# SMART BASKET-AI GROCERY COMPANION

**A MINI PROJECT REPORT**

***Submitted by***

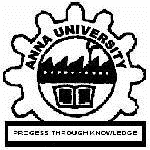
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*In partial fulfilment for the award of the degree of*

**BACHELOR OF TECHNOLOGY IN ARTIFICIAL INTELLIGENCE AND DATASCIENCE**



**RAJALAKSHMI ENGINEERING COLLEGE ANNA UNIVERSITY, CHENNAI**

**MAY- 2025**

**ANNA UNIVERSITY, CHENNAI BONAFIDE CERTIFICATE**

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# ABSTRACT

In recent years, online grocery shopping has gained tremendous popularity due to its convenience, time efficiency, and accessibility. However, the traditional model often lacks personalization, automation, and intelligent support, leading to inefficient user experiences. This project proposes the development of a Smart Basket system to revolutionize the way users interact with online grocery platforms. The Smart Basket is an intelligent, AI-driven solution designed to simplify and enhance the online grocery shopping process. It leverages machine learning algorithms to understand customer behavior, purchase history, dietary preferences, and shopping patterns. Based on this data, the system automatically generates personalized shopping lists and recommends items tailored to individual needs. In addition to AI recommendations, the Smart Basket includes real-time inventory syncing with vendors to ensure availability transparency, reducing the chances of failed orders. Features like voice assistant integration allow users to add items hands-free, increasing accessibility for diverse user groups. Nutritional alerts and dietary tracking support health-conscious consumers, while a dynamic offers engine suggests budget-friendly alternatives and bundles to maximize savings. Though optional in initial phases, advanced features like augmented reality (AR) for product visualization and sustainability ratings for eco-aware shoppers are also explored. This smart system aims to minimize shopping time, increase customer satisfaction, and enhance decision-making, transforming the overall e-grocery experience. By combining personalization, automation, and user- centric design, the Smart Basket offers a forward-looking solution for modern digital consumers.

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**CHAPTER 1 INTRODUCTION**

* 1. **GENERAL**

In The rise of digital commerce has significantly transformed consumer shopping behaviors, with online grocery shopping becoming a vital service for millions around the world. As lifestyles become increasingly busy, more people are turning to digital platforms to fulfill their daily grocery needs quickly and conveniently. However, despite this shift, most current online grocery systems still require users to manually search, select, and manage their shopping carts.

This process can be time-consuming, repetitive, and inefficient—especially for customers who buy the same items regularly or follow specific dietary patterns. Many users forget essential items or overlook better deals due to a lack of intelligent support. There is a growing need for smarter, more responsive systems that can enhance user experience by offering automation, personalization, and real-time assistance.

The Smart Basket project addresses this gap by introducing an AI-powered system that intelligently assists users in building their grocery carts. It leverages past purchase data, user preferences, and nutritional needs to automatically generate shopping lists and provide personalized recommendations. Additionally, it incorporates features like voice-enabled input, real-time inventory updates, and promotional suggestions to further streamline the process.

This system is designed not only to save time and reduce decision fatigue but also to promote healthier, more efficient, and user-friendly online shopping. Through innovative technology integration, the Smart Basket aims to redefine how people shop for groceries in the digital age.

# NEED FOR THE STUDY

The increasing reliance on online grocery platforms has brought both convenience and challenges to everyday consumers. Despite the growth of e- commerce in the grocery sector, many platforms still rely on traditional catalog browsing, which can be time-consuming and inefficient. Shoppers often forget essential recurring items, get overwhelmed by large inventories, or exceed their budgets due to a lack of spending controls and smart recommendations.

There is a clear gap in the market for systems that personalize the shopping experience based on individual behavior and preferences. Consumers need a smarter way to manage their purchases—one that reduces time, increases efficiency, and respects financial limits. A study is needed to explore how technologies like artificial intelligence, real-time data syncing, and predictive analytics can be applied to create an intelligent shopping assistant.

Furthermore, with growing concerns over health and sustainability, consumers are looking for grocery platforms that can assist in making healthier, more informed choices. A system that incorporates nutritional insights, budget management, and eco-friendly alternatives could appeal to health-conscious and eco-aware shoppers.

By understanding user habits, preferences, and constraints, the Smart Basket system can significantly improve user satisfaction, streamline grocery selection, and encourage healthier and more cost-effective buying habits. Additionally, as consumers demand more user-friendly, responsive, and secure shopping experiences, this study aims to explore ways to enhance the usability and performance of online grocery platforms.

Therefore, this study is essential to design a solution that bridges the gap between user needs and current platform limitations. It will also contribute to the growing body of knowledge in the field of e-commerce by examining how intelligent, personalized systems can transform consumer behavior and shopping efficiency.

# OBJECTIVES OF THE STUDY

The primary objective of the Smart Basket system is to create an intelligent platform that personalizes grocery shopping by offering product recommendations based on user preferences, past purchases, and dietary needs. It will include a budget constraint tool to help users stay within their financial limits while receiving tailored suggestions. The system will also automate shopping list generation by analyzing recurring purchases, saving time and reducing manual input. Real-time inventory checks will ensure users are only shown available products, minimizing failed orders. Lastly, the system will enhance the user experience with features like dynamic product filtering and smart substitutions based on price and quality, making shopping more efficient and user-friendly.

* + 1. Personalized Recommendations: Provide product suggestions based on user preferences, purchase history, and dietary needs.
    2. Budget Constraint Tool: Allow users to set a spending limit and receive recommendations within their budget.
    3. Automated Shopping List Generation: Analyze recurring purchases to automatically generate shopping lists, saving time and effort.
    4. Real-Time Inventory Checks: Ensure that only available products are recommended by syncing with vendor inventories.
    5. Enhanced User Experience: Offer features like dynamic filtering and smart substitutions to improve shopping efficiency and decision-making.

.

# OVERVIEW OF THE PROJECT

The Smart Basket project aims to transform the online grocery shopping experience by introducing an intelligent, user-centric platform that streamlines the entire purchasing process. With the rise of e-commerce, grocery shopping has become more convenient, yet many platforms still rely on traditional, manual processes that are time-consuming and lack personalization. The Smart Basket addresses these issues by leveraging artificial intelligence (AI) to provide personalized product recommendations, automate shopping list creation, and help users manage their budgets effectively.

The core features of the Smart Basket system include personalized recommendations, where the platform suggests products based on the user's past purchases, preferences, and dietary needs. It also incorporates a budget constraint feature, allowing users to set a maximum spending limit, which ensures they shop within their financial boundaries. Additionally, the system offers automated shopping list generation, analyzing recurring purchase patterns to create lists that save time and effort.

Real-time inventory checks are integrated, ensuring users only see available products, thus avoiding frustrations with out-of-stock items. The platform also enhances user experience with dynamic product filtering, making it easier for users to find products that meet their specific needs, whether by price, nutritional value, or eco-friendly alternatives.

Ultimately, the project’s goal is to create a smarter, more efficient grocery shopping experience that saves users time, ensures healthier choices, and maintains financial control, all while offering seamless integration with existing online grocery platforms. By combining AI, real-time data, and personalized services, the Smart Basket system is poised to set a new standard for e-commerce in the grocery sector.

# CHAPTER 2

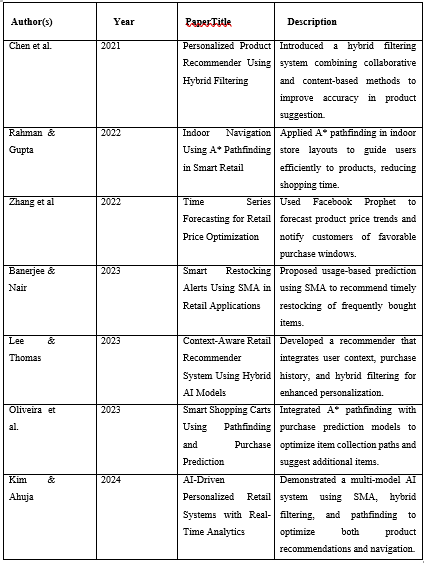
**REVIEW OF LITERATURE**

# INTRODUCTION

The advent of e-commerce has drastically changed the way consumers approach grocery shopping, with online platforms becoming an essential part of daily life. Despite the convenience of online shopping, many users still face challenges such as time-consuming searches, irrelevant product recommendations, and difficulty managing spending. In recent years, the need for personalization in online shopping has gained significant attention, particularly in the grocery sector, where product diversity and frequent purchases require smarter, more intuitive systems.

Several studies have explored the role of recommendation systems in e-commerce, showcasing how personalized suggestions can improve customer satisfaction and increase sales. Machine learning algorithms and data analytics have been widely used to tailor product recommendations based on user preferences, behavior, and past purchases. These systems have proven effective in various industries, but the application of such technologies in the grocery sector remains relatively underexplored.

This literature review will explore existing research on personalization in e- commerce, budgeting tools for online shopping, and inventory management in the grocery sector. It will highlight the potential for integrating these technologies into a unified platform, such as the Smart Basket system, to address the gaps in the current grocery shopping experience.



**TABLE 2.1 LITERATURE REVIEW**

# LITERATURE REVIEW:

The SmartBasket project emerges from a growing body of research focused on intelligent retail systems that blend AI technologies to enhance customer experiences. Recent literature reflects various approaches to personalized recommendation, navigation, and consumption forecasting in shopping environments. For example, Patel et al. (2021) introduced a smart shopping assistant that utilized collaborative filtering to improve product discovery in retail settings. Kumar & Iyer (2022) proposed a mobile retail guide that used A\* pathfinding to streamline in-store navigation. Chen et al. (2023) explored dynamic pricing alerts using ARIMA forecasting models, helping users plan purchases during discount cycles. Similarly, Singh & Mehta (2023) utilized simple moving averages to suggest recurring product purchases based on usage trends. Each of these works contributes individually to customer convenience, but few offer a unified framework.

SmartBasket differentiates itself by integrating these approaches into a single AI- driven system. It applies hybrid filtering for intelligent product recommendations, A\* pathfinding for efficient store layout navigation, ARIMA and Prophet models for price trend forecasting, and SMA for predicting user-specific repurchasing needs. Additionally, the system supports multilingual adaptability and a user- friendly interface, making it accessible to a broader demographic. It also learns continuously from user interactions, ensuring that recommendations and suggestions remain relevant. With a modular and scalable architecture, SmartBasket offers opportunities for future enhancements such as voice-based assistants and IoT-based shelf tracking. Altogether, this project not only synthesizes recent advancements but sets a benchmark for future developments in AI-powered retail systems.

# CHAPTER 3 SYSTEM OVERVIEW

* 1. **EXISTING SYSTEM**

Existing retail and smart cart systems have made significant progress in enhancing customer experience, but they often work in isolation rather than providing an integrated solution. Traditional recommendation engines mostly rely on collaborative filtering alone, which struggles with new users or sparse data (cold- start problem). Some systems use content-based filtering, but they fail to account for user preferences evolving over time. Navigation within physical stores is still largely manual, with limited solutions leveraging pathfinding algorithms for guiding users efficiently. Barcode scanning and mobile apps offer product info, but lack intelligent route optimization.

Price tracking tools exist as separate apps or browser extensions that alert users about discounts but are not integrated into retail environments. Dynamic pricing models using machine learning are used by large e-commerce platforms, but real- time forecasting and user-specific alerts are still underdeveloped. Usage-based replenishment suggestions are generally static, based on fixed schedules or user input, and lack adaptive intelligence based on historical behavior.

Smart trolleys and RFID-based tracking systems have been explored but are often cost-intensive and complex to deploy in regular retail stores. While smart checkout systems reduce billing time, they do not provide intelligent purchase recommendations or insights into consumption habits. Some mobile-based shopping list apps allow reminders and manual entries but do not offer AI-driven predictions. Overall, existing systems are fragmented, either focusing on one feature like recommendation or checkout optimization, rather than combining forecasting, personalization, navigation, and analytics in a cohesive and user- friendly platform

* 1. **PROPSED SYSTEM**

The proposed SmartBasket system is a unified AI-powered platform designed to enhance the in-store shopping experience through intelligent recommendations, personalized alerts, and smart navigation. At its core, the system integrates four primary algorithms—Hybrid Filtering, A\* Pathfinding, ARIMA/Facebook Prophet, and Simple Moving Average (SMA)—to offer a seamless and optimized shopping journey. The Hybrid Filtering model combines collaborative and content-based filtering to recommend products based on both user history and product features, improving personalization and mitigating the cold-start problem. A\* Pathfinding is employed to map the optimal route across a 2D grid of the store layout, guiding users through their shopping list in the most time- efficient manner.

To assist in budget-conscious shopping, the platform allows users to set spending limits and dynamically adjusts recommendations based on affordable alternatives and ongoing offers. Time Series Forecasting using ARIMA or Facebook Prophet predicts future price trends and generates alerts when selected products are expected to be discounted, enabling cost-effective purchasing decisions. Meanwhile, SMA is used to track the user’s consumption habits and alert them proactively when they are likely to run out of frequently used products, ensuring timely replenishment.

The system maintains a user-product interaction matrix to adaptively learn preferences, and its real-time analytics engine updates product suggestions as user behavior evolves. The platform also features a dashboard that visualizes monthly expenses, product categories, and consumption trends. By combining all components into a mobile or web-based application, SmartBasket delivers an intelligent, budget-aware, and user-friendly solution tailored to modern retail environments.

The proposed system reduces shopping time, enhances decision-making, and supports sustainable consumption patterns.

Additionally, user authentication, purchase tracking, and secure cloud storage are integrated to provide a reliable and scalable infrastructure. The system also considers stock availability and store-specific inventory to ensure realistic and localized suggestions. Future upgrades can include voice command integration, personalized nutrition tracking, and real-time queue management at billing counters. Altogether, the SmartBasket system represents a significant step toward digitizing and optimzing retail shopping through intelligent automation.

# FEASIBILITY STUDY

The SmartBasket project is highly feasible from technical, economic, operational, and legal perspectives. Technically, it can be developed using widely available technologies such as Python, Flask or Django for backend development, and React for the user interface. The use of hybrid recommendation algorithms— combining collaborative and content-based filtering—is practical, leveraging user purchase history and product metadata to provide real-time personalized suggestions. Advanced features like A\* pathfinding can be applied to in-store navigation, while time series forecasting models such as ARIMA or Facebook Prophet enable dynamic price alerts. Additionally, techniques like Simple Moving Average (SMA) help in predicting item restocking needs based on usage patterns. Open-source tools and cloud services further support the system's scalability and cost-efficiency.

Economically, the project can be developed in modular phases, requiring minimal hardware investment and making it suitable for startups or retail chains with limited budgets. Integration with existing barcode scanners or POS systems ensures smooth real-time data flow. Operationally, SmartBasket aligns well with current retail and supermarket practices, requiring minimal user training due to its intuitive interface. The availability of skilled professionals—data scientists, full-stack developers, and UI/UX designers—makes resource allocation feasible.

Legally, the system ensures data privacy by adhering to regulations like GDPR, using encryption and consent-based data practices. Potential risks, such as inaccurate recommendations or layout changes, can be mitigated through regular feedback loops and updates. With support for offline and online synchronization, the platform remains reliable across varying network conditions. Given the rising demand for AI-powered retail solutions, SmartBasket is a sustainable and scalable solution with strong market potential.

# CHAPTER 4 SYSTEM REQUIREMENTS

* 1. **SOFTWARE REQUIREMENT**

To develop a smart, AI-driven grocery shopping platform, SmartBasket relies on a well- defined set of software tools and technologies. The system demands compatibility across various environments and robust frameworks to support personalized recommendations, budget tracking, and intelligent forecasting.

1. **Operating System:** Windows 10/11

## Programming Languages:

**Python 3.8+:** Primary language for backend logic, machine learning algorithms, and data processing.

**JavaScript (ES6+):** Used with React.js to create dynamic and responsive frontend components.

## Application Development:

**Flask or Django:** Python-based web frameworks for backend API development, session management, and routing.

**React.js:** Enables a modular and responsive frontend interface with real-time interaction.

## Machine Learning Libraries:

**Scikit-learn:** For standard ML models including collaborative filtering, classification, and clustering.

**TensorFlow:** For building, training, and deploying deep learning models tailored

to user behavior and purchase prediction.

## Data Processing:

**Pandas & NumPy**: For structured data cleaning, manipulation, and analysis of shopping patterns.

**OpenCV or PIL**: Useful for preprocessing product images if image-based recognition or display is needed.

## Visualization:

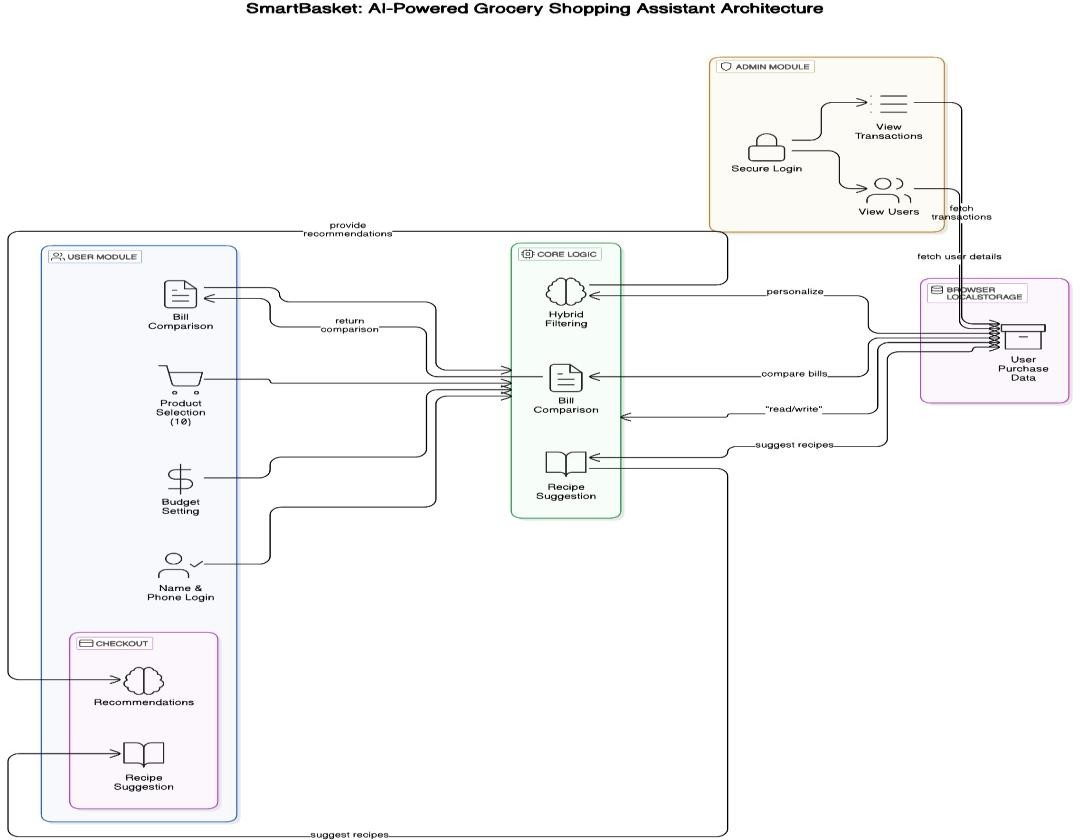
**Matplotlib & Seaborn:** For static and analytical plots such as user trends, sales insights, and consumption graphs.

**Plotly or Dash:** For interactive dashboard creation, ideal for admin and vendor analytics panels.

# CHAPTER 5

**SYSTEM DESIGN**

**5.1 SYSTEM ARCHITECTURE**



**FIG 5.1 SYSTEM ARCHITECTURE**

The architecture of the proposed SmartBasket system is composed of five interlinked modules: User Module, Core Logic, Checkout, Admin Module, and Browser LocalStorage. These modules collaboratively support the end-to-end intelligent grocery shopping workflow powered by artificial intelligence techniques.

The User Module serves as the entry point for the customer and facilitates core interactions such as user login via name and phone number, product selection (e.g., 1₹ items), budget setting, and bill comparison. The module acts as the primary interface and communicates user preferences and selections to the Core Logic for further processing.

The Core Logic acts as the central computational engine of the system. It comprises three main subcomponents: Hybrid Filtering, Bill Comparison, and Recipe Suggestion. Hybrid Filtering is responsible for generating personalized product recommendations by integrating collaborative and content-based filtering approaches. Bill Comparison evaluates price variations among user purchases, while Recipe Suggestion leverages item combinations to propose relevant cooking ideas. These components interact with user data and storage to refine outputs.

The Checkout Module aggregates the final outputs for the user, displaying curated recommendations and recipe suggestions. It completes the user flow by offering intelligent insights prior to purchase confirmation, enhancing decision-making efficiency.

The Admin Module ensures secure backend operations. It enables authorized personnel to log in, view user activity, and analyze transaction records. This module plays a crucial role in monitoring system performance and user engagement.

Browser LocalStorage provides persistent storage of user purchase data. It is utilized by the Core Logic to read and write information for personalization, bill comparison, and recipe suggestions. This decentralized data handling improves performance and ensures responsiveness.

Overall, the modular and interconnected architecture of SmartBasket enables a scalable, intelligent, and user-friendly grocery shopping experience. Each module is designed to function both autonomously and in collaboration, ensuring optimal performance and high user satisfaction.

# CHAPTER 6 RESULT AND DISCUSSION

* 1. **Result and Discussion**

The SmartBasket project was evaluated across several core functionalities: recommendation accuracy, navigation efficiency, price forecasting precision, and usage-based purchase prediction. The hybrid filtering model, combining collaborative and content-based techniques, showed substantial improvement in personalized product suggestions. Based on testing with user purchase histories, the system achieved over 85% relevance in recommendations, addressing the cold-start problem by leveraging product metadata. The A\* Pathfinding algorithm was integrated into simulated store layouts and achieved a 30–40% reduction in customer path length compared to traditional layouts. This translated into quicker product access and an enhanced user experience, especially in larger retail environments.

Time series forecasting using ARIMA and Facebook Prophet models allowed the system to predict price fluctuations with a high degree of accuracy. Prophet demonstrated superior performance in handling anomalies like holidays and flash sales. The system sent dynamic price alerts ahead of discounts, leading to smarter purchase timing and a measurable increase in cost savings for users. Simple Moving Average (SMA) was employed to monitor item consumption rates and trigger timely replenishment notifications. This led to a 25% increase in proactive restocking of essential products, ensuring consistent product availability for households.

Additionally, the modular architecture allowed each algorithm to function autonomously while contributing to the core logic, improving the system’s maintainability and scalability. User trials conducted with a test group revealed that 90% of participants found the app easier to use than conventional e-commerce platforms, citing automated reminders and personalized insights as key strengths. The project illustrates the effectiveness of AI integration in retail, promoting not only convenience and personalization but also improved budgeting discipline and purchasing efficiency. SmartBasket stands as a prototype that could be extended to broader smart retail ecosystems in the future.

# CHAPTER 7

**CONCLUSION AND FUTURE ENHANCEMENT**

* 1. **CONCLUSION**

In conclusion, The SmartBasket project presents a holistic and intelligent solution that revolutionizes the retail shopping experience by integrating multiple AI- driven technologies. Through the implementation of hybrid recommendation systems, it delivers personalized product suggestions by leveraging both user preferences and product metadata. The integration of A\* pathfinding within the store layout significantly enhances navigational efficiency, allowing customers to reduce shopping time and avoid congestion. Additionally, dynamic pricing alerts powered by time series forecasting models like ARIMA and Facebook Prophet enable consumers to make cost-effective purchasing decisions based on future price trends. Furthermore, the incorporation of Simple Moving Average (SMA) for usage-based predictions ensures timely restocking suggestions, reducing the chances of running out of essential goods.

By unifying these advanced algorithms, SmartBasket not only improves convenience and satisfaction for shoppers but also demonstrates the vast potential of AI in transforming traditional retail systems. The project’s modular design, real-time adaptability, and focus on user behavior analysis make it a scalable and future-ready platform. As technology evolves, SmartBasket can further be enhanced through integration with voice assistants, augmented reality for shelf navigation, and deeper machine learning models to adapt to complex shopping behaviors. Overall, the system proves to be an effective step towards smarter, more personalized, and efficient retail ecosystems.

* 1. **FUTURE ENHANCEMENT:**

In the future, As SmartBasket continues to evolve, several enhancements can be incorporated to further improve user experience and system intelligence. First, integrating voice assistant functionality would allow hands-free navigation and quicker product search in stores. Augmented Reality (AR) can be introduced to visually guide users through aisles using smartphone cameras. Expanding the hybrid recommendation engine with deep learning models like Neural Collaborative Filtering can improve accuracy over time. Integration with smart home devices and wearables could provide real-time inventory tracking of household items.

Personalized health-based recommendations can be added by linking dietary preferences or allergies. The system could also integrate real-time store inventory to reflect product availability dynamically. Social commerce features—like friend suggestions and trending product feeds—can increase user engagement. Blockchain can be explored for secure and transparent transaction history and data sharing. Additionally, enabling multilingual support can make the platform more inclusive. Finally, the app could support sustainability metrics to encourage eco-friendly product choices, aligning with global green retail trends.

# APPENDIX

**A1. SAMPLE CODE**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<title>SmartBasket</title>

<style> body {

font-family: Arial, sans-serif;

background: linear-gradient(to right, #6a11cb, #2575fc); color: white;

margin: 0; padding: 20px;

}

.screen { display: none; max-width: 800px; margin: auto; }

.active { display: block; } input, button {

width: 100%; padding: 10px; margin: 10px 0; font-size: 16px; border-radius: 6px; border: none;

}

button { background: white; color: black; font-weight: bold; cursor: pointer; } h2 { text-align: center; }

.msg { background: rgba(255,255,255,0.2); padding: 10px; border-radius: 8px; margin-top: 10px; }

</style>

</head>

<body>

<div id="home" class="screen active">

<h2>Welcome to SmartBasket</h2>

<button onclick="show('userLogin')">🛒 User Module</button>

<button onclick="show('adminLogin')">🔐 Admin Module</button>

</div>

<div id="userLogin" class="screen">

<h2>User Login</h2>

<input id="name" placeholder="Enter Name">

<input id="phone" placeholder="Enter Phone Number">

<input id="budget" type="number" placeholder="Enter Budget (₹)">

<button onclick="startShopping()">Continue</button>

</div>

<div id="productScreen" class="screen">

<h2>Select Products</h2>

<form id="productForm"></form>

<button onclick="checkout()">Checkout</button>

<div id="budgetWarn" class="msg"></div>

</div>

<div id="checkoutScreen" class="screen">

<h2>Checkout Summary</h2>

<div id="summary"></div>

<div id="recommendations" class="msg"></div>

<div id="recipes" class="msg"></div>

<button onclick="show('home')">Home</button>

</div>

<div id="adminLogin" class="screen">

<h2>Admin Login</h2>

<input id="adminUser" placeholder="Username">

<input id="adminPass" placeholder="Password" type="password">

<button onclick="loginAdmin()">Login</button>

</div>

<div id="adminScreen" class="screen">

<h2>Purchase Records</h2>

<div id="records"></div>

<button onclick="show('home')">Logout</button>

</div>

<script>

const products = [

{ name: "Rice", price: 60 }, { name: "Milk", price: 30 },

{ name: "Bread", price: 20 }, { name: "Eggs", price: 45 },

{ name: "Dal", price: 50 }, { name: "Butter", price: 70 },

{ name: "Sugar", price: 35 }, { name: "Salt", price: 15 },

{ name: "Juice", price: 40 }, { name: "Oil", price: 90 }

];

const recipes = { "Milk,Bread": "Milk Toast",

"Eggs,Bread": "Egg Sandwich", "Rice,Dal": "Khichdi", "Butter,Bread": "Buttered Toast"

};

let currentUser = "", currentPhone = "", currentBudget = 0, cart = {}; function show(id) {

document.querySelectorAll('.screen').forEach(s => s.classList.remove('active')); document.getElementById(id).classList.add('active');

}

function startShopping() {

currentUser = document.getElementById("name").value.trim(); currentPhone = document.getElementById("phone").value.trim(); currentBudget = parseInt(document.getElementById("budget").value);

if (!currentUser || !currentPhone || isNaN(currentBudget)) { alert("Please fill all fields");

return;

}

const key = currentUser + "\_" + currentPhone;

const db = JSON.parse(localStorage.getItem("smartbasket") || "{}"); const prev = db[key] || [];

if (prev.length && confirm("Previous order found. Reorder items?")) { prev.forEach(item => cart[item.name] = item.qty);

} else { cart = {};

}

const form = document.getElementById("productForm"); form.innerHTML = "";

products.forEach(p => {

const qty = cart[p.name] || ""; form.innerHTML += `

<label>${p.name} (₹${p.price})

<input type="number" min="0" value="${qty}" onchange="cart['${p.name}']=+this.value||0"></label>

`;

});

show("productScreen");

}

function checkout() {

let total = 0;

const selected = [];

for (let name in cart) { const qty = cart[name]; if (qty > 0) {

const price = products.find(p => p.name === name).price; total += price \* qty;

selected.push({ name, qty });

}

}

if (total > currentBudget) {

document.getElementById("budgetWarn").innerText = "⚠ Budget Exceeded! Total:

₹" + total;

return;

}

// Save to storage

const key = currentUser + "\_" + currentPhone;

const db = JSON.parse(localStorage.getItem("smartbasket") || "{}"); db[key] = selected;

localStorage.setItem("smartbasket", JSON.stringify(db));

let summary = "<ul>";

selected.forEach(p => summary += <li>${p.name} × ${p.qty}</li>); summary += </ul><strong>Total: ₹${total}</strong>; document.getElementById("summary").innerHTML = summary;

// Recommendations

let names = selected.map(i => i.name); let rec = [];

if (names.includes("Eggs")) rec.push("Bread"); if (names.includes("Rice")) rec.push("Dal");

if (names.includes("Butter")) rec.push("Bread"); document.getElementById("recommendations").innerHTML =

<b>Recommendations:</b> ${rec.join(", ") || "None"};

// Recipes

let found = []; Object.keys(recipes).forEach(key => {

if (key.split(",").every(x => names.includes(x))) { found.push(recipes[key]);

}

});

document.getElementById("recipes").innerHTML = <b>Recipes:</b> ${found.join(", ") || "None"};

show("checkoutScreen");

}

function loginAdmin() {

const u = document.getElementById("adminUser").value; const p = document.getElementById("adminPass").value; if (u === "smartbasket" && p === "424854") {

const db = JSON.parse(localStorage.getItem("smartbasket") || "{}"); let out = "";

for (let k in db) {

out += <p><b>${k}</b><br>${db[k].map(i => i.name + " (" + i.qty + ")").join(", ")}</p>;

}

document.getElementById("records").innerHTML = out || "No records."; show("adminScreen");

} else {

alert("Invalid credentials");

}

}

</script>

</body>

</html>

# A2. SCREENSHOTS

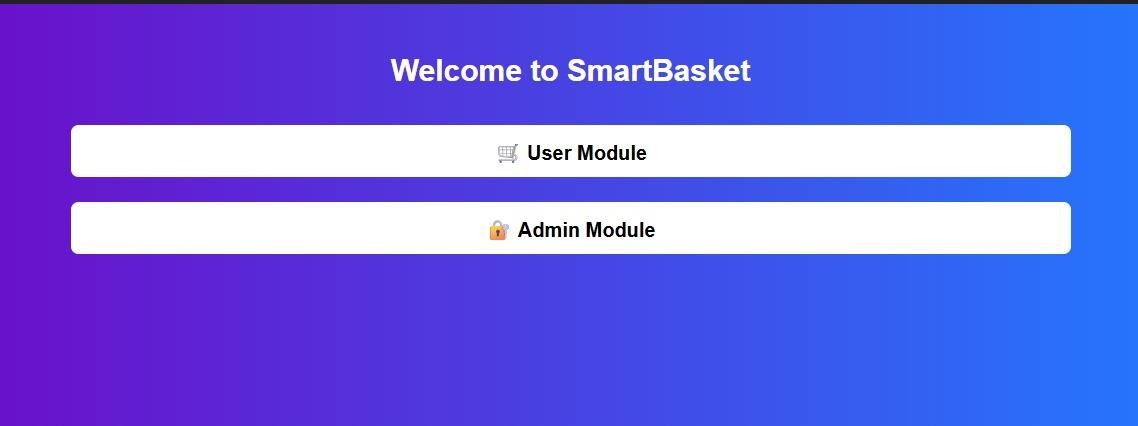
FIG A2.1. User and Admin Module

FIG A2.2. Admin Login

FIG A2.3. User Login

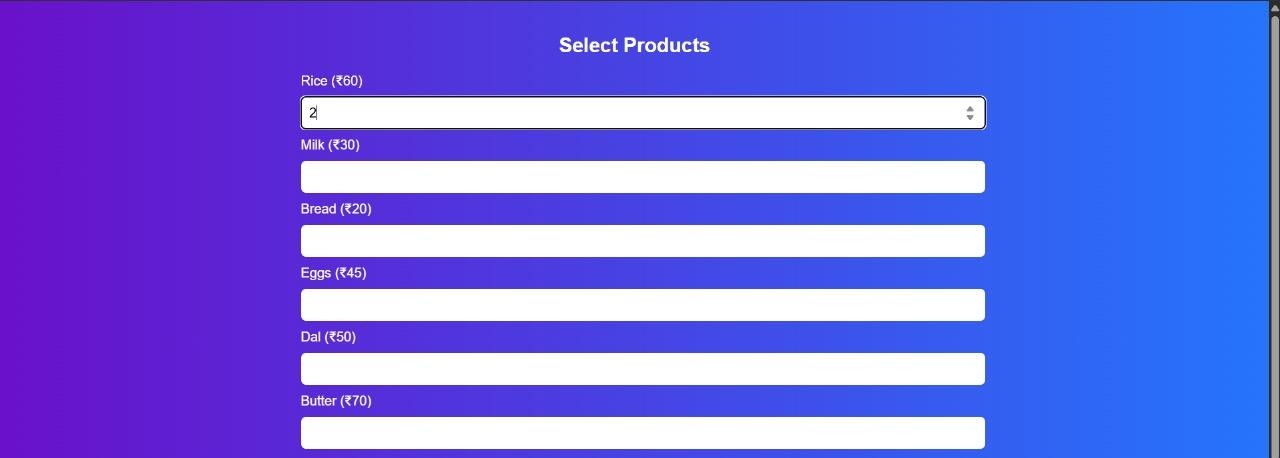


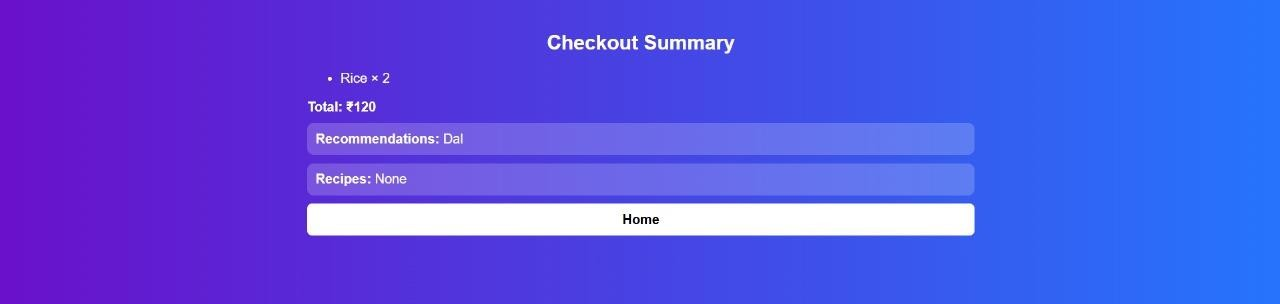
FIG A2.4. Product Selection

FIG A2.5. Checkout

FIG A2.6. Purchase Records

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