional and non-functional requirements must be also defined in order to integrate system validation and assigning user’s roles and the most important thing in system design is having the diagrams which present the flow of data in the system and the relationship between the entities because a developer may refer to them to develop a system. Physical data model, data dictionary and tools with languages to be used must be clarified too.

## 3.1 Data collection techniques

Data collection is the process of gathering and categorizing relevant information that can then be used to make decisions about specific situations. There are primary and secondary data where primary data are those found directly from the source while secondary may be data from written statements in books, from posted information in any platform by other researchers.

It means that the techniques to be used may be different depends to the kind of information which are going to be conducted. The following are different techniques I used while collecting data.

### 3.1.1 Interview technique

The interview is an important data gathering technique involving verbal communication between the researcher and the participant. Interviews are commonly used in survey designs and in exploratory and descriptive studies. There is a range of approaches to interviewing, from completely unstructured in which the participant is allowed to talk freely about whatever they wish, to highly structured in which the participant responses are limited to answering direct questions. (Dr Nick Fox, 2009) [33]

One of advantages of using interview technique is that it gives reliable information efficiently because are from the source. Yes, it requires to be on the field means it costs a little or highly depends to the range, sometime the interviewee misses the presence because of h/her schedule means it takes a time and requires to be patient but the expected results after gathering information are dependable.

After choosing the topic, I set the questions to be asked, order and test them, I clearly asked the questions from the staff of BDF branch office, and I got the results. It looked like they were interested to give me information because of the proposed system I told them which will minimize their task in a profit of saving their time.

### 3.1.2 Observation technique

Observation is a technique that involves systematically selecting, watching, and recording behavior and characteristics of living beings, objects, or phenomena. Observation of human behavior is a much-used data collection technique. It can be undertaken in different ways; Participant observation where the observer takes part in the situation he or she observes. Non-participant observation: The observer watches the situation, openly or concealed, but does not participate. (Iedunote, 2021) [34]

I used open because observer makes respondents aware of the observation going on, passive observation because observer does not get involved in what respondent is doing and indirect observation because observer cares only to the past behavior by tracing the physical site.

I took few days in working period and I moved around; I asked one of the supervisors the form they use. Employees fill it manually and after they submit them to the supervisor. This is a waste of time, it means probably, they need this system to minimize their task.

### 3.1.3 Documentation technique

Documentation is categorized as a technique used to get secondary data as traditional technique used to gather information where the conductor collects information from the books, magazines, flyers, or any other document with related data according to h/her target. It requires concentration because of reading and highlighting the points from many theories. It is less expensive and gives enough time to get data, but its problem is that sometimes you get incomplete or outdated information means researcher must be updated to know the real information to consider.

I read some books which are related to my topic as Staff performance appraisal portal, by finding what other researchers wrote about their topics, by figuring out the hardships the past developers faced and by knowing how they tried to solve their problems. No man is Island so, it is important to be helpful with what others did.

### 3.1.4 Internet research

The advancement of information and communication technology, researchers have found new methods of data collection and analysis. This has evolved from telephone surveys, computerized data analysis, and use of cell phones and pagers, to collecting information at random intervals, use of Personal Digital Assistants, and use of the Internet in research. (Benfield, Jacob A. and Szlemko, William J., 2006) [35]

One of the modern techniques used to gather data is “internet research”. Internet is a global network which connects all continents by using different platforms in order to share information. Researcher retain posting a lot of studies, some online websites collect the activities done by different people, so it shows that internet is an intermediator between researchers and information.

I used this technique in order to see some uploaded electronic books which talk about performance appraisal, highlighting the weaknesses of other system so that I can strengthen mine. There no many systems which are in use and have similar functionalities as this one because I found that many institutions are still using manual system, others have no appraisal of performance especially private sectors for the case of ignoring additional expenses.

## 3.2 Software engineering methods

### 3.2.1 Methodology of software development

There are many types of models/methodologies in software development that could help a developer when he/she is going to start a project. Those models describe the different processes of how the software was developed from the stating of software name up to its starting period of being launched.

Some of those development models are waterfall model, V-shaped model, Iteration model, spiral model, and extreme programming. In this project, as developer I decided to use waterfall model for the reason its advantages are related to my works better than other models and also it is easy to be used.

#### 3.2.1.1 Waterfall model

The waterfall model is the classical model of software engineering. This model is one of the oldest models and is widely used in government projects and in many major companies. As this model emphasizes planning in early stages, it ensures design flaws before they develop. In addition, its intensive document and planning make it work well for projects in which quality control is a major concern. (Nabil Mohammed Ali Munassar, A. Govardhan, 2010) [36]

**Figure 3 Shows Waterfall model**

Diagram

Description automatically generated

The following are the sequential phases in Waterfall model

1. **Requirement Gathering and analysis**: All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification document. Those requirements are like photos and electronic information from internet feedback and other resources required to fulfill this study.
2. **System Design**: The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture. Application Architecture is the process of defining the framework of an organization’s application solutions against business requirements.
3. **Implementation**: With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.
4. **Integration and Testing**: All the units developed in the implementation phase are integrated into a system after testing of each unit. The software designed, needs to go through constant software testing to find out if there are any flaw or errors. Testing is done so that the client does not face any problem during the installation of the software.
5. **Deployment of system:** Once the functional and non-functional testing is done; the product is deployed in the customer environment or released into the market.
6. **Maintenance**: There are some issues which come up in the client environment. To fix those issues, patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards (like a waterfall) through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model". In this model, phases do not overlap. (Ali Aydar, 2021) [37]

**Advantages of the Waterfall Model**

* It allows for departmentalization and control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process model phases one by one.
* It progresses through easily understandable and explainable phases and thus it is easy to use.
* It is easy to manage due to the rigidity of the model, each phase has specific deliverables and a review process.
* The phases are processed and completed one at a time and they do not overlap. Waterfall model works well for smaller projects where requirements are very well understood.

**Disadvantages of the Waterfall Model**

* It is difficult to estimate time and cost for each phase of the development process.
* May fix hardware and other technologies too early
* Very document oriented, requiring docs at the end of each phase
* Follows the “big bang” approach – all or nothing delivery; too risky (if the project runs out of money in the middle, then there will be no software)
* Difficulty of accommodating change after the process is underway. One phase has to be complete before moving onto the next phase.

### 3.2.2 System specification

System requirements are the configuration that a system must have in order for a hardware or software application to run smoothly and efficiently. Failure to meet these requirements can result in installation problems or performance problems. Staff performance appraisal portal is a computer-based system which needs the integration of hardware and software in order to operate. Here below there are the specifications to be considered when we need to run this system.

### 3.2.3 Hardware specifications

A computer which is capable to run this system must have the following hardware:

* **Hard disk (HD):** This component is used as a storage where information has to be kept. The system itself has to be stored and all requirements are located to this component. It must have enough space at least it must have 250 GB up of capacity.
* **Processor:** Intel(R) Core(TM) i5-7200U CPU @ 2.50GHz-2.71 GHz
* **Memory (RAM):** RAM is a memory which stores data temporarily while they are in-use or soon to be and also it is randomly accessed depends to the process which is on ahead. It must be good enough to the capacity in order to speed up the operation of the system. Its capacity must be from 4 GB up.
* **External Hard Disk:** This system will be carried on a flash disk that has at least 4GB of free space.

### 3.2.4 Software specifications

After finalizing this system, it has to be turned to the BDF Rwanda at Huye branch in order to start being used as its function. In order to start using this system, after seeing the hardware requirements needed, also there are software needed to be installed in a computer before installing and using this system.

* **Windows 8, 10:** One of these windows is needed to be installed in a computer as the operating system which help the computer to be accessed, controlled, managed and to manipulate data from the developed system. There are many windows, but these are the operating systems which are compatible with the platform needed.
* **Browser (Mozilla, Microsoft edge or chrome, and others):** This application is used to run the webpages as the staff performance portal is web-based application. So, one of the specified browsers can be used.
* **Language**: HTML, PHP, MySQL, and JavaScript
* **Front End Software:** HTML, CSS, JavaScript
* **Back End Software:** PHP, MySQL
* XAMPP Server,
* CKEditor

## 3.3 Functional requirements

Functional requirements define a function of a system or its component, where a function is described as a specification of behavior between outputs and inputs. The following statements show the functional requirements of Staff performance appraisal portal.

* The system must allow the admin to monitor the users and provide the users’ credentials.
* The system must allow the users to sign in, reset their credentials and update their profiles
* The system must allow the supervisor to record the milestones and save them in database as storage.
* The system must allow the local users (Staff members) to view the milestones entered by the supervisor according to the department and Position h/she belonged to.
* The system must allow the staff to input the accomplished tasks.
* The system must allow the staff to upload the evidence where it is required.
* The system must allow the supervisor to evaluate the finished tasks according to the level of completion.
* The system must allow the Human resource, Supervisor, and staff member to give feedback or comment to the inputted milestone.
* The system must be capable of generating report of all staff members with their ranks.

## 3.4 Non-functional requirements

Non-functional requirements define the performance attribute of a system such as its reliability, validity, capacity, integrity, and availability. Staff performance appraisal portal has the following non-functional requirements:

* The GUI of the system is user friendly.
* The data that is shown to the users will be made sure that it is correct and is available for the time being.
* The system is flexible to changes.
* The system is extensible for changes and to the latest technologies.
* Efficiency and effectiveness of the system is made sure.
* The logins and sign ups of the users must be validated according to the grants of each one.

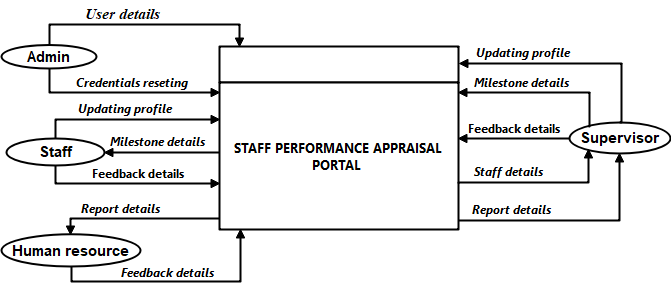
## 3.5 Context diagram (Level 0)

A system context diagram in engineering is a diagram that defines the boundary between the system, or part of a system, and its environment, showing the entities that interact with it. This diagram is a high-level view of a system. It is like a block diagram. It shows a system, as a whole and its inputs and outputs from/to external factors. System. (License, Commons Attribution-ShareAlike, 2019) [38]

Context Diagram represents all external entities that may interact with a system such a diagram pictures the system at the center, with no details of its interior structure, surrounded by all its interacting systems, environments, and activities. The objective of the system context diagram is to focus attention on external factors and events that should be considered in developing a complete set of systems requirements and constraints.

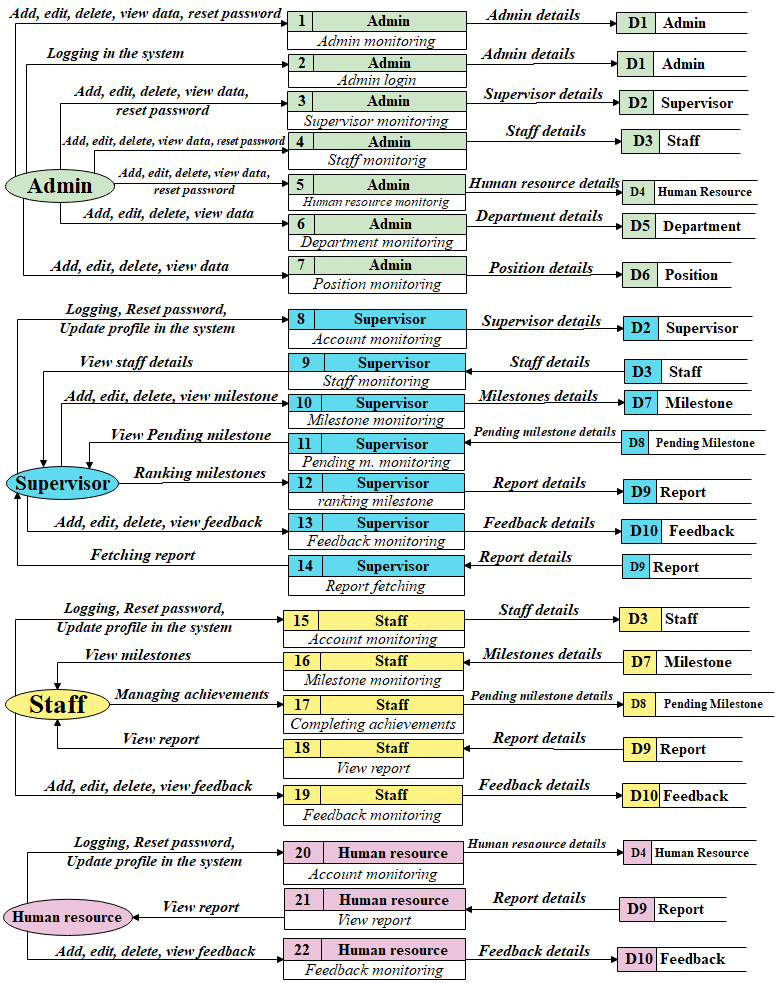
System context diagrams are used early in a project to get agreement on the scope under investigation. Context diagrams are typically included in a requirements document. These diagrams must be read by all project stakeholders and thus should be written in plain language, so the stakeholders can understand items within the document. The diagram below, presents how data flows as inputs to the production as output in Staff performance appraisal portal.

**Figure 4 Shows Data flow diagram (level 0) Source: Own drawing, 2022**



3.6 Data flow diagram (Level 1)

**Figure 5 Shows Data flow diagram (Level 1) Source: Own drawing, 2022**



## 3.7 Entity relationship diagram

ERD is a diagram which presents the relationship between the entities in a database with the integrities if they occur. Staff performance appraisal portal has one database called “performance” with several entities.

**Figure 6 Shows Entity Relationship Diagram; Source: Own drawing, 2022**

Diagram

Description automatically generated

## 3.8 Physical data model

A physical data model is a database-specific model that represents relational data objects (for example, tables, columns, primary and foreign keys) and their relationships. (IBM Corporation 2021) [39]

**Figure 7 Shows Physical Data Model; Source: Own drawing, 2022**

Graphical user interface

Description automatically generated with medium confidence

## 3.9 Data dictionary

**Database name: Performance**

**Table 1 Shows attributes of Admin**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| id (Primary) | int(11) | No |
| username | varchar(30) | No |
| password | varchar(30) | No |
| firstname | varchar(30) | No |
| lastname | varchar(30) | No |

**Table 2 Shows Indexes for admin**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | id | 0 | A | No |  |

**Table 3 Shows attributes of Supervisor**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| id (Primary) | int (11) | No |
| username | varchar(30) | No |
| password | varchar(30) | No |
| firstname | varchar(30) | No |
| lastname | varchar(30) | No |
| position | varchar(30) | No |
| telephone | varchar(30) | No |
| email | varchar(30) | No |

**Table 4 Shows Indexes for supervisor**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | id | 0 | A | No |  |

**Table 5 Shows attributes of Staff**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| id (Primary) | int(11) | No |
| username | varchar(30) | No |
| password | varchar(30) | No |
| firstname | varchar(30) | No |
| lastname | varchar(30) | No |
| position | varchar(30) | No |
| departmentid | varchar(30) | No |
| telephone | varchar(30) | No |
| email | varchar(30) | No |

**Table 6 Shows Indexes for staff**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | id | 0 | A | No |  |
| departmentid | BTREE | No | No | departmentid | 0 | A | No |  |

**Table 7 Shows attributes of Human resource**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| id (Primary) | int(11) | No |
| username | varchar(30) | No |
| password | varchar(30) | No |
| firstname | varchar(30) | No |
| lastname | varchar(30) | No |
| telephone | varchar(30) | No |
| email | varchar(30) | No |

**Table 8 Shows Indexes for Human resource**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | id | 0 | A | No |  |

**Table 9 Shows attributes of department**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| depid (Primary) | varchar(30) | No |
| dename | varchar(30) | No |

**Table 10 Shows Indexes for department**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | depid | 0 | A | No |  |

**Table 11 Shows attributes for Job position**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| pid (Primary) | int(11) | No |
| pname | varchar(30) | No |

**Table 12 Shows Indexes for job position**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | pid | 0 | A | No |  |

**Table 13 Shows attributes for Milestone**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| goal (Primary) | int(11) | No |
| description | varchar(255) | No |
| target | varchar(255) | No |
| category | varchar(30) | No |
| inputdate | datetime | No |
| enddate | datetime | No |
| agreeordisagree | varchar(255) | No |
| positionid | int(11) | No |

**Table 14 Shows Indexes for milestones**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | goal | 0 | A | No |  |
| positionid | BTREE | No | No | positionid | 0 | A | No |  |

**Table 15 Shows attributes for Pending milestone**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| goal (Primary) | int(11) | No |
| description | varchar(255) | No |
| target | varchar(255) | No |
| actualachieved | varchar(255) | No |
| weight | double | No |
| category | varchar(30) | No |
| inputdate | datetime | No |
| userid | int(11) | No |

**Table 16 Shows Indexes for Pending milestones**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| **PRIMARY** | BTREE | Yes | No | goal | 0 | A | No |  |
| **userid** | BTREE | No | No | userid | 0 | A | No |  |

**Table 17 Shows attributes for Report**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| goal (Primary) | int(11) | No |
| description | varchar(255) | No |
| target | varchar(255) | No |
| actualachieved | varchar(255) | No |
| weight | double | No |
| midyearrating | double | No |
| endyearrating | double | No |
| averageannualscore | double | No |
| totalpoint | double | No |
| category | varchar(30) | No |
| inputdate | datetime | No |
| rankdate | datetime | No |
| userid | int(11) | No |

**Table 18 Shows Indexes for report**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | goal | 0 | A | No |  |
| userid | BTREE | No | No | userid | 0 | A | No |  |

**Table 19 Shows attributes for Feedback**

|  |  |  |
| --- | --- | --- |
| **Column** | **Type** | **Null** |
| fid (Primary) | int(11) | No |
| userid | int(11) | No |
| description | varchar(255) | No |
| date | datetime | No |

**Table 20 Shows Indexes for feedback**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Keyname** | **Type** | **Unique** | **Packed** | **Column** | **Cardinality** | **Collation** | **Null** | **Comment** |
| PRIMARY | BTREE | Yes | No | fid | 0 | A | No |  |
| userid | BTREE | No | No | userid | 0 | A | No |  |

## 3.10 Tools and languages to be used in software development

The below are the tools and languages that will be used to develop the project

**XAMPP** is a cross-platform web server that is free and open-source. XAMPP is a short form for Cross-Platform, Apache, MySQL, PHP, and Perl. XAMPP is a popular cross-platform web server that allows programmers to write and test their code on a local webserver. Here I used it to test and run my database using MySQL server. (EDUCBA, 2022) [40]

**MySQL** is the world's most used to develop the database and is an open-source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. (Oracle Corporation, 2014)[41]

**PHP** is a server side scripting language. that is used to develop Static websites or Dynamic websites or Web applications. PHP stands for Hypertext Pre-processor. (Paul Jackson, 2022).

I chose it because it’s familiar and easy to us. Especially, it can be embedded in other languages like HTML and used for database integration. [42]

**Cascading Style Sheets (CSS)** is a style sheet language used to describe the presentation semantics (the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML. CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts (V.Gouthaman, 2022)[43]

**Hypertext Markup Language (HTML)** is the primary language standard used to organize and format web pages and other documents on the World Wide Web. It is often used in conjunction with Cascading Style Sheets (CSS) and JavaScript to create a fully responsive web page that displays correctly on all device screens. (Vangie Beal, 2021)[44]

**JavaScript** is a client-side scripting language, which means the source code is processed by the client's web browser rather than on the web server This means JavaScript functions can run after a webpage has loaded without communicating with the server. JavaScript function may check a web form before it is submitted to make sure all the required fields have been filled out. I will use it to validate the html forms. (Braincuber Technologies, 2022) [45]

**CKEditor** is an open-source WYSIWYG (what you see is what you get) text editor, which is designed to bring common word processor features directly to the Web pages, simplifying their content creation. It is a popular HTML Editor. CKEditor is a JavaScript editor which allows the user to edit the multiple lines of texts with the use of menu tabs. (Alagappapandian M, 2019)[46]

# REFERENCES

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| [1] | (researchclue, 2022), "The impact of effective performance appraisal on employee productivity," [Online]. Available: https://nairaproject.com/projects/3499.html. [Accessed 2022 (researchclue, 2022)]. |
| [2] | (Fisher, C.D, Schoenfeldt, L.F and & Shaw, JB, 2003), "Human Resources Management," vol. 5, 2003 (Fisher, C.D; Schoenfeldt, L.F; & Shaw, JB, 2003). |
| [3] | (Lugalia, Nebert, 2011), "Employee performance management practices in Kenya Sugar Board," 2011. [Online]. Available: https://www.grin.com/document/301546 (Lugalia, Nebert, 2011). |
| [4] | (Mariti, Elizabeth Wanjiku, 2019), "Effects of performance appraisal systems on employee performance of multinational companies in Nairobi County," 2019. [Online]. Available: https://su-plus.strathmore.edu/handle/11071/6611 (Mariti, Elizabeth Wanjiku, 2019). |
| [5] | (Gaba and Monisha, 2017), "An analytical study of Performance Appraisal System in Contemporary Organisation," *International Journal of Business Administration and Management,* Vols. ISSN 2278-3660 Volume 7, Number 1 (2017) No. 15021126, no. Kalinga University, Raipur, p. https://www.ripublication.com/ijbamspl17/ijbamv7n2spl\_06.pdf, (Gaba and Monisha, 2017). |
| [6] | (researchclue, 2022), "Assessment the effectiveness of performance appraisal exercise in the public service," [Online]. Available: https://nairaproject.com/projects/3478.html. [Accessed 2022 (researchclue, 2022)]. |
| [7] | (Michael A. Mulvaney, William R. McKinney and Richard Grodsky, 2012), "The Development of a Pay-for-Performance Appraisal System for Municipal Agencies," October 2012. [Online]. Available: https://thekeep.eiu.edu/recadmin\_fac/5/. [Accessed 2022 (Michael A. Mulvaney; William R. McKinney; Richard Grodsky, 2012)]. |
| [8] | (researchclue, 2022), "The effect of performance appraisal in improving productivity in an organization," [Online]. Available: https://nairaproject.com/projects/511.html. [Accessed 2022 (researchclue, 2022)]. |
| [9] | (Uni Assignment 2022), "The History Of The Performance Appraisal System Business Essay," [Online]. Available: https://www.uniassignment.com/essay-samples/business/the-history-of-the-performance-appraisal-system-business-essay.php. [Accessed 2022 (Uni Assignment 2022)]. |
| [10] | (HR Web Wisdom, 2022), "Employee Engagement as a Strategic," [Online]. Available: https://core.ac.uk/download/pdf/18505222.pdf. [Accessed 2022 (HR Web Wisdom, 2022)]. |
| [11] | (Andersen and Pedersen, 2012), "Public Service Motivation and Professionalism," *Khairi Mohamed Omar,* pp. 35, 46-57, 2012 (Andersen; Pedersen, 2012). |
| [12] | (Russell, Russell, 2010), "The next level of performance management," 2010. [Online]. Available: https://www.researchgate.net/publication/291652064\_The\_next\_level\_of\_performance\_management. [Accessed 2021 (Russell, Russell, 2010)]. |
| [13] | (Elizabeth W. Mariti, 2019), "Effects of performance appraisal systems on employee performance of multinational companies in Nairobi County," Strathmore Business School (SBS), 2019. [Online]. Available: https://su-plus.strathmore.edu/bitstream/handle/11071/6611/Effects%20of%20performance%20appraisal%20systems%20on%20employee%20performance%20of%20multinational%20companies%20in%20Nairobi%20County.pdf?sequence=5&isAllowed=y (Elizabeth W. Mariti, 2019). |
| [14] | (Houghton, J. D and Di Liello, T. C, 2010), "Leadership Development: The Key to Unlocking Individual Creativity in Organizations. Leadership & Organization Development Journal," *Psychology,* pp. 31, 230-245, 2010 (Houghton, J. D; Di Liello, T. C, 2010). |
| [15] | (Sendawula, Kasimu, 2018), "Training, employee engagement and employeeperformance: Evidence from Uganda’s healthsector," 11 Feb 2018. [Online]. Available: https://doi.org/10.1080/23311975.2018.1470891 (Sendawula, Kasimu, 2018). |
| [16] | (Meyer, H. Herbert, 1991), "A solution to the performance appraisal feedback enigma. Academy of Management Perspectives," *Academy of Management Perspectives,* vol. 5(1), pp. 68-76, 1991 (Meyer, H. Herbert, 1991). |
| [17] | (Kolawole, Komolafe, Adebayo and Adegoroye, 2013), "Appraisal system: A tool for performance in selected organizations in Nigeria," *Academic journals,* vol. V, no. 7, pp. 249-261, 2013 (Kolawole, Komolafe, Adebayo; Adegoroye, 2013). |
| [18] | (eduprojecttopics, 2022), "Employees’ performance appraisal as a tool for organization growth," [Online]. Available: https://eduprojecttopics.com/product/employees-performance-appraisal-as-a-tool-for-organization-growth/. [Accessed 2022 (eduprojecttopics, 2022)]. |
| [19] | (Byrne, Pitts, Wilson and & Steiner, 2012), "Trusting the fair supervisor: the role of supervisory support in performance appraisals," *Human Resource Management Journal,* vol. 22, 2012 (Byrne; Pitts; Wilson; & Steiner, 2012). |
| [20] | (Muhammad Imran, 2014), "The Performance Appraisal System: An Examination in The City School of Bahawalpur in Terms of Employee Perceptions," *International Journal of Human Resource Studies,* vol. 4, no. https://www.macrothink.org/journal/index.php/ijhrs/article/view/5230/4218, p. 74, 2014 (Muhammad Imran, 2014). |
| [21] | (Business Development Fund "BDF", 2022), "Background," Business Devlopment Fund, [Online]. Available: https://www.bdf.rw/bdfeng/bdf-background/ (BDF, 2022). |
| [22] | (Singh and Hemendra, 2020), "What are the advantages of web application development in 2020," 8 June 2020. [Online]. Available: https://customerthink.com/what-are-the-advantages-of-web-application-development-in-2020/ (Singh and Hemendra, 2020). |
| [23] | (Sanjay, Karak and KrishnenduSen, 2019), "Performance appraisal of employees: a literature review," IJRAR, Netaji Mahavidyalaya, Arambagh, Hooghly, https://www.researchgate.net/publication/331175598\_Performance\_appraisal\_of\_employees\_a\_literature\_review (Sanjay, Karak and KrishnenduSen, 2019). |
| [24] | (Ciner Lia, 2019), "What does employee performance mean?," [Online]. Available: https://www.walkme.com/blog/how-to-improve-employee-performance/#what-does-employee-performance-mean (Ciner Lia, 2019). |
| [25] | (Adam Hayes, 2021), "What Is a Performance Appraisal?," investopedia, 22 Aug 2021. [Online]. Available: https://www.investopedia.com/what-is-a-performance-appraisal-4586834 (Adam Hayes, 2021). |
| [26] | (Susan M. Heathfield, 2021) , "What, Exactly, Is an Employee?," 26 Feb 2021. [Online]. Available: https://www.thebalancecareers.com/what-is-an-employee-1918111 (Susan M. Heathfield, 2021). |
| [27] | (Alex Abrams, 2021), "What is a Web Portal?," Liferay Inc, [Online]. Available: https://www.liferay.com/resources/l/web-portal (Alex Abrams, 2021). |
| [28] | (Education and Manpower Bureau, 2003), "Teacher Performance Management," 2003. [Online]. Available: https://www.edb.gov.hk/attachment/en/sch-admin/sbm/sbm-forms-references/staff-appraisal-system/TPMguide.pdf. [Accessed 2022 (Education and Manpower Bureau, 2003)]. |
| [29] | (Ministry of Public Service and Labour and Ministry of Finance and Economic Planning, 2015), "Result Based Performance Management (RBM) Policy for Rwanda Public Service," [Online]. Available: https://www.minecofin.gov.rw/fileadmin/user\_upload/Minecofin/Publications/POLICIES/RBM\_Policy/FINAL\_RBM\_POLICY\_11-8-2015.pdf. [Accessed 2021 (Mifotra and minecofin, 2015)]. |
| [30] | (Akrad and Adam, 2021), "Performance appraisal and review systems: The identification, measurement, and development of performance in organizations," [Online]. Available: https://www.academia.edu/15273385/Chapter\_3\_Literature\_Review\_3.0\_Introduction (Akrad and Adam, 2021). |
| [31] | (Stephen J. Carroll and and Craig Eric Schneier, 1982), "Performance appraisal and review systems: The identification, measurement, and development of performance in organizations," Scott, Foresman, Berlin (Stephen J. Carroll; and Craig Eric Schneier, 1982). |
| [32] | (Sileyew and Jilcha, Kassu, 2019), "Research design and methodology," [Online]. Available: https://www.intechopen.com/chapters/68505. [Accessed 2022 (Sileyew; Jilcha, Kassu, 2019)]. |
| [33] | (Dr Nick Fox, 2009), "Using Interviews in a Research Project," [Online]. Available: https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2013/05/15\_Using-Interviews-2009.pdf (Dr Nick Fox, 2009). |
| [34] | (Iedunote, 2021), "Observation Method of Data Collection," [Online]. Available: https://www.iedunote.com/observation-method-of-data-collection (Iedunote, 2021). |
| [35] | (Benfield, Jacob A. and Szlemko, William J., 2006), "Journal of Research Practice," [Online]. Available: http://jrp.icaap.org/index.php/jrp/article/view/30/51 (Benfield, Jacob A. and Szlemko, William J., 2006). |
| [36] | (Nabil Mohammed Ali Munassar, A. Govardhan, 2010), "A Comparison Between Five Models Of Software Engineering," [Online]. Available: https://www.ijcsi.org/papers/7-5-94-101.pdf (Nabil Mohammed Ali Munassar, A. Govardhan, 2010). |
| [37] | (Ali Aydar, 2021), "SDLC-Waterfall Model," Tutorials Pointd India Private Limited, [Online]. Available: https://www.tutorialspoint.com/sdlc/sdlc\_waterfall\_model.htm (Ali Aydar, 2021). |
| [38] | (License, Commons Attribution-ShareAlike, 2019), "System context diagram," Wikipedia, the free encyclopedia, [Online]. Available: https://en.wikipedia.org/wiki/System\_context\_diagram (License, Commons Attribution-ShareAlike, 2019). |
| [39] | (IBM Corporation 2021), "InfoSphere Data Architect," [Online]. Available: https://www.ibm.com/docs/en/ida/9.1.1?topic=modeling-physical-data-models (IBM Corporation 2021). |
| [40] | (EDUCBA, 2022), "Introduction to XAMPP," [Online]. Available: https://www.educba.com/what-is-xampp/ (EDUCBA, 2022). |
| [41] | (Oracle Corporation, 2014), "MySQL," [Online]. Available: https://www.limswiki.org/index.php/MySQL (Oracle Corporation, 2014). |
| [42] | (Paul Jackson, 2022), "What is PHP?," [Online]. Available: https://www.guru99.com/what-is-php-first-php-program.html (Paul Jackson, 2022). |
| [43] | (V.Gouthaman, 2022), "Introduction Cascading Style Sheets (CSS)," Ada Carroll, [Online]. Available: https://slideplayer.com/slide/7963679/ (V.Gouthaman, 2022). |
| [44] | (Vangie Beal, 2021), "Definition of HTML," [Online]. Available: https://www.webopedia.com/definitions/html/ (Vangie Beal, 2021). |
| [45] | (Braincuber Technologies, 2022), "Why is JavaScript called a client-side language?," [Online]. Available: https://www.quora.com/Why-is-JavaScript-called-a-client-side-language. [Accessed 2022 (Braincuber Technologies, 2022)]. |
| [46] | (Alagappapandian M, 2019), "Introduction To CKEditor," 22 Oct 2019. [Online]. Available: https://www.c-sharpcorner.com/blogs/ckeditor-introduction. [Accessed 2022 (Alagappapandian M, 2019)]. |