VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A MINIPROJECT SYNOPSIS

On

Quick-Cart Compare

Submitted in Partial Fulfillment of the requirement for the award of the degree of

BACHELOR OF ENGINEERING

IN

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CERTIFICATE

This is to certify that the Mini-project work entitled **"**Quick-Cart Compare**"** is a bonafied work carried out by **Aman Kumar(1MV23CS011),Anuj Kumar(1MV23CS018),Himanshu Shekhar(1MV23CS062)**in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering of Visvesvaraya Technological University, Belagavi** during the year **2025-2026.** It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report. The project report has been approved as it satisfies the academic requirements with respect to project work prescribed for the Bachelor of Engineering degree.

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CONTENT

ABSTRACT

Quick-Cart is a cutting-edge, web-based platform designed to assist users in efficiently comparing product prices across multiple online grocery and e-commerce platforms, including Instamart, BigBasket, Zepto, and Flipkart. The primary objective of this system is to empower customers to identify the most cost-effective purchasing options for their desired products, thereby enabling informed and data-driven buying decisions.

The platform utilizes **data aggregation** techniques to collect and consolidate product information from diverse online sources. Through **API integration**, Quick-Cart establishes real-time connectivity with partner platforms, ensuring that price, availability, and offer details are always up to date. Furthermore, the inclusion of **intelligent recommendation algorithms** allows the system to analyze various parameters—such as price, delivery time, and platform reliability—to suggest the optimal purchasing choice to users.

By automating the process of price comparison, Quick-Cart minimizes the time and effort consumers spend manually browsing through different platforms. The platform enhances **transparency**, **user convenience**, and **decision accuracy** while promoting fair competition among e-commerce providers. This project serves as a practical demonstration of **full-stack web development**, integrating frontend design, backend logic, and real-time data handling to address a contemporary challenge in the fast-growing digital retail ecosystem.

In the digital era, online shopping has become an indispensable aspect of modern consumer lifestyles. The proliferation of multiple service providers such as **Instamart, BigBasket, Zepto,** and **Flipkart** has transformed the way people purchase groceries and essential goods, offering unparalleled convenience and accessibility. However, this convenience is often accompanied by a significant challenge — the **variation in product prices, discounts, and delivery options** across different platforms. As a result, consumers are frequently compelled to navigate through multiple websites or applications to identify the most cost-effective deals, leading to a time-consuming and inefficient shopping experience.

QuickCart has been conceptualized as an innovative solution to address this issue by introducing a **centralized, real-time price comparison and recommendation system**. The platform aggregates and analyzes data from multiple e-commerce and grocery delivery services to provide users with a unified view of product availability, price variations, and ongoing offers. Through this integration, QuickCart ensures that customers can make informed purchasing decisions quickly, accurately, and conveniently.

From a technological standpoint, the project employs a **full-stack development approach** utilizing **JavaScript** for dynamic user interface design, **Node.js** for backend processing and data handling, and **MySQL** for structured data storage and management. The system architecture emphasizes **scalability, reliability, and real-time responsiveness**, ensuring that the platform remains efficient even with large volumes of data.

Beyond enhancing cost efficiency for consumers, QuickCart also serves as a step toward **data-driven decision-making** in e-commerce. By combining intelligent data processing and a user-centric interface, the platform not only simplifies the shopping process but also promotes **transparency, competitiveness, and trust** within the digital marketplace.

LITERATURE SURVEY

In recent years, numerous price comparison platforms such as **Google Shopping**, **PriceDekho**, and **MySmartPrice** have emerged to assist users in evaluating product prices across multiple e-commerce websites. While these platforms provide valuable insights for general product categories such as electronics, fashion, and appliances, they are not adequately optimized for the **grocery and quick-commerce segment**, which operates on highly dynamic pricing and availability models. The grocery domain presents unique challenges, including frequent changes in stock levels, rapid price variations, location-based delivery charges, and time-sensitive offers — factors that most existing comparison systems fail to accurately capture.

Furthermore, a detailed review of existing systems reveals several **limitations**. Many of these platforms rely on **static data scraping** or periodic updates, which leads to delays in reflecting the latest prices and discounts. Others lack **real-time API integration**, preventing them from accessing up-to-date information directly from source platforms. Additionally, few systems consider **contextual parameters** such as delivery time, service reliability, and location-based cost differences — aspects that significantly influence a consumer's purchasing decision in the quick-commerce sector.

Academic and market research also highlight a growing **demand for personalized, accurate, and real-time comparison tools**. Consumers increasingly expect transparency and convenience, seeking platforms that deliver not only price comparisons but also intelligent recommendations based on preferences and purchasing patterns. However, most e-commerce platforms are designed with a **competitive bias**, promoting their own products and offers rather than enabling objective, cross-platform comparison. This lack of interoperability and transparency creates an opportunity for a neutral, data-driven system like QuickCart.

QuickCart aims to fill this gap by providing a **specialized price comparison solution** tailored for groceries and daily-use products. The project employs a combination of **web scraping techniques** and **RESTful API integration** to ensure continuous synchronization with multiple e-commerce data sources. Additionally, it utilizes **optimized data structures and intelligent data processing algorithms** to enhance the speed, accuracy, and reliability of price comparisons. By focusing on real-time updates and location-based personalization, QuickCart aligns with current research trends emphasizing user-centric and data-driven e-commerce solutions.

In developing QuickCart, insights from previous studies on **consumer behavior, price elasticity, and digital retail analytics** have been incorporated to refine the system's functionality and interface design. This integration of technological innovation with user behavior research strengthens QuickCart's relevance as both a practical tool and a contribution to ongoing advancements in online retail technology.

PROBLEM DEFINITION

With the rapid proliferation of online shopping and grocery delivery platforms such as Instamart, BigBasket, Zepto, and Flipkart, consumers are presented with a multitude of choices for purchasing the same products. While this digital diversity offers greater accessibility and convenience, it also introduces a significant **challenge** — determining which platform provides the best price, delivery option, and value for money. In the absence of a unified comparison mechanism, customers are forced to **manually browse multiple websites or mobile applications**, comparing prices, discounts, and delivery charges for each item. This process is not only time-consuming but also prone to human error and inefficiency.

Moreover, modern e-commerce platforms operate under **dynamic pricing strategies**, where product prices fluctuate based on factors such as demand, time of purchase, location, and promotional events. The presence of **temporary discounts**, **limited-time offers**, and **varying delivery costs** adds additional complexity to the decision-making process. As a result, it becomes extremely difficult for users to obtain real-time, accurate comparisons across platforms without an automated system to handle such data variability.

The **core issue** lies in the lack of a **centralized and intelligent comparison system** capable of automatically aggregating, processing, and analyzing pricing information from multiple online vendors. Existing tools either provide partial data or fail to account for real-time updates, leading to unreliable comparisons. This gap highlights the need for a robust platform that can deliver accurate, up-to-date, and transparent insights to users.

QuickCart is designed precisely to address this problem by automating the entire data retrieval and comparison process. Through **API integration**, **data aggregation**, and **real-time analytics**, the system collects and compares product prices from various platforms and presents the information in a structured, easy-to-understand format. By doing so, QuickCart not only minimizes the effort and time required for comparison but also enhances **transparency**, encourages **smart purchasing behavior**, and fosters **price awareness** among consumers.

Ultimately, the project aims to bridge the gap between convenience and affordability by creating a **comprehensive, reliable, and user-centric solution** for real-time price comparison in the fast-evolving online marketplace.

The **QuickCart** project carries profound significance within the fast-evolving landscape of **digital commerce**, where competition among multiple online platforms has intensified and consumer expectations have risen dramatically. With platforms such as **Instamart, BigBasket, Zepto,** and **Flipkart** offering overlapping product inventories, users are increasingly challenged to identify where genuine value lies. Although the abundance of options theoretically benefits consumers, in practice it often leads to **decision fatigue** and confusion due to variations in prices, delivery charges, and promotional schemes.

QuickCart directly addresses this challenge by introducing a **unified, intelligent, and transparent price comparison interface**. The platform consolidates product data from various online marketplaces into a single, user-friendly dashboard, enabling consumers to make **informed and data-backed purchasing decisions**. This innovation simplifies the process of price discovery, allowing users to compare multiple options in real time without navigating through numerous applications or websites. As a result, consumers save both **time and financial resources**, while also gaining awareness of the **dynamic pricing strategies** frequently employed by online retailers.

From a **technological standpoint**, the project exemplifies the seamless integration of **real-time data retrieval**, **data processing**, and **recommendation algorithms** using modern web development frameworks. By leveraging **API connectivity** and **automated data aggregation techniques**, QuickCart ensures that product information remains accurate, up to date, and reflective of market fluctuations. The inclusion of a **recommendation engine** further enhances its utility by suggesting optimal purchase options based on various parameters such as price, delivery time, and platform reliability. This technological synthesis demonstrates the practical implementation of **data-driven intelligence** in enhancing consumer experience and supporting smarter decision-making processes.

SIGNIFICANCE & RELEVANCE OF WORK

Beyond its immediate functional purpose, QuickCart has considerable **scalability and market relevance**. Although initially developed for grocery and essential product comparisons, its architecture can be effortlessly extended to include other categories such as electronics, apparel, and personal care products. This scalability underscores the project's potential to evolve into a **comprehensive price comparison and recommendation ecosystem**, catering to a broader segment of the online retail market.

From an **academic and research perspective**, the QuickCart project contributes meaningfully to the study of modern e-commerce systems.

Objectives

- To design and develop a web-based platform for real-time product price comparison across major e-commerce platforms.
- To recommend the most cost-effective and reliable option based on product availability, delivery time, and offers.
- To provide a simple, responsive, and visually appealing interface for seamless user experience.
- To ensure accurate and real-time data integration using APIs or web scraping methods.
- To create a scalable model that can accommodate additional platforms and product categories in the future.

Methodology

1. Requirement Analysis: Identify key features, user expectations, and technical constraints.
2. Data Collection: Fetch product data, including price, name, brand, and availability, through APIs or scraping.
3. Data Normalization: Convert and clean the collected data to a standard format for comparison.
4. Comparison Algorithm: Develop a logic that compares prices and identifies the best value for each product.
5. Recommendation System: Implement filters and algorithms to suggest optimal options to users.
6. Frontend Development: Use HTML, CSS, JavaScript, and frameworks like React for an intuitive UI.
7. Backend Development: Use Node.js or Python Flask/Django for managing data requests and responses.
8. Database Integration: Store product data using MySQL or MongoDB.
9. Testing and Optimization: Perform unit testing, API testing, and UI/UX evaluation.

Hardware Requirements

- **Processor:** Intel i5 or equivalent
- **RAM:** 8 GB or more
- **Hard Disk:** Minimum 500 GB
- **Display:** 1080p resolution recommended

Software Requirements

- **Operating System:** Windows / Linux
- **Frontend Technologies:** HTML, CSS, JavaScript, React.js / Vue.js
- **Backend Technologies:** Node.js / Python (Flask or Django)
- **Database:** MySQL / MongoDB
- **API Testing Tool:** Postman
- **Version Control:** Git and GitHub
- **Code Editor:** Visual Studio Code

Functional Requirements

- User can search for products across multiple platforms.
- System fetches real-time prices and displays a comparison table.
- Recommendation system suggests the cheapest and most reliable option.
- Admin can add or update supported platforms.

PLAN OF EXECUTION

Phase 1 – Requirement Gathering & Planning:
Define project scope, objectives, and identify data sources and APIs.

Phase 2 – System Design:
Create system architecture, data flow diagrams, and database schema.

Phase 3 – Frontend Development:
Build a responsive UI using React.js with a search and results display module.

Phase 4 – Backend & Database Setup:
Implement server logic for fetching and processing data, connect backend to database.

Phase 5 – API Integration & Testing:
Integrate APIs/web scrapers from Instamart, BigBasket, Zepto, and Flipkart; perform testing.

Phase 6 – Deployment & Maintenance:
Deploy the website on a cloud platform (e.g., Render, AWS, or Vercel) and perform periodic updates.

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- **MDN Web Docs** – Tutorials and documentation on HTML, CSS, and JavaScript for web development: https://developer.mozilla.org
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- **W3Schools** – Reference material and tutorials for frontend and backend technologies: https://www.w3schools.com

- **GeeksforGeeks** – Educational resources for full-stack web development, database management, and API integration: https://www.geeksforgeeks.org

- **freeCodeCamp** – Guides and practical examples for building scalable web applications using modern frameworks and tools: https://www.freecodecamp.org

- IEEE and ACM Research Papers – Scholarly articles on price comparison algorithms, recommendation systems, and real-time data processing in e-commerce platforms.

- **React.js, Node.js, Express, and MySQL Official Documentation** – Authoritative references for frontend and backend frameworks, server-side development, and database management:
  - https://reactjs.org/docs/getting-started.html
  - https://nodejs.org/en/docs/
  - https://expressjs.com/
  - https://dev.mysql.com/doc/

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