

# A PROJECT REPORT

**on**

Human Resource Management Strategy for Employee Engagement with Gamification Features

SUBMITTED TO

# SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

In partial fulfillment of the award of the course of

# DSA0198 OBJECT ORIENTED PROGRAMMING WITH C++ FOR EXPERT PROGRAMMING

**SUBMITTED By**

D.V.N. KAIVALYA (192211072)

B. CHAITHANYA (192210331)

# SUPERVISED BY

DR. P. SELVARAJU

(Associate Professor)



# SAVEETHA SCHOOL OF ENGINEERING, SIMATS CHENNAI- 602105

**SEPTEMBER-2024**

# BONAFIDE CERTIFICATE

Certified that this project report titled “**Human Resource Management Strategy for Employee Engagement with Gamification Features**” is the bonafide work **D.V.N. KAIVALYA (192211072), B. CHAITHANYA (192210331)** who carried out the project work under my supervision as a batch. Certified further, that to the best of my knowledge, the work reported herein does not form any other project report.

Project Supervisor Head of the Department

Date: Date:

**ABSTRACT:**

Employee engagement plays a pivotal role in improving organizational performance, productivity, and employee retention. To address this, Human Resource Management (HRM) strategies must adapt to create a more motivated and committed workforce. One innovative approach to enhancing engagement is the incorporation of gamification into HR practices. Gamification involves applying game-like elements such as rewards, challenges, and competition in non-gaming environments to encourage desirable employee behaviors. By integrating features like leaderboards, badges, real-time feedback, and goal-setting, organizations can create a more interactive and stimulating workplace. This approach fosters motivation, collaboration, and professional growth. Additionally, the psychological effects of gamification, including its impact on both intrinsic and extrinsic rewards, can significantly influence employee performance and engagement levels. As a result, a gamified HRM strategy not only enhances employee involvement but also promotes innovation and continuous learning, contributing to the organization’s long-term success.

Employee engagement is a critical factor in driving organizational performance, enhancing productivity, and ensuring employee retention. Human Resource Management (HRM) strategies must continuously evolve to foster a motivated, committed workforce. One emerging approach to boost engagement is the integration of gamification into HR practices. Gamification, the application of game-like elements in non-gaming contexts, leverages rewards, challenges, and competition to encourage positive employee behaviors.

**INTRODUCTION:**

Employee engagement is a critical aspect of organizational success, influencing productivity, retention, and overall performance. Traditional Human Resource Management (HRM) strategies often struggle to effectively engage employees in the modern workplace, leading to disengagement and decreased motivation. To address this challenge, organizations are increasingly turning to gamification, the application of game-design elements in non-game contexts, to enhance employee engagement. By integrating gamified elements into various HRM practices, organizations can motivate employees, drive desired behaviors, and create a more engaging work environment.

This paper proposes a comprehensive HRM strategy for employee engagement with gamification features. The strategy aims to leverage gamified elements such as points, badges, leaderboards, and interactive challenges to enhance various HRM practices, including recruitment, training, performance management, and rewards. By aligning HRM practices with gamification principles, organizations can potentially improve employee morale, job satisfaction, and overall organizational performance.

Employee engagement is essential for improving organizational performance, productivity, and retention. In today's rapidly changing work environment, Human Resource Management (HRM) strategies must evolve to keep employees motivated and committed. One innovative approach is the use of gamification, which incorporates game-like elements such as rewards, challenges, and competition to influence behavior and foster engagement. By integrating features like leaderboards, badges, real-time feedback, and goal-setting, gamification creates an interactive and stimulating workplace.

**OBJECTIVE AND GOAL:**

The objective of this project is to develop a Human Resource Management (HRM) strategy with gamification features to enhance employee engagement. The goal is to design a system that integrates gamified elements into HRM practices such as recruitment, training, performance management, and rewards, and to develop a model that can analyze employee engagement data to provide insights for HRM decision-making. The project also aims to evaluate the effectiveness of the proposed HRM strategy in improving employee engagement and organizational performance.

**Project Scope:**

The scope of this project includes the design, development, and implementation of a comprehensive Human Resource Management (HRM) strategy with gamification features to enhance employee engagement. The project will involve the integration of gamified elements into various HRM practices, including recruitment, training, performance management, and rewards. The project will also include the development of a model to analyze employee engagement data and provide insights for HRM decision-making. This will involve data input processing, feature extraction selection, model training, and evaluation.

The evaluation of the proposed HRM strategy will be conducted to assess its effectiveness in improving employee engagement and organizational performance. The project will also consider the future scope and challenges of implementing a gamified HRM strategy. The project scope does not include the development of a mobile application or the integration of external systems. It also does not include the implementation of the HRM strategy in a real-world setting.

**Technology and Tools:**

For the development of a Human Resource Management (HRM) strategy with gamification features to enhance employee engagement, you can consider the following technologies and tools:

1. Programming Languages:

* Python: For data processing, model training, and analysis.
* JavaScript: For front-end development of the user interface.

2. Web Development Frameworks

* Flask or Django: For building web applications to implement the HRM strategy.

3. Database

* SQLite or PostgreSQL for storing employee engagement data and other relevant information.

4.Front-end Technologies

* HTML, CSS, and JavaScript for building the user interface and implementing gamification elements.
* React, Angular, or Vue.js for building interactive and dynamic user interfaces.

5. Data Visualization

* + Matplotlib or Seaborn for creating visualizations to analyze and present data.
  + D3.js for creating interactive data visualizations on the web.

**PROJECT DELIVERABLES:**

* The project deliverables encompass various components essential for the development and implementation of a Human Resource Management (HRM) strategy with gamification features aimed at enhancing employee engagement.
* These include the creation of a comprehensive project plan detailing the scope, timeline, and resources, along with milestones for tracking progress.
* The project will also entail the establishment of systems for data processing and feature extraction, crucial for analyzing employee engagement data effectively.
* The culmination of these efforts will result in the deployment of a functional web application encompassing recruitment, training, performance management, and rewards modules, all integrated with gamified features.

**Potential Challenges and Solutions:**

Implementing a Human Resource Management (HRM) strategy for employee engagement with gamification features can be exciting but also comes with its own set of challenges. One potential challenge is resistance to change. Employees may resist using new systems or methodologies, especially if they perceive gamification as unnecessary or intrusive. To address this, ensure that the benefits of gamification are clearly communicated to employees, highlighting how it can improve engagement, learning, and performance. Provide training and support to help employees understand and embrace the new approach.

Another challenge is integrating gamification features into existing systems. This can be complex, requiring compatibility and seamless data exchange. To overcome this challenge, work closely with IT teams to ensure compatibility and establish a clear integration plan. Use APIs and middleware if necessary to facilitate data exchange between systems.

**Budget:**

A big expense might not be needed because the project can be carried out with free and open-source technologies.

**FUNCTIONALITY:**

* Adding employees should involve collecting essential details like name, ID, department, salary, and other relevant information.
* Removing employees should allow for the removal of outdated or inactive records.
* Updating employee information should enable modifications to detail such as name, department, and salary.
* Managing transactions could include features like processing salary payments based on the number of days worked, calculating bonuses, or tracking leaves taken.

**OBJECT ORIENTED DESIGN:**

* Create classes for Employee and HRMS, with methods for adding, removing, updating employees, managing transactions, and searching employees.
* Use inheritance and composition to manage different types of transactions and gamification features, ensuring scalability and modularity.

**Encapsulation:** Use private member variables and public member functions in the Employee and HRMS classes to encapsulate data and behavior, respectively.

**Inheritance:** Implement subclasses for different types of employees or gamification features to inherit common attributes and methods from a base class.

**Polymorphism:** Use virtual functions in the base class to allow for different implementations in subclasses, enabling flexibility and extensibility in behavior.

**CODE:**

#include <iostream>

#include <vector>

#include <string>

#include <algorithm>

using namespace std;

class Employee {

public:

string name;

int id;

string department;

double salaryPerDay;

int daysInMonth;

int daysLeaveTaken;

int points;

Employee(string n, int i, string d, double spd, int dim) {

name = n;

id = i;

department = d;

salaryPerDay = spd;

daysInMonth = dim;

daysLeaveTaken = 0;

points = 0;

}

void displayInfo() {

cout << "Name: " << name << endl;

cout << "ID: " << id << endl;

cout << "Department: " << department << endl;

cout << "Salary Per Day: " << salaryPerDay << endl;

cout << "Days in Month: " << daysInMonth << endl;

cout << "Days Leave Taken: " << daysLeaveTaken << endl;

cout << "Total Salary per Month: " << calculateTotalSalary() << endl;

cout << "Points: " << points << endl;

}

double calculateTotalSalary() {

return (daysInMonth - daysLeaveTaken) \* salaryPerDay;

}

};

class HRMS {

private:

vector<Employee> employees;

static bool compareByPoints(const Employee &a, const Employee &b) {

return a.points > b.points;

}

public:

void addEmployee() {

string name, department;

int id, daysInMonth;

double salaryPerDay;

cin.ignore(); // To clear the newline character from the input buffer

cout << "Enter employee name: ";

getline(cin, name);

cout << "Enter employee ID: ";

cin >> id;

cin.ignore(); // To clear the newline character from the input buffer

cout << "Enter employee department: ";

getline(cin, department);

cout << "Enter number of days in month: ";

cin >> daysInMonth;

cout << "Enter salary per day: ";

cin >> salaryPerDay;

Employee e(name, id, department, salaryPerDay, daysInMonth);

employees.push\_back(e);

}

void awardPoints(int id, int points) {

for (size\_t i = 0; i < employees.size(); ++i) {

if (employees[i].id == id) {

employees[i].points += points;

cout << "Awarded " << points << " points to " << employees[i].name << endl;

return;

}

}

cout << "Employee not found." << endl;

}

void displayAllEmployees() {

for (size\_t i = 0; i < employees.size(); ++i) {

employees[i].displayInfo();

cout << endl;

}

}

void displayEmployeeById(int id) {

bool found = false;

for (size\_t i = 0; i < employees.size(); ++i) {

if (employees[i].id == id) {

employees[i].displayInfo();

found = true;

break;

}

}

if (!found) {

cout << "Employee not found." << endl;

}

}

void displayLeaderboard() {

sort(employees.begin(), employees.end(), compareByPoints);

cout << "Leaderboard:" << endl;

for (size\_t i = 0; i < employees.size(); ++i) {

cout << i + 1 << ". " << employees[i].name << " - Points: " << employees[i].points << endl;

}

}

};

int main() {

HRMS hrms;

char choice;

do {

cout << "1. Add Employee\n2. Display All Employees\n3. Display Employee by ID\n4. Award Points\n5. Display Leaderboard\n6. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case '1':

hrms.addEmployee();

break;

case '2':

cout << "All Employees:" << endl;

hrms.displayAllEmployees();

break;

case '3': {

int id;

cout << "Enter employee ID to display: ";

cin >> id;

hrms.displayEmployeeById(id);

break;

}

case '4': {

int id, points;

cout << "Enter employee ID to award points: ";

cin >> id;

cout << "Enter points to award: ";

cin >> points;

hrms.awardPoints(id, points);

break;

}

case '5':

hrms.displayLeaderboard();

break;

case '6':

cout << "Exiting program." << endl;

break;

default:

cout << "Invalid choice. Please try again." << endl;

}

} while (choice != '6');

return 0;

}

**CODE QUALITY:**

**Readability:** Use descriptive variable and function names, follow a consistent coding style, and break down complex operations into smaller, understandable parts.

**Modularity:** Organize code into logical modules or classes, each responsible for a specific aspect of the HRM system, to promote reusability and maintainability.

**Comments:** Include comments to explain the purpose of classes, methods, and important code blocks, making it easier for others to understand and maintain the code.

**USER INTERFACE:**

**Intuitiveness:** Design a user interface that is easy to understand and navigate, with intuitive controls and layout.

**User feedback:** Provide clear and timely feedback to the user, such as confirmation messages or error notifications, to keep them informed about the status of their actions.

**PROJECT MANAGEMENT:**

**Adherence to timeline:** Track progress regularly and adjust plans as needed to ensure project milestones are met according to the set timeline.

**Milestone completion**: Break down the project into smaller, manageable tasks and set clear milestones to monitor progress and celebrate achievements.

**Handling of challenges:** Anticipate potential challenges, such as technical issues or changes in requirements, and have contingency plans in place to address them efficiently and minimize impact on the project timeline.

**CONCLUSION:**

In conclusion, the implementation of a Human Resource Management (HRM) strategy with gamification features has the potential to significantly enhance employee engagement and organizational performance. By integrating gamified elements into HRM practices such as recruitment, training, performance management, and rewards, organizations can motivate employees to actively participate in organizational activities and achieve specific goals. The use of points, badges, leaderboards, and interactive challenges can create a more engaging and enjoyable work environment, fostering a sense of accomplishment, recognition, and community among employees. Additionally, the integration of predictive analytics, personalized engagement, and mobile integration can further enhance the effectiveness of the HRM strategy. Overall, the successful implementation of a gamified HRM strategy can lead to improved employee morale, job satisfaction.

Human Resource Management strategies present a powerful approach to enhancing employee engagement. By incorporating game-like elements such as rewards, challenges, and feedback, organizations can create a more dynamic and motivating work environment. This strategy not only improves individual performance and collaboration but also fosters continuous learning and professional growth. Ultimately, a gamified HRM approach helps to align employee goals with organizational objectives, driving both productivity and retention. As businesses strive for long-term success, adopting such innovative techniques will be key to maintaining a highly engaged and committed workforce.

**REFERENCES:**

* Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From Game Design Elements to Gamefulness: Defining "Gamification". *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9-15.
* Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2015). Is it all a game? Understanding the principles of gamification. *Business Horizons*, 58(4), 411-420.
* Zichermann, G., & Cunningham, C. (2011). *Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps*. O'Reilly Media.
* Mekler, E. D., Brühlmann, F., Tuch, A. N., & Opwis, K. (2017). Towards understanding the effects of individual gamification elements on intrinsic motivation and performance. *Computers in Human Behavior*, 71, 525-534.
* Kapp, K. M. (2012). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education*. Wiley.