

OWRIS (Office Work Reimbursement Information System)

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Abstract: The work of tracking employees expenses is itself a costly work for the company. The process of managing employee expenditure, and accordingly managing the money given to the employee requires many people, time and money. This system is developed to do the same work, saving time and money for the company. It is designed to keep track of employees expenses which companies have to pay to their employees on a monthly basis. The system allows the user to track and check vehicle fuel entries, servicing data and even repair/maintenance status. This system allows users to keep track of their vehicles provided on rent or lease to someone else. The main motto is to have a track of fuel, maintenance status of vehicles provided to employees.

Keywords: Reimbursement, Information Systems, Expense Tracking

I. INTRODUCTION

Reimbursement is the act of compensating someone for an out-of-pocket expense by giving them an amount of money equal to what was spent. Companies, governments and nonprofit organizations may compensate their employees or officers for necessary and reasonable expenses, these expenses may be deducted from taxes by the organization and treated as untaxed income for the recipient provided that accountability conditions are met. Reimbursement is also provided for supply, day care, mobile, medical, or education expenses, as determined by the payer. Similarly, a university, academic conference, or business conference may reimburse the expenses of an invited speaker or attendee.

II. PROBLEM STATEMENT

Fast growing consulting companies like ACG Inc., have an increasing number of employees working for several clients in different parts of the country. One of the important tasks for such a firm is to manage expenses for employees located in different parts of the country. The current system that is in place for expense management at this firm is a manual process. Employees fill out a monthly expense form and send it for approval along with expense receipts. Some of the potential problems identified with the existing method are as follows

Slow & Inefficient: There is no one application that manages the entire expense process. This leads to a very slow and in-efficient way to manage the expenses.

Error prone A lot of steps in the current process involve manual work like data entry and manually verifying the expense details. Due to this there are high chances for errors which slow the entire expense process.

Communication issues there is no proper communication during the entire expense approval process. It is important that the employee is updated with the current expense status faster

A. Existing Solutions

There are existing software solutions to manage employee expenses that could potentially address the issues raised in the earlier section. These existing solutions however have issues that are discussed below. Complexity Most of the existing software solutions address a broad and general issues pertaining to financials of a company. Usually such software would be big, feature rich & complex. For a small size company most of the features from such software would not be relevant. Cost The initial and the operating costs of such existing software are huge. No single software There is a need for a single web-based solution that would address the entire requirements specific & focused for the company. To address this issue, lean & focused software needed to be developed to address only the requirements specific for this company instead of using multiple software solutions.

Along with the issues mentioned above, the client also needed a software solution that is flexible, easy to maintain & also integrate to the existing system with complete control to the software solution for future enhancements.

B. Goal of the Project

This project is being developed for "MNCS" with the primary goals as follows: Improve efficiency The firm wishes to improve the efficiency by automating the entire employee expense process. Improve communication The firm requires the capability to better communicate with the employees by providing faster updates to the expenses using email alerts. Reduce manual errors The firm requires an online application that covers the entire process of employee expense management eliminating the majority of manual work to remove un-intended human errors. Ease of use The online application should be easy to use for the employees with minimal training.

III. PRODUCT FEATURES

This project provides various functionalities including managing the employee profiles, adding/editing expenses, track expense status, review past expenses, email notifications, etc. The whole project is developed in 2 levels depending on the user access levels. This project supports the **following access levels**.

- **Employee Access**
- **Administrator Access**

Employee Access: This level of access is given to individual employees that will enable update of certain fields in employee profile and will also allow adding, editing, and deleting their own expense reports.

- The system should allow employees to edit/update employee profiles. The Employee profile should include basic employee information along with bank details.
- The system should allow the employee to change the login password. • The system should allow the employees to review all the expenses filed in the past.
- Employees are expected to file expenses on a monthly basis; however the system should be flexible to allow employees to file for expenses for any duration.
- The employees are expected to file different types of expenses per week. The system should allow the user to name these monthly expenses and should send one report to the manager when the expense is filed. The system should be easy to use and should allow the employee to see all the expenses based on the expense type. The system should show the expense total based on the expense type along with total per day.

Administrative Access: An admin is a “super user” for the company and will have all administrative permissions. This access level will allow editing employee & manager profiles.

- The system should allow the admin to add/delete employees & Managers.
- The system should allow the admin to “activate” or “deactivate” an employee. An employee that is currently inactive should not be allowed to login.
- The system should allow the admin to set up different types of roles in the company. This feature should be flexible to add any number of roles.
- The system should allow the admin to assign/change a manager to a certain employee. 8
- The system should allow the admin to set up different types of expenses.
- The system should allow the admin to set cost limits to different types of expenses.

IV. METHODOLOGY

The functionalities in scope are as follows

1. The system should allow a first time user to login with temporary password and should instruct the user to change password upon login.
2. Employee profile will display employee, personal & bank details. There will be options available to edit/update certain fields in the profile.
3. This web-based application will allow both employees & managers to file for the following type of expenses. • Hotel expense • Airline expense • Rental car expense • Miscellaneous expenses As the employees are expected to file expenses on a monthly basis, all these types of expenses could be filed together under a certain “expense name”.
4. Each expense report should have the information for total expense per day along with total expense per expense type including the overall total expense.
5. Save employee expenses and come back to it later before submitting the final expense report.
6. View and print the past employee expenses but cannot edit any “accepted” expense reports.
7. View expense reports filed by all employees or lookup a particular employee under a manager. The manager can retrieve detailed information on a particular expense filed by the employee.
8. Manager should be able to generate several useful reports that will enable him to easily manage his budget.

For analysis part we are using K-Means algorithm which K-Means clustering algorithm. We have used this algorithm for analyzing which are the type of expenses that employees spend most on. So in this way the company will come to know where the most of the expenditure comes from and will be ready to provide the expenditure or reduce the expenses by planning some strategy. Figure 4.1 shows the top five type of employee expenses. This data will help the manager in reimbursing the employees and also to see where they spend most on and can also then plan on reducing the costs.

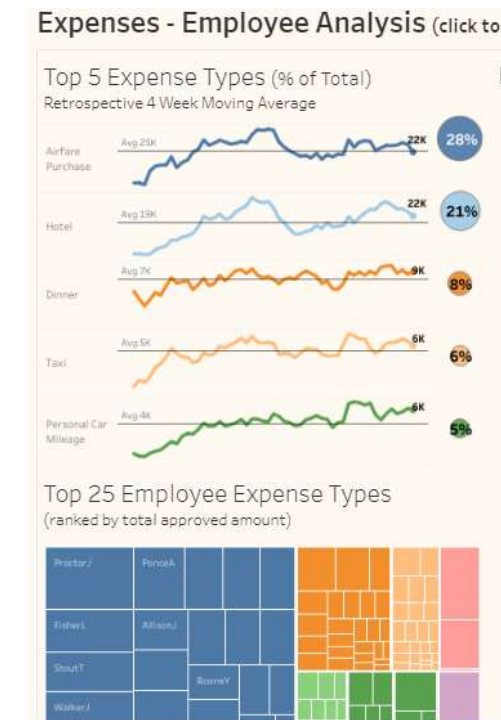


Fig 4.1 Employee Expense Analysis

For predicting the future expenses of employees we have used Rain Forest algorithm which builds a decision tree based on the historical data in the training dataset and then uses the tree for predicting the future expenses.

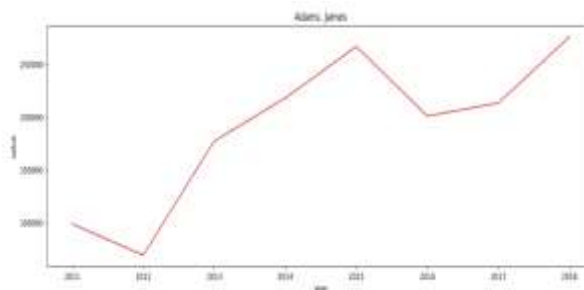


Fig 4.2 Expense Prediction

The Figure 4.2 above shows the prediction of expenses of two employees for the next seven years. In this way we can view expenses of all the employees of the company and the company can then know what the future expenses of their employees will be and be prepared for future expenses.

1. Web Portal

The website version of OWRIS would be implemented to be responsive on all devices. The head of the organisation responsible for tracking the expenses, will be able to see all the expenses of all the employees. The system will also help the admin to estimate the future expenditure of an employee or a group of employees based on present expenditure.

V. USE CASE DIAGRAM

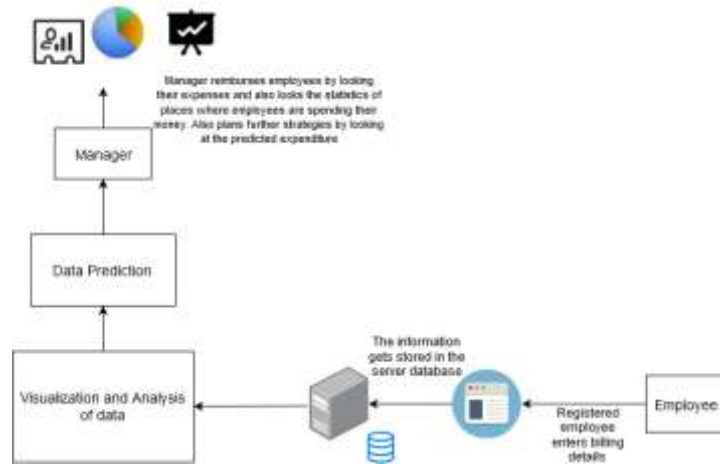


Fig 5.1 Block Diagram for OWRIS

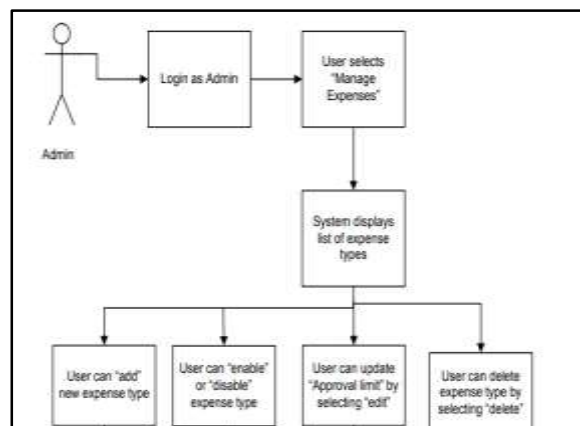


Fig 5.2 Block Diagram for Admin

Fig 5.3 Flow diagram

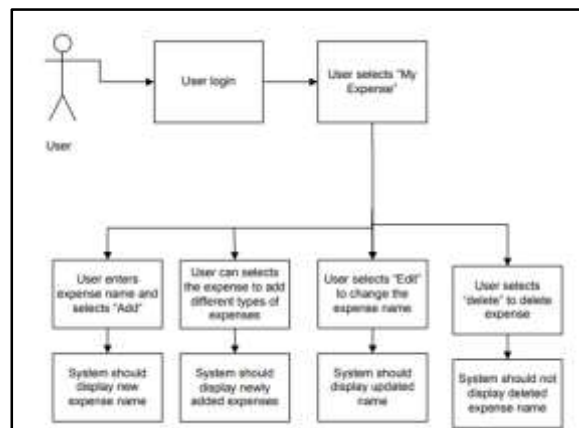
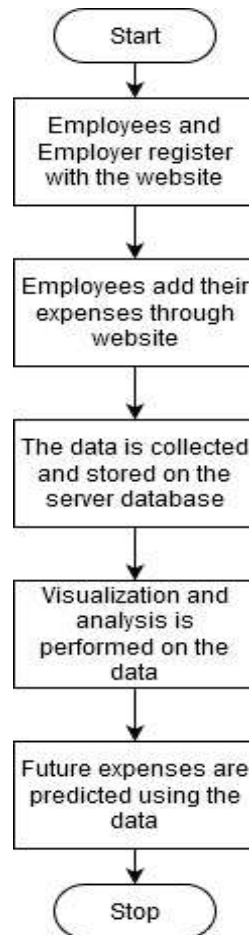


Fig 5.4 Block Diagram for Employee

VI. EXPECTED RESULT

Since the whole system is computer based rather than physically maintaining records, hence there is very little chance of error. Also there are photos of the bills that are paid by the employee, hence the chances of fraud are reduced to a great extent. The system produces an expense report of the employee every month, which will make it easier to calculate the overall expenses of the employee in that month. With the help of the annual report, the annual expenses of all the employees can be calculated.



Fig 6.1 Expense dashboard

Fig 6.1 shows how the expense of the employee or a group of employee can be seen over a particular period of time. The data of the past month is readily available. However the older data can be viewed as well.

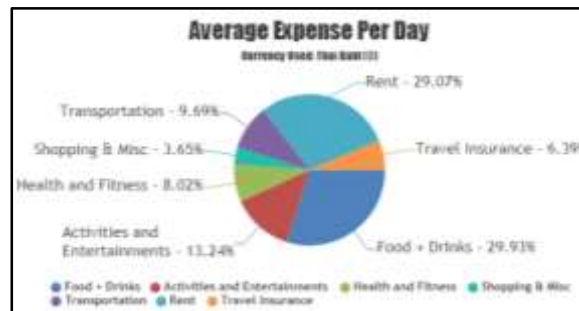


Fig 6.2 Expenses divided according to category

Fig 6.2 shows the data divided in various categories like travel, health, food, etc. This data can be further used to predict the expenses based on each category.

VII. FUTURE SCOPE

The current system has a huge loophole. Bills that are uploaded can not be verified, that is, if an employee uploads a fake bill (something that he/she has not spent but may be of a friend or some other person) there is no way of verifying if he/she has actually spent that money.

Another module of vehicle tracking can be added so that the organisation can know the exact location of every vehicle. This will further prevent frauds since the organisation will have the exact location to verify the vehicle usage.

REFERENCES

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Authors: IEEE

Description: This paper is given by IEEE and contains guidelines for travel and expense reimbursement of IEEE employees to establish standards and procedures in order to reduce travel costs while complying with federal regulations regarding reimbursement of business expenses and to provide a consistent approach for timely processing along with required documentation on authorized expenses.

Link: http://sites.ieee.org/r2/files/2013/08/IEEE_travelguidelines_9_26_07.pdf

2. An Improved Algorithm of Decision Tree for Classifying Large Data Set Based on RainForest Framework

Authors: Thangaparvathi.B, Anandhavalli.D

Description: This paper contains information about an improved algorithm of decision tree which is based on Rain Forest algorithm. In this paper it is described how it works for classifying large data sets.

Link: <https://sci-hub.tw/https://ieeexplore.ieee.org/document/5670733>