

Review Article

A Review on Artificial Intelligence Enabled B2B Invoice Management System

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A B S T R A C T

The basic idea behind this application is to manage the invoices for businesses. Now a days, managing the Accounts is becoming a very crucial part and is very important. So, we will hire an accountant or CA for managing the Accounts. That actually not good, because he requires each and every information related to accounts, access of the balance sheet, some sensitive details like OTPs, etc. for maintaining the account. So, after seeing such problems, we build a web application that replaces CA and managing your accounts by programming. And, it didn't share any sensitive information to anyone and also not save the details on any server. This application uses the local Database, ie., HDD of your Laptop. That means, this application never breaks the privacy and trust of any user and shows the data in the form of Graphs and charts.

Keywords: HDD-Hardisk, UI-User Interface, UX-User Experience, API-Application Programming Interface, MYSQL-Database Used, Ide-Integrated Development Environment, SAAS-Software Service, ERP-Enterprise Resource Planning

Introduction

The B2B world works uniquely in contrast to the B2C or C2C world. Organizations work with different organizations on credit. At the point when a purchaser business orders products from the merchant business, the vendor business gives an invoice (receipt) for something very similar. This receipt for the products contains different data like the subtleties of the merchandise bought and when it ought to be paid. This is referred to in accounting terminology as "Accounts Receivable".

Seller business trade with various businesses and sells their goods to all of them repeatedly and made the business relationship. Hence, the seller business needs to take care of the bills or total amount, they

will have to collect from all the vendors. This involves maintaining the record of all the invoices from all the vendors.

In the real world, the purchaser business should compensation inside the specified time (for example the Payment Term). However, in reality, the purchaser business only here and there pays inside their laid-out time span, this is the place where payment receivables department comes into the play. Every business comprises a devoted Payment Clearing Departments to collect and track installments of solicitations. It comprises an Account receivables group that is answerable for:

- Gathering installments from clients of their pending due invoices
- Sending updates and subsequent meet-ups to clients for installments to be made
- Taking care of the whole course of getting the money inflow
- Assist the organization with getting compensated for the administrations and items provided

- Construct a Machine Learning Model to foresee the installment date of a receipt when it gets made in the framework
- Construct a full-stack Invoice Management Application

Functional Overview

- Data Loading in the Database
- UI Representation of the Data
- Receivables Dashboard Page, It consists the buttons for Predict, Advance Search, Analytics View Add, Delete & Edit, Search bar

Add button

- It is used for adding new field values to the grid
- The Add button is in the enabled state when not any single row is selected
- When single or multiple rows were selected, the Add button won't be deactivated until the user didn't unselect all the rows
- After click on to the Add button, a new window will be shown with the required entities, a Cancel, an Add button. All the entities must acquire any value otherwise data won't be stored
- The user could insert the values in every entity, but cannot insert any to the date of invoice because we added in-build calendar view for this, from where user can select the date, month, year
- Before pressing the ADD button, all the fields must have appropriate values, otherwise data won't be stored in the database and the program shows the error.



Figure 1

Edit button:

- It is used for editing the editable field values in the grid
- Edit button will disabled at first and should enable when atleast one checkbox is selected. A user should be able to select a row and then click on the

Edit button.

- The fields which can be edited are the Invoice Currency and Customer Payment Terms fields. Without selecting any row, the Edit button should remain disabled
- On clicking the Edit button, a popup will open up with the column header name and existing value. The user should be able to edit the existing value
- The popup should have a Edit, Cancel



Figure 2

Delete Button:

- This button allowed the user to delete the records from table or database
- When user selects single or multiple records of invoices, the delete button will automatically get enabled
- A new window will display after pressing the delete button to make sure whether you want to delete the selected row(s) from database or not
- Once the user clicked "Delete" from the pop-up prompt, the row(s) will removed from the database and the list will refresh automatically



Figure 3

Predict button:

- Users should be able to predict the payment date of selected Invoices with the help of the Predict button. Clicking on this button will populate the Predicted Payment Date column on the UI with the predicted dates
- When the user selects one or more Invoices and clicks on the Predict button, the Predicted Payment Date column should get populated only for those invoices. The button should get activated only upon selecting any of the Invoice(s)
- If no Invoice is selected, the button should be in a disabled state



Figure 4

Advanced Search button:

The UI consists of the Advanced Search button. Clicking on this button will help the user to perform an advanced search on the data based on the following four fields:

- Document Id-(doc_id)
- Customer No-(cust_number)
- Invoice No-(invoice_id)
- Business Year- (buisness_year)



Figure 5

Analytical View:

- To get insights from the existing data based on users inputs
- The existing parameters would act as key points or outliers for the synthesis of data
- So the analytics view will be a button in UI which responds to a new window on click event



Figure 6

The new window contains of parameters:

- Currency (Multiselect)
- Due Date
- Baseline Create Date
- Clear Date
- The user will have a privilege to go for single parameter or multi parameter based on their choices and preferences
- On submitting the parameters the web application will open the dialog window which will provide the user with an illustration of a bar graph and pie chart which will be formed based on the parameterized data that the user had selected
- The bar graph will be showing data for the total open amount and number of customers for all Business
- The Pie chart will be containing the selected currencies

- There will be a close button to close the window and redirect the user to the main screen(UI)
- The analytics view button would be a simple tool that the user can use to view data based on their preferences and could facilitate decision making

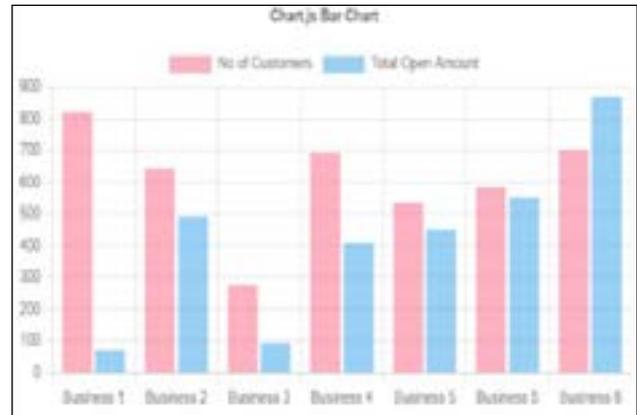


Figure 7

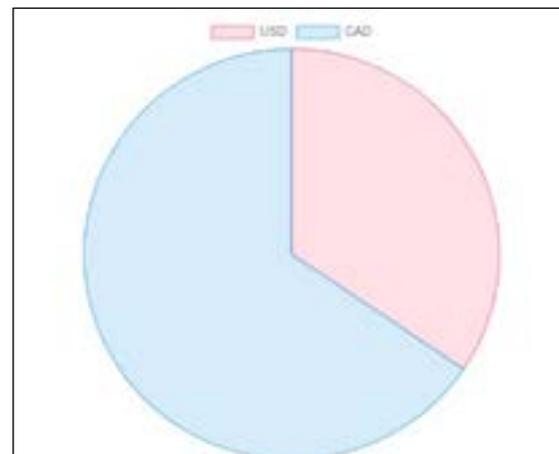


Figure 8

Searchable fields behavior:

- Business Year-Text Field
- Customer Id-Text Field c. Invoice No - Text Field d. Document Id-Text Field
- Customer Id-Equal Search Users should be able to search for a customer by typing text in the Customer id integer field. Search is not case-sensitive



Figure 9

Grid Panel Section:

- The Grid Header section, consisting of all the different column name headers and a Select All and Deselect All functionality



Figure 10

- A Predict button is added on the top left corner in the Header of list followed by an Advance Search Button, an Analytics view, an Add Button, an Edit Button, a Delete Button, a Search Bar
- The name of the grid is Invoice List. It is mentioned in the top left corner of the grid
- The next portion is the table with customer's invoices data in rows
- The Grid contains the required data in the form of rows that is loaded from the CSV File
- On a single page, only 10 invoices data or rows is displayed. Users can select single or multiple rows

Sorting & Searching:

- Sorting: Sorting is performed on all the columns that were present in the database
- Clicking on the column headers should sort the values of the whole grid
- First click-Ascending
- Second click-Descending
- Third Click-default or original order
- Column headers should have a double arrow symbol near the column name to indicate they can be sorted

AI Support for the Prediction of Payment Date

- There is a button named "Predict" present on the UI besides the "Advance Search" button
- Users can select one or more invoices and click on the "Predict" button for predicting the payment dates of those selected invoices
- Once the button is clicked, the Predicted Payment Date column should get populated with the predicted dates derived from the ML model
- The "Predict" button remain disabled if no invoices are selected

Glossary:

- **Invoice** - A document that is circulated by a vendor to a client when some goods are purchased.
- **Advanced Search** - A pop-up window, which depicts the illustration that enables the user to search with single or multiple parameter values from the grid

- **Predict** - The predict button is used as a tool to predict the Payment Date of each invoice

Feature

- Machine Learning Model to anticipate the installment date of a invoice when it gets made in the framework
- A Receivables Dashboard to picture information as networks i.e., in form of grids
- ADD, EDIT, DELETE functionalities for adding, edit and delete the details of the Invoices. Limit the displaying of number of rows per page through pagination
- Responsive UI
- Auto Update the data of Grid after adding, editing, or deleting the invoice

Benefits

As we are proving a services for managing the invoices with the help of Software, there are so many benefits we get by building any Software or Application by using SaaS Model. These benefits are:

- **Cost:** According to the reports, for managing the accounts and taking care of the invoice, most of the vendors or business owner hire an Accountant and offered the package of 60-90K per month. But by using the software that deals with the same kind of services, that could reduce the cost and works only on subscription basis. The price gap is also very huge in between the subscription of software and the salary of any Accountant. We could buy the subscription of almost 6-10 months with the one month salary of an accountant and could get the benefits of all the services and increase the profit easily
- **Fast and Easy Resource Accessibility:** As this application doesn't uses any online server for saving or fetching the data, uses the local database that could be either in the form of HDD, pen drives, Micro SD Cards, etc. because of this the accessibility of the resources becomes very fast and all the buttons' name predicts their work like edit is for made the changes in pre-existing invoice, add is for adding the invoice, delete is for deleting the invoice from storage permanently, etc. so, novice user also access this application easily
- **Scalability and Flexibility:** This is also a best part of this application, whatever the update or changes we made in our side, everything is updated automatically in every client's Application. By this feature, we could easily scale our business without affecting any user and their data

Conclusion

The main idea for this project is to build the invoice management web application by using the SaaS Model. This application doesn't share any kind of information with anyone and does not store any sensitive information

on any server as well like OTP, Passwords, etc. Vendors can use this application with 100% of their trust and can maintain their accounts by using this software. We have gained a meaningful amount of professional experience and exposure to companies' environments and work ethics. We have also created progress in individual adaptation to cooperation. There were plans to build system which controls organization into a complete ERP solution in the future that would do even ultimate advanced businesses and able to scale with the increasing needs of each and every business. This demands high-level improvements to the system which controls the organization and the addition of enhanced and up-to-date hardware infrastructure. With an increasing appetite for availability between the wider society or public, business firms were impelled expected more adaptable and creative in their product implementation & duty transmittal.

Servlets c. JDBC

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- SOFTWARES USED
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- Tomcat Server 9.0
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- Workbench 8.0
- Jupyter Notebook

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