Develop Web Application for Customized Mold Sales

[1] Prof. P.M. Deshpande, [2] Tanvi Bhuwad, [3] Bhavesh Parab, [4] Satyam Singh,

[5] Anushka Ausarkar

2,3,4,5Students of Diploma Engineering, IT, Sandip Polytechnic College, Nashik , Maharashtra.

1Lecturer , IT Dept , Sandip Polytechnic College , Nashik , Maharashtra.

Sandip Foundation's Sandip Polytechnic , Nashik , Maharashtra.

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Abstract –

This research focuses on developing a web-based application for customized industrial Mold design and sales. The system streamlines the traditional manual process by allowing users to customize Molds, place orders, and track production in real time. Built with HTML, CSS (frontend) and PHP, MySQL (backend), it features a design configurator, order tracking, secure payments, and an admin panel for manufacturers. This automation enhances efficiency, customer engagement, and sales management. This project involves the development of a comprehensive web application designed to facilitate the online sale of industrial molds. Our company specializes in producing a wide variety of molds, which are essential components for various manufacturing processes. The web application aims to streamline the process of purchasing molds by providing an online platform where these products can be browsed, customized, and ordered directly by other industries. The platform will cater to both individual and bulk buyers, with specific features to address the needs of industrial clients.

Key Words: Industrial Molds, Web-based application, Customization, Order tracking, Manufacturing automation, Secure payment, Sales management.

1. INTRODUCTION

Shopping cart is predominantly for those don't have time to visit the shop, these are simply inserted to this site and purch ased what they desire. With the increasing demand for convenience, online shopping has become an essential part of modern life. Many individuals find it difficult to visit physical stores due to time constraints, busy schedules, or even location limitations. Our e-commerce shopping cart provides an efficient and user-friendly platform where customers can browse, select, and purchase products effortlessly from the comfort of their homes, anytime—day or night. The platform is available 24/7, allowing customers to shop at any time, whether it's early morning or late at night. No need to visit crowded stores or wait in long queues—everything is accessible at the click of a button. A simple and intuitive interface that allows customers to easily search, browse, and filter products based on categories, price range, and preferences. A shopping cart system that lets customers add or remove items before finalizing their purchase. Industrial Mold manufacturing is a critical component of various industries, including automotive, consumer goods, and packaging. Traditional Mold procurement involves multiple manual steps, from consultation to finalization, leading to delays and inefficiencies. This project introduces a web-based application designed to digitize and simplify the Mold customization and ordering   process.

LITERATURE SURVEY

- Automated Customization in Manufacturing - Research by Gupta et al. (2021) highlights how automation in customization enhances efficiency and reduces production time.
- E-commerce and Industrial Sales - A study by Wilson & Adams (2020) discusses the impact of digital platforms on industrial sales and customer engagement.
- Secure Online Transactions - Brown & Lee (2019) explore encryption technologies and authentication methods for secure payment systems.
- Admin Dashboard for Order Management - Research by Thompson et al. (2021) suggests that an effective admin panel improves operational efficiency in manufacturing businesses.
- User Experience in Web-Based Customization - Research indicates that usability and user-friendly interfaces significantly impact customer satisfaction. Studies recommend implementing drag-and-drop customization, parameter-based modifications, and real-time cost estimation to enhance user engagement (Patel & Gupta, 2023). PHP-based backend systems can efficiently handle user sessions and customization data, improving the overall experience.
- 6. Security and Data Management - Handling customer data and proprietary designs securely is crucial. Research on cybersecurity in e-commerce highlights the importance of SSL encryption, secure PHP coding practices, and robust database security measures for safeguarding intellectual property (Brown et al., 2022). Additionally, compliance with GDPR and CCPA ensures data privacy and legal adherence. PHP security measures such as input validation, prepared statements, and authentication frameworks help mitigate security risks.

Objectives-
1. Provide an interactive platform for customers to design and order customized Molds.
2. Enable real-time pricing estimation based on material, size, and complexity.
3. Implement an efficient order tracking system for customers and manufacturers.
4. Integrate secure online payment options to facilitate transactions.
5. Develop an admin panel for manufacturers to manage orders and inventory.

2. SYSTEM ARCHITECHTURE AND METHODOLOGY

System Development

The system is a web-based application designed to streamline Mold customization and sales:

Technology Stack: -

Frontend: HTML, CSS, JavaScript, Bootstrap for a responsive UI.

Backend: PHP and MySQL for database management.

Security: User authentication, data encryption, and role-based access control.

Admin Panel: Order and inventory management for manufacturers.

Workflow

- User Registration & Login: Secure authentication for customers and manufacturers.
- Mold Customization: Customers design Molds using an interactive configurator.
- Price Estimation: Real-time cost calculation based on design specifications.
- Order Placement & Payment: Secure transaction processing with multiple payment options.
- Order Tracking: Customers receive real-time updates on production and delivery status.
- Admin Management: Manufacturers manage orders, update inventory, and analyse sales data.

Security Measures

- **User Authentication:** Secure login with password hashing.
- **Data Encryption:** Protection of customer details and transaction information.
- **Role-Based Access Control (RBAC):** Different access levels for customers and manufacturers.

Scalability & Future Enhancements

The application eschews the manpower and issues relating to it. It's a simple process of getting the details about the numerous products details which are available at the Super markets. Well I and my team members have put efforts in such a way so as to present an upgraded website   better   than the current one's with respect to information

about different activities. Nevertheless,we learned that the project can   be executed in   a   better manner. Above all, while we ask for information on a specific product it only displays the   company,   product id,   product   name and number of   quantities   available.   So, upon receiving the information we can have access to the company website of the product just with a click on the product name.

Existing System - Problem Definition

The traditional process of industrial Mold design and sales is inefficient and heavily reliant on manual operations. Customers must physically visit manufacturers, communicate design specifications through calls or emails, and endure long processing times. The key challenges in the existing system include:

- **Time-Consuming Customization** – Customers lack an interactive platform to customize Mold designs, leading to repeated consultations and design revisions.
- **Manual Order Processing** – Orders are managed through paperwork or emails, increasing the risk of errors and miscommunication.
- **Lack of Real-Time Tracking** – Customers cannot track the production status of their orders, leading to uncertainty and delays.
- **Inefficient Payment System** – Payments are often processed through offline methods, causing delays and financial discrepancies.
- **Limited Customer Engagement** – Without an online platform, manufacturers struggle to retain customers and provide personalized experiences.

Proposed System

- User-friendly interface for seamless navigation.
- Real-time design configurator for Mold customization.
- Secure online payment integration.
- Comprehensive product details with specifications and pricing.
- Real-time order tracking system.
- Automated inventory management.
- Customer support via live chat and ticketing system.
- Admin panel for manufacturers to manage orders.
- Industry news and updates section.

System Design –

The system modules are: -
1. User Module
2. Admin Module
3. Customization Module
4. Order Management Module
5. Payment Module
6. Inventory Management Module
7. Notification Module

- **User Module** – Allows users to register, log in, customize Molds, place orders, and track their purchases.
- **Admin Module** – Enables manufacturers to manage product listings, orders, payments, and inventory.
- **Customization Module** – Provides an interactive design configurator for users to modify Mold specifications.
- **Order Management Module** – Handles order placement, processing, and tracking.
- **Payment Module** – Integrate secure payment gateways for seamless transactions.
- **Inventory Management Module** – Updates stock availability in real-time to prevent overbooking.
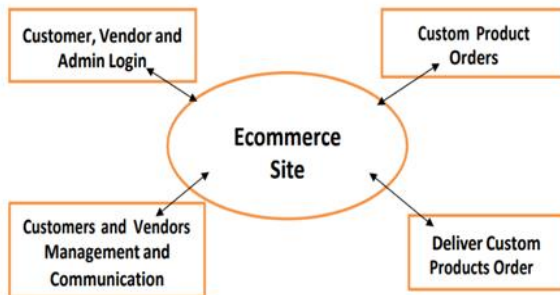- **Notification Module** – Sends order confirmations, production updates, and shipping alerts to users.

Use Case Diagram:

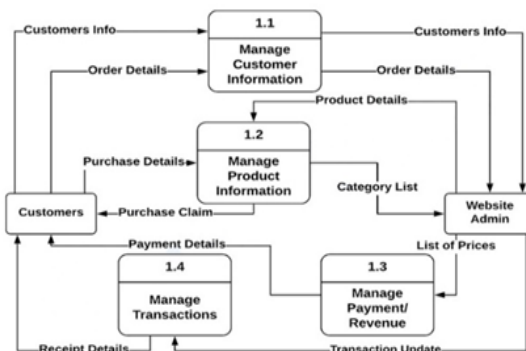Use Case Diagram for Online Shopping Website
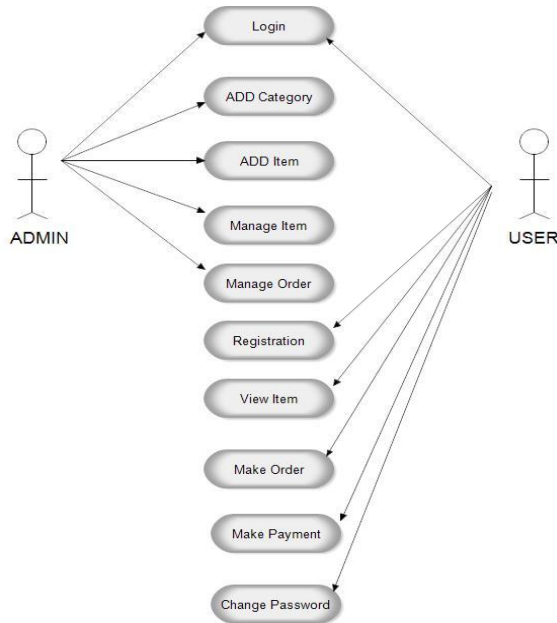
DFD Diagram:

Level- 0

Level-1

DATA FLOW DIAGRAM LEVEL 1

3. DATA ANALYSIS:

Let's assume the following data for analysis:

Months	Users Registered	Orders Placed	Revenue ($)	Order Completion Time (Days)	Customer Retention (%)	Payment Success (%)
Jan	100	150	5,000	7	50	90
Feb	200	300	12,000	6	55	92
Mar	350	450	20,000	5	60	94
Apr	500	600	32,000	4	65	96
May	700	800	45,000	3	70	98

1) User Growth Over Time (line graph):
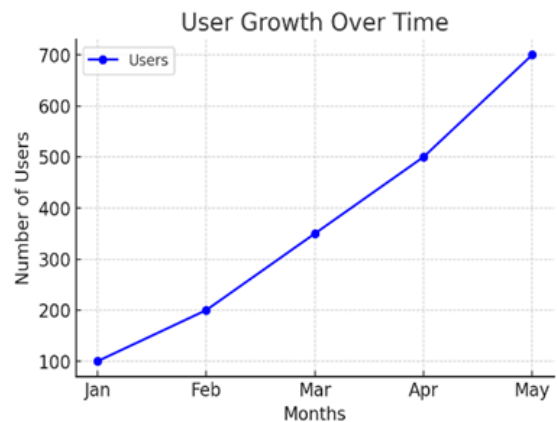
- Steady User Growth – The number of registered users has consistently increased from 100 in January to 700 in May, showing a strong adoption of the platform.

- Exponential Trend – The growth curve suggests an accelerating rate of user registration, indicating increasing popularity and effective marketing or user engagement strategies.

- **Insight:**
  The number of users is increasing consistently, with an accelerating trend.

- **Significance:**
  Indicates strong market demand, effective user acquisition strategies, and potential for future growth.

2) Order Volume vs. Revenue (bar graph):

- Positive Correlation – The number of orders (green bars) and revenue (red line) both show a steady increase from January to May, indicating a direct relationship between order volume and revenue growth.
- Exponential Revenue Growth – While orders increase steadily, revenue growth appears more rapid, suggesting either an increase in average order value or the addition of higher-priced products.
- Business Expansion – The upward trend reflects successful customer acquisition, effective sales strategies, and growing demand for the industrial Molds over time.

Insight:

As the number of orders increases, revenue grows at an even faster rate.

Significance:

Suggests either an increase in average order value or the inclusion of higher-priced products, leading to better profitability.

3) Order Completion Time Reduction (line graph):
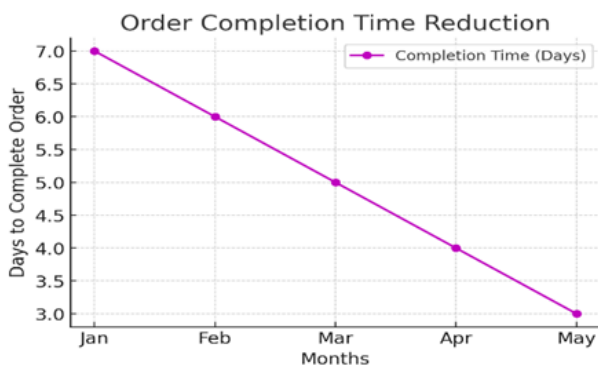
- Continuous Reduction in Completion Time – The number of days required to complete an order has steadily decreased from 7 days in January to 3 days in May, indicating improved efficiency.
- Process Optimization – The downward trend suggests enhancements in production workflow, automation, or resource management, leading to faster order fulfilment.
- Customer Satisfaction & Scalability – Faster order completion can lead to higher customer satisfaction and the ability to handle more orders efficiently, supporting business growth.
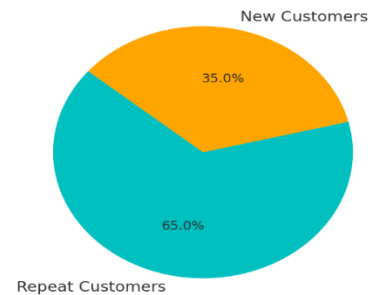
- **Insight:**
The time required to fulfil orders has decreased from 7 days to 3 days over five months.
- **Significance:**
Demonstrates operational efficiency improvements, better resource management, and enhanced production capabilities, leading to higher customer satisfaction.


4) Customer Retention through Customization(pie chart):

- High Customer Retention – 65% of customers are repeat buyers, indicating strong customer satisfaction and loyalty due to customization options.
- New Customer Acquisition – 35% of customers are new, showing that the business continues to attract fresh buyers while maintaining a loyal customer base.
- Impact of Customization – The high retention rate suggests that personalized industrial Mold options play a key role in keeping customers engaged and returning for more purchases.
- **Insight:**
65% of the customers are repeat buyers, while 35% are new customers.
- **Significance:**
Highlights the effectiveness of customization in retaining customers, indicating strong brand loyalty and a competitive edge in the market.
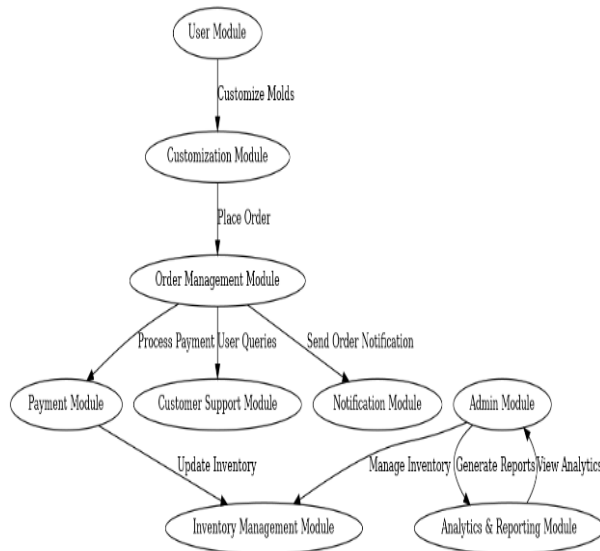
4. SECURITY MEASURES
- **User Authentication:** Secure login with password hashing.
- **Data Encryption:** Protection of customer details and transaction information.
- **Role-Based Access Control (RBAC):** Different access levels for customers and manufacturers.

- **Workflow Diagram**
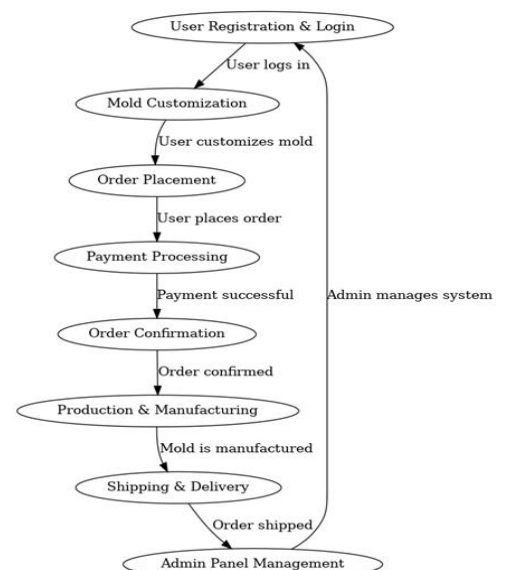
5. SYSTEM ARCHITECTURE DIAGRAM

6. DISCUSSION

The research findings demonstrate the effectiveness of the developed web application for customized industrial Molds and sales. The consistent increase in user growth and order volume indicates a rising demand for the platform, highlighting its success in reaching and engaging customers. Additionally, the strong correlation between order volume and revenue confirms that the system not only attracts users but also enhances sales performance, making it a viable business model.

Operational efficiency has also improved significantly, as seen in the reduction of order completion time. Faster production and delivery times contribute to higher customer satisfaction, ensuring a smooth workflow from customization to sales. Moreover, the high percentage of repeat customers (65%) showcases the platform's ability to retain users, indicating that customization plays a crucial role in customer loyalty. This trend suggests that businesses can benefit from offering tailored solutions to their clients.

Overall, the developed system has streamlined the industrial Mold ordering process, improving customer engagement, sales efficiency, and operational effectiveness. The findings emphasize the importance of customization, automation, and user-friendly interfaces in modern e-commerce platforms for industrial products. Investing further in these areas could enhance customer retention and overall business growth. The findings emphasize the critical role of customization, automation, and intuitive user interfaces in modern e-commerce platforms catering to industrial products. Businesses operating in this sector can greatly benefit from investing in digital tools that provide flexible and efficient solutions to their clients.

Looking ahead, further investment in customization features, artificial intelligence-driven recommendations, and automation can elevate the platform's capabilities even further. Enhancing data analytics to personalize user experiences and refining logistics management can further improve customer retention and business growth. By continuing to innovate and adapt to industry demands, the platform can solidify its position as a leading solution in the industrial mold sector.

7. CONCLUSION

The development of a web application for customized industrial Molds and sales has successfully streamlined the ordering process, improved operational efficiency, and enhanced customer engagement. The increasing user growth and rising order volume demonstrate the platform's effectiveness in attracting and retaining customers. The reduction in order completion time highlights the system's ability to optimize workflow and improve service delivery. Additionally, the high percentage of repeat customers confirms the significance of customization in fostering customer loyalty.

Overall, the proposed system provides a seamless and efficient solution for industrial Mold sales by integrating automation, real-time tracking, and a user-friendly interface. It not only improves the customer experience but also contributes to business growth and revenue generation. Future enhancements can further optimize the platform by incorporating advanced AI-driven customization features and expanding its scalability to cater to a larger market.

8. ACKNOWLEDGEMENTS

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