GEOLOCATION BASED TRACKING

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Abstract—Offline retail stores often struggle to rival the ease of access and convenience of online e-commerce websites and thus suffer decreasing footfalls and lost sales. The Offline E-Commerce system tries to bridge this gap by providing a frictionless blend of online shopping and in-store purchasing. The system consists of three roles—Admin, User, and Shop Owner—each having particular functionalities to ease processes and enhance shopping.

Perhaps the most beneficial feature of this system is the local credit card user tracking, where registered users can enter their credit card details (type and limit) for lending and allow others to use special online deals. Another feature is an AI-powered chatbot, introduced through OpenAI's API, assisting users with real-time details and directions. Developed using HTML, PHP, and MySQL, the system ensures seamless operations, secure transactions, and efficient stock management. With system implementation and testing using real-life scenarios, this study verifies the system's ability to deliver more in-store visits, streamline purchase decisions, and promote user engagement. Through the development of a hybrid shopping model, this paper sets a new standard for the integration of e-commerce benefits into offline shopping, offering digital convenience without giving up the in-store experience.

Index Terms—Offline E-Commerce, Hybrid Shopping Model, Retail Digitalization, AI Chatbot Assistance, Credit Card User Tracking, Local Store Visibility.

I. INTRODUCTION

Physical outlets are being increasingly threatened in the age of digitalization when customer purchases are dominated by online shopping websites. Insufficient digital presence, inferior digital convenience, and ineffective inventory management are the reasons behind decreasing store traffic and sales. Despite most companies' efforts to convert fully to e-business, it is likely to overlook the advantages of physical retailing, including instant product availability and face-to-face customer services.

To address this issue, the Offline E-Commerce system offers a hybrid system that benefits from online browsing and offline buying. Customers can browse, book products, and benefit from special offers when they make their purchases offline. Additionally, a credit card user tracking system allows registered customers to share their card details (type and limit) for borrowing, so others can use special online deals. This feature enhances the flexibility of buying in the platform.

To further complement user engagement, a chatbot, driven by AI and built using OpenAI's API, facilitates customer support with real-time guidance and answers. With HTML, PHP, and MySQL, the site offers streamlined inventory management, user role access, and an online presence without cannibalizing brick-and-mortar. The hybrid strategy creates a new benchmark in facilitating in-store commerce while leveraging digital technology to deliver a smarter, more integrated shopping experience. Example is shown in Fig. 1.

II. RELATED WORK

An online store can be a place where traditional offline retailers and digital convenience can be combined into one.

That's how current hybrid shopping models function, sharing the core components such as inventory automation, query processing of transactions in real time, AI-supported user interaction) as their focus. In this section, we talk about the accomplishments of the offline trade (underneath the rock, inventory control),

about which automated inventory control, electronic payment systems, and AI-powered recommendation engines occupy the leading positions.

A. Automated Inventory and Order Management

The proper location of a product within a warehouse's inventory is key in the successfulness of e-commerce platforms. The growth of old point-of-sale systems into the new one that can track stocks in real-time and to process orders automatically is one of the benefits of the innovative technologies introduced in the e-commerce sector. However, still, most of the offline stores do not have the synchronization of inventory among multiple their stores. The most recent solutions are those that operate through IoT-enabled sensors coupled with forecasting algorithms that automatically modulate stock backup levels, thus correcting the inefficiencies among the different parties involved. Our solution through the traditional inventory management system even further improves the habit by synchronizing the stock updates with predictive analytics and at the same time ensure minimal stock outs and overstocking as well as improve the order fulfillment efficiency.

B. AI-Driven User Engagement

Highly individualized shopping experiences are a crucial means of making the offline shopping experience better. The existing variants are the competition between the AI chatbots and the virtual assistants that eliminate the barriers such as product finding and offers availing [4]. Despite its benefits, such methods are not flexible to user-specific choices. Our system utilizes AI-powered recommendation models that analyze customer shopping behavior to offer personalized product suggestions, enhancing the shopping experience

C. Secure Payment and Transaction Processing

Clear identification and the swiftness of payment transactions are offline e-commerce's main concerns. Instead, you have to digitally deal with them to complete a retail purchase [2]. Conversely, integrating properly with offline stores is always a concern. The system also manages to generate and publish the details required for payment to a secure mechanism and multifactor authentication to reduce concerns.AI-based anomaly detection models have proven effective in identifying suspicious

e-commerce transactions [11].
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D. AI-Driven Inventory and Order Management

The idea of using AI in order processing and inventory management for offline e-commerce businesses has been discussed in various models. Machine learning methods like demand forecasts, reinforcement learning for dynamic stock replenishment, and anomaly detection for fraud prevention are replacing conventional rule-based systems [3]. These methods improve the accuracy and reduce the amount of waste that can occur through operations. Besides these methods, retailers still find it difficult to keep the correct levels of stock at the multiple stores synchronized in real-time. Our vision encompasses the AI-based automation along with the predictive analytics that will assure shopping is an easy and one-to-one solution thus reducing stock mismatches.

G.

E. User Behavior Analysis and Personalization

Consumer preferences are the heart and soul of the personalized shopping experience, and therefore, understanding those are very crucial. Recurrently, the two strategies of recommendation engines are filtering a person's history of purchases from everyone else and making suggestions based on their own preferences from the available products [1]. Nevertheless, such models tend to be slow to adjust to the changes that occur in the process of online shopping in real-time. For the first time, deep learning methods are being usedm in shopping personalization. For example, transfomer-based recommendation models and the reinforcement learning-driven personalization approach make suggestions in a more dynamic and context-aware manner [5]. Our platform both listens to our users faintly through AI-driven suggestions and provides adaptive promotions.

F. Secure Transaction Processing and Fraud Detection

Security is a critical component of offline e-commerce systems, especially during transaction processing. Traditional fraud detection mechanisms often fail to adapt to modern

threats. Our system incorporates AI-driven methods such as anomaly detection and graph-based fraud detection to ensure secure transactions.[4]. The developed system includes

AI-based advanced techniques of fraud detection as it is using the accolade of compliance to establish authorization while making sure the checkout process is smooth.

Challenges and Research Directions
Applying heavy automation, personalization, and use of AI-based solutions often are accompanied by data privacy a clients demand, and it comes on top must be the highest priority in that particular sector. Even though AI digital assistants have helped to scale down the number of manual tasks such as personalized experiences in AI-driven solutions (targeted ads, product recommendations, voice-controlled apps) still some people cast their vote in favor of personalization.

H. Offline E-Commerce System Suggested
Offline E-Commerce System is a groundbreaking system that marries the ease of internet shopping with the convenience of shopping from a store [6]. By joining the physical and the virtual, the system presents an integrated, warm experience that meets current shopping needs without undermining the advantages of physical stores.

Fig.1.online to offline
I. Key Features
Offline E-Commerce System stands out in that it provides:
• User Role Management: Three principal roles—Admin,
User, and Shop Owner—are established, each of which is designed to facilitate system administration and daily work.
• Hybrid Shopping Model: The customers can shop online, place the items in the basket, and purchase them in the stores and enjoy both.Prior studies have explored hybrid ecommerce models that allow local businesses to establish a digital presence [7].
• Proximity Credit Card User Location Tracking: This feature allows users to sign up

for an address and post credit card information (e.g., type, limit) to allow others more easily to use special e-commerce promotions. As shown in fig 3.Geolocation-based services significantly improve user targeting in retail environments [10].
• AI Chatbot Support: OpenAI's AI chatbot is also employed on the site to support customers with instant browsing, shopping, and answering any questions.AI-powered chatbots enhance user engagement and customer
service in e-commerce platforms [9].
• Shop Management Tools: You can add or modify product information, inventory management, order tracking, and assignment of delivery staff so that everything is ready.
• Complaint and Feedback Management: Complaints or feedback are easily given, which are tracked by admins in an attempt to further enhance the shopping experience.

Fig. 2. O2O marketing
1) Acquisition and Processing of Data Content: Offline E- Commerce System integrates data from numerous sources to improve a fair shopping experience. Product data, images, and customer reviews are collected from customers and suppliers. Sophisticated image processing techniques are used on high- definition product images to give sharp and uniform images on the site. Images and complete product data are updated in real time to indicate available stock and promotions.

Fig. 3. credicard tracking

Apart from this, the system also captures transaction data and user activity from a strong backend. The data is processed and analyzed to enhance inventory management, track shopping behavior, and enhance customer satisfaction on a general level. Various sources of data make the platform responsive and adaptable to user needs and market trends.This is called O2O marketing As illustrated in Fig. 2

J. System Architecture and Evaluation Framework

The Offline E-Commerce System is composed of modular components including user interface, product database, inventory manager, chatbot API integration, and geolocation-based. credit card user matching. These modules work independently yet are fully integrated for seamless transactions and management.

• User Interface and Data Collection: With PHP and HTML, the user interface collects the current data of the product's availability, customer orders, and stock.

• Database Management and Backend Processing:

MySQL technology is the main engine of that hub letting the data be organized with the proper transactions and the customer or client will be able to give his feedback in no time with the system remaining as it should be, the best.

• Transaction and Order Management: A separate module for this application allows booking online, in-store payment transactions, and order tracking for hassle-free shopping.Predictive analytics has been shown to improve inventory optimization and reduce stockouts in retail systems [8].

• AI Chatbot and Customer Service Pairing: An AI chatbot gives immediate help to the user with the plat- form navigation, and provides the FAQ answers, hence increasing the user satisfaction.

Offline E-Commerce System is a foundational technology for online and offline shopping as it allows the products to be tested out both online and offline, and the facility to change it according to the market consumer satisfaction and operation.

III. SYSTEM ARCHITECTURE AND WORKFLOW

Modular composition and scalability are the key features of the architecture of AI in Academia. Making these modules independent and scalable, which ensures the update of each component independently, has become the priority in the structure of the whole system.
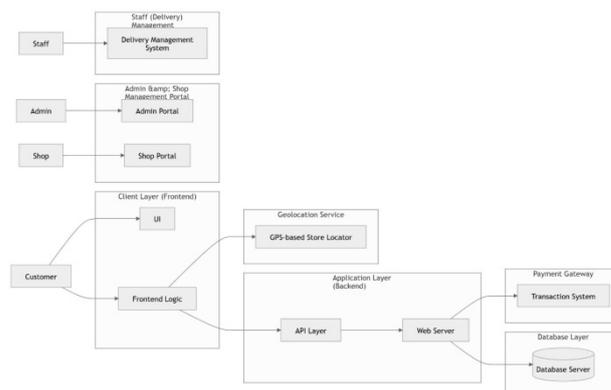

Fig. 4. System architecture

As illustrated in Fig. 4, key modules like inventory management, chatbot interaction, and credit card tracking are interconnected .It is possible to describe the system in the following way:

• Data Ingestion Layer: Merge data from student databases, faculty records, and external APIs. This layer is necessary to make sure the system has all needed data sources.

• Processing Layer: Uses AI models to perform predictive analytics, natural language processing, and workflow automation. This is the process that geometrically converts raw data into insights.

• Integration Layer: The system is also supported by other external systems such as Twilio for voice communication and CrewAI for task automation so inter-module communication is made easy. This dispersion is one of the sole factors that have brought me to the end of my life.

• Presentation Layer: Ensures inputs have immediate access to prominent and pertinent information. It is an interactive dashboard and chatbot interface that allows users to ask for help or take action at the same time. Users can send each other real-time updates as well. It assures ease of access to the data.

This design is not only simpler for system administration but also, security becomes better because different functionalities are segregated, thereby making the entire system more resilient and suitable for the future.

A connection of the multiple interfacing modules is the research paper. The Offline E-Commerce System elements are digital store fronts, inventory management, order processing,

and AI-based customer support. The app can also link with other payment gateways and delivery tracking APIs among other external applications to facilitate transactions and logistics.

This design is implemented with each module working on its own and only can be replaced easily yet still, they are joined to be a part of a full digital-physical retail solution.

IV. IMPLEMENTATION AND HUMAN-CENTRIC DESIGN

We develop our implementation strategy by giving equal weight to robustness that is technical and to a human-centric approach that ensures that the system is accessible and effective for users of all technical backgrounds.

A. AI Chatbot Integration and System Optimization

In order to improve the user engagement and also to enhance the operations, our system unites the AI chatbot that is powered by OpenAI's API. We first took a high-performing pre-trained model and further customized it through datasets relevant to retail operations, including customer inquiries, product feedback, and transaction data. With this method, the chatbot can both give accurate responses and context-aware ones and operate stably, including various devices. The inclusion of this feature helps in the provision of customer support while at the same time it also involves the decrease of the human resources demand through being readily available to assist customers throughout the day, which is important in the uninterrupted shopping experience, a matter that is of utmost importance.

B. Automated Order Management

Now, E-commerce offline system has a smart AI powered automated order management feature that informally allows smooth Inventory Checks, placement transaction processing through the machine. The ordering process is easier thanks to automation. This is due to automation has decreased manual work.

There is a step which can be evaluated from stand one which does only a few things as a vendor does to stock products and visualize customers. The system is now rolling out the automation part of the system that makes sure that these repetitive activities such as Inventory-Checks and transactions are the most successful in the system.

C. AI-Driven Customer Notification via Twilio

Good offline e-commerce system communication is key. Thanks to the Twili API, our platform is now equipped with the capabilities to automate and personalize voice call notifications for updates on the orders, various promotional offers, and any incidents that may occur during transactions. These calls that are generated immediately ensure that customers receive feedback about the deliveries without any need for manual action. This feature actually creates a flawless, engaged shopping experience thus the asset of having a personal touch persist as the businesses automate certain communications.

D. System Integration and Testing

To guarantee the system's smooth operation, we designed and implemented a strict testing strategy:

• Unit Testing: A module was tested individually to ensure that the core functions were working effectively.

• Integration Testing: Modules were joined together and evaluated that they were able to pass data easily and interact with one another.

• User Acceptance Testing (UAT): The feedback from the ,shop owners and the customers was collected and the system was further refined and tested through out it. This very well-arranged testing method, run by a team of dedicated QAs, is able to make the experience very strong, fast, and user-friendly.

V. EXPERIMENTAL EVALUATION AND USER FEEDBACK

A three-month test was performed in several offline retail stores to estimate the efficiency and efficiency of the Offline E-Commerce platform.

A. Experimental Setup

Throughout the pilot, the platform was incorporated with real-time store operations such as product balance, order management, and customer transactions. Along with the key performance indicators (KPIs), the order processing time, customer engagement as well as inventory accuracy, were constantly supervised, hence comprehensive real-life assessment were done. In this way, the metrics that were measured assured a real-world evaluation.

B. Results and Observations

Preliminary results revealed:

• Upto 45% less order processing time was achieved through the use of automated inventory management.

• The AI-powered chatbot made user engagement more effective, thus marking an improvement.

• Increased forecasting accuracy of demand leads to the possibility of a better stock management practice, as well as lesser instance of overstocking or stock outs.

All these factual accounts of the potential of the Offline E- Commerce system to bring down retailing operations effectively are the things that made it possible for the functions of the platform to be streamlined and enabled efficiency and the satisfaction of the customers be increased.

C. User Feedback

The surveys and interviews had a worthwhile effect on the

project and yielded clear open secrets, e.g., it was reported that . . .

• Shop Owners reported improved inventory management and reduced manual workload.

• Customers felt comfortable with the ordering process and AI-based chatbot interaction.

• Delivery Personnel realized fast and smooth order tracking and scheduling after adopting the system.

It was obvious that happy users resulted from combining the smart technologies with the user-friendly functionality of the operation leading to an overall experience of quick and easy e-commerce.

VI. FUTURE WORK AND DISCUSSION

Future improvements for the Offline E-Commerce System encompass:

• AI-Powered Recommendation System: That is, providing customer-tailored item recommendations grounded on customer preferences and shopping history.

• Blockchain for Secure Transactions: For instance, to make sure that businesses will be safeguarded from unauthorized chargebacks and transaction failure.

• Augmented Reality (AR) Shopping Experience: For instance, where customers imagination has become more consumer-friendly, by creating a virtual environment in which a product that is one and only can be depicted and inserted into the virtual surroundings so that the customer can visualize and interact with it.

• Enhanced Chatbot Capabilities: Alternatively, features like support for different languages and even real-time guidance can also be added.

Moreover, we would want to direct cloud-based solutions that will, in turn, bring better scalability and reliability. Also, predictive analytics and it is necessary for decision-making will allow us to get more predictable demand assumptions and will also help us to react to market changes automatically.

VII. CONCLUSION

The Offline E-Commerce System is no longer just the shopping technology of traditional walks and digital gadgets. With automated order management, live inventory tracking, and AI-driven customer assistance, the platform not only improve customer experience but also increase supplier productivity. The tools such as streamlining the operation, reducing the need for manual work, and the impeccable shopping experience illustrate the down-to-earth potential of the system. As the platform forwards blockchain security, predictive analysis, and more cloud space, the whole process will get to secure its place in modern retail and thus, ensure its sustainability and competitiveness in the market, which is always in motion.

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