



# International Journal of Innovative Research in Science Engineering and Technology (IJIRSET)

*(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)*



**Impact Factor: 8.699**

**Volume 14, Issue 8, August 2025**

# Smart Street Vendors

Harshitha K<sup>1</sup>, Siddesh K T<sup>2</sup>

Student, 4<sup>th</sup> Semester MCA, Department of MCA, BIET, Davanagere, Karnataka, India<sup>1</sup>

Assistant Professor, Department of MCA, BIET, Davanagere, Karnataka, India<sup>2</sup>

**ABSTRACT:** An easy-to-use digital tool to assist street sellers work more efficiently with their suppliers is the Smart Street Vendor Management System. There will be an administrator, vendor, and customer user in the system. Admins will have the ability to oversee vendor item categories, accounts, and stock. Vendors have the ability to create an account, manage products, update their locations, alter prices, and view their sales and profit margins. Consumers will be able to quickly find suppliers (using GPS), navigate through the vendor list according to the things they require, and register into their account. All things considered, the Smart Street Vendor Management System will use modern technology (the digital payment and mobile application) to modernize and streamline street vending, which benefits customers by offering services, vendors by boosting potential revenue, and users by updating their interactions with the market.

**KEYWORDS:** Smart Vendor Management, Mobile Application, GPS Tracking

## I. INTRODUCTION

Street vending plays a crucial role in the informal economy, providing essential goods and services to urban populations at affordable prices. However, traditional street vending practices often face challenges such as limited customer reach, lack of organized inventory management, inefficient payment systems, and poor visibility. In response to these issues, the emergence of digital technologies has opened up new avenues for transforming the street vending ecosystem. The concept of Smart Street Vending leverages modern tools such as mobile applications, GPS tracking, digital payments, and data analytics to enhance the efficiency, visibility, and profitability of street vendors. Smart street vendors are increasingly adopting technology to streamline their operations and meet the demands of a digitally connected society. With mobile

apps and smart carts, vendors can manage their sales activities in real time, update product prices, track stock availability, and process transactions through secure digital payment gateways. GPS integration enables customers to effortlessly locate vendors based on their current location or specific item needs, thereby creating a more customer-centric experience. Some vendors are also using data analytics to study customer preferences, enabling them to adapt their product offerings and pricing strategies for better engagement and increased sales.

To support this technological shift, governments and private organizations are offering digital tools and training programs aimed at empowering vendors with the knowledge and resources required for digital transformation. This not only increases the earning potential of vendors but also contributes to a smarter and more organized marketplace. In this context, the Smart Street Vendor Management System emerges as a comprehensive digital solution designed to address the needs of all stakeholders involved in street vending. The system includes three primary user roles: Admin, Vendor, and Customer. For Admins, the platform provides functionality to manage business categories, approve or reject vendor registrations, and monitor item availability, thereby ensuring an efficient and regulated marketplace. For Vendors, the system offers features such as registration, real-time location updates, inventory and price management, and access to detailed sales and profit reports. These tools help vendors make informed decisions, increase operational transparency, and improve overall efficiency. Meanwhile, Customers benefit from the ability to register, log in, and search for nearby vendors based on product categories, ensuring quick and convenient access to goods. By digitizing the interaction between vendors and customers, and facilitating robust administrative control, the Smart Street Vendor Management System brings structure and innovation to the street vending industry. It not only helps vendors modernize their businesses and grow their customer base but also provides consumers with a more reliable and efficient service experience. Ultimately, this system aims to bridge the gap between traditional street vending practices and modern digital commerce, creating a more inclusive and technology-driven urban economy.



## **II. RELATED WORK**

P. Singh, S. Dash, A. K. Gupta et.al. The aim of this paper is to explore the role of blockchain technology in enhancing the efficiency, transparency, and security of street vendor management systems in urban areas. The study proposes a Blockchain-based Street Vendor Management (SVM) framework that addresses the dual challenges faced by municipal corporations in managing street vendors and ensuring a transparent and tamper-proof process. The system automates the registration of vendors and assigns them a unique street ID through Ethereum-based smart contracts, eliminating manual intervention and reducing the risk of fraud. The use of blockchain ensures that all data is securely stored, immutable, and accessible only to authorized participants. The SVM model introduces role-based access control, distinguishing between street vendors, local administrators, and global administrators, each with specific permissions and responsibilities. This decentralized approach not only simplifies vendor registration and monitoring but also supports secure transactions and interactions among vendors, customers, and administrators. By leveraging the capabilities of blockchain and smart contracts, the proposed system aims to modernize street vendor governance and promote accountability across all stakeholders involved[1].

Mir, I. U. R., & Wani et al., 2023, The aim of this paper is to understand how street vendors In India, there are about 4.9 million street vendors who are now starting to use mobile payment apps like PhonePe, Google Pay, Paytm, and BHIM. Even though many of these vendors have little or no formal education, they are learning to accept digital payments by using QR codes on their carts. In Srinagar, Kashmir, researchers found that while vendors are using these apps, many do not fully understand how they work. They often need help from family or friends to check their payments or resolve problems. To support them, companies like Paytm and PhonePe have introduced devices like soundboxes that give voice alerts when payments are made. These tools help vendors know when they receive money. However, these solutions only solve small problems and do not fix bigger issues like lack of education and digital skills. This study shows that more government support and training are needed to help street vendors truly benefit from digital payments[2].

Dasaklis, T., & Casino, F 2019, This paper to enhance the efficiency and reliability of Vendor-Managed Inventory (VMI) systems by introducing a blockchain-based interaction framework that uses smart contracts. Traditional VMI strategies require strong trust, transparent information sharing, and well-integrated systems between vendors and buyers, which can be difficult to achieve due to complex logistics, multiple stakeholders, and disconnected distribution channels. To overcome these challenges, the proposed approach leverages blockchain technology to create a secure, transparent, and decentralized environment for managing inventory processes. The authors design and implement functional smart contracts on a local private blockchain that automate inventory replenishment decisions based on real-time data. A practical use-case scenario is tested to demonstrate the applicability and benefits of the system. The results show that the proposed architecture can significantly improve communication, trust, and operational efficiency for all participants in the supply chain.[3]

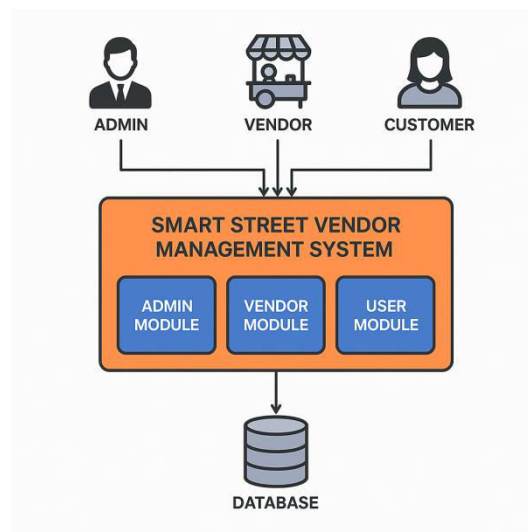
Son, H. H., Lien et, al. 2019, This paper aims to address the challenges of managing the informal economic sector, especially street vending, in developing countries. It highlights common problems such as selling fake or poor-quality goods, harassment, and tax evasion, which are often difficult to track and manage through traditional, manual systems. To solve these issues, the paper proposes a new digital Street Vendor Management System that uses QR codes and mobile technology to make the process more transparent and efficient. This system allows hawkers, customers, and government authorities to access, manage, and monitor street vending activities more effectively. The paper also discusses suggested improvements in public policies related to street vendor management and presents initial results from early system implementation to evaluate its impact and effectiveness.[4]

Nauval, I., Widyanto et.al. 2023, This paper explains how GPS technology can be used to track the real-time location of street vendors. The main goal is to help customers easily find nearby vendors and allow local authorities to manage and organize street vending more effectively. In this system, street vendors use smartphones or GPS devices that send their location to a central system. Customers can use a mobile app or website to see where vendors are and what products they are selling. The system also helps government bodies to monitor where vendors are setting up, avoid overcrowding in busy areas, and ensure rules are followed. The technology uses simple tools like mobile phones with GPS, internet connections, and location maps such as Google Maps. While the system offers many benefits, it also faces some challenges like the cost of devices, internet availability, and the need to teach some vendors how to use the

technology. Overall, the paper shows that GPS tracking can make street vending more organized, easier for customers, and better managed by authorities.[5]

### III. METHODOLOGY

The development of the Smart Street Vendor Management System fig1 shows that the followed a structured and phased methodology to ensure that the system met the practical needs of street vendors, customers, and administrators. The methodology encompassed six major stages: requirements analysis, system design, technology integration, module development, database management, and testing and verification.



**Fig.1. Proposed System**

#### 1. Requirements Analysis

The first step involved identifying the key requirements and challenges faced by different stakeholders including street vendors, customers, and administrative authorities. Data was gathered through discussions, observations, and informal surveys to understand the essential functionalities required in the system. This analysis highlighted the need for modules such as vendor registration, product management, real-time GPS tracking, electronic payments, and automated sales reporting. The outcome of this phase was a clear set of functional and non-functional requirements that guided the subsequent development phases.

#### 2. System Design

Based on the requirements, a user-friendly interface was designed for the three distinct user roles: Admin, Vendor, and Customer. The design ensured that each user type could access only relevant functionalities through independent modules. Backend database schemas were developed to manage user accounts, item categories, transactions, and vendor locations. The design phase prioritized usability, modularity, and scalability of the system to support future enhancements.

#### 3. Technology Integration

The system was developed using modern web and mobile development technologies. Mobile and web interfaces were created to enable seamless interactions across devices. Integration of GPS technology facilitated real-time location tracking of vendors, improving discoverability for users. In addition, digital payment gateways were embedded to allow cashless transactions. The backend was designed to handle user management, data processing, and system logic, ensuring secure and efficient performance.

#### 4. Development of Modules

Each module was developed with specific functionalities based on user roles:

- Admin Module: Enabled administrators to manage item quantities, approve or reject vendor accounts, and maintain categories and subcategories of items and companies.
- Vendor Module: Allowed vendors to register and log in, set item prices, manage product listings, update their location, and view sales and profit/loss reports.
- User Module: Enabled users to register or log in, search for vendors by item categories, and view vendor locations using GPS integration.

### 5. Management of the Database

A well-structured database was implemented to store user data, vendor information, product details, sales records, and location data securely. The database was designed to support high performance, data integrity, and easy retrieval for analytical and operational purposes.

### 6. Testing and Verification

Extensive unit testing and system-level testing were conducted to validate the functionality, reliability, and performance of the system. Feedback from testers was collected and used to identify bugs and areas for improvement. Necessary modifications and enhancements were implemented to ensure system stability and usability before deployment.

## IV. TECHNOLOGIES USED

### A. Front-End Technologies

The front-end of the Smart Street Vendor Management System was developed using core web technologies—HTML, CSS, and JavaScript—to ensure a responsive and interactive user interface for all user roles: Admin, Vendor, and Customer. These technologies were chosen for their simplicity, flexibility, and wide browser support, making them ideal for building lightweight and accessible web applications.

HTML5 was used to structure the content of each web page. It defines the layout of forms, buttons, tables, and navigation elements required for functionalities such as user registration, login, product listings, and vendor dashboards. The semantic features of HTML5 help ensure the pages are well-organized and easily readable by both users and browsers.

CSS3 was implemented to style the interface, allowing the system to have a clean, modern, and user-friendly appearance. CSS was used to define color schemes, font styles, spacing, and positioning of elements to enhance usability. Responsive design techniques were applied using CSS media queries to ensure that the application performs well on different screen sizes, including desktops, tablets, and mobile devices.

JavaScript was employed to add interactivity and dynamic behavior to the system. It handles client-side validation for login and registration forms, updates content dynamically without reloading the page (using DOM manipulation), and enables features such as real-time UI feedback. JavaScript also enhances the user experience by providing instant responses to user actions, making the application feel faster and more responsive.

### B. Back-End Technologies

The back-end of the Smart Street Vendor Management System was developed using PHP in combination with the Laravel framework, offering a powerful and secure environment for managing business logic, user interactions, and data processing. PHP was selected due to its wide support, ease of integration with databases, and strong community. Laravel, as a modern PHP framework, simplifies and enhances development through its built-in features and structured approach.

PHP acts as the server-side scripting language responsible for handling requests from the client, interacting with the database, and generating dynamic content. It processes form submissions, manages sessions, performs user authentication, and handles the core logic of the system—such as calculating profits, filtering vendors, and updating item details.

Laravel, a robust PHP framework, was used to streamline the development process. Laravel follows the MVC (Model-View-Controller) architectural pattern, which separates the application's logic, user interface, and data handling, making

the codebase clean, organized, and easy to maintain. It offers powerful tools such as Eloquent ORM for seamless database interactions, Blade templating engine for building dynamic views, and built-in routing and middleware for managing request flows and user access.

Laravel also simplifies tasks such as:

- User authentication and authorization: Ensuring secure login and access control for Admins, Vendors, and Customers.
- Database migrations and seeders: Making it easier to manage and update database schema across different environments.
- RESTful API support: Allowing smooth integration with mobile or third-party systems if needed.
- Form validation and error handling: Ensuring data integrity and providing user-friendly error messages.
- By using PHP with Laravel, the system achieves a high level of security, scalability, and performance. The back end ensures smooth data flow between the user interface and the database while maintaining robust access control and efficient system operations.

### **C. Database Technologies**

The database for the Smart Street Vendor Management System was implemented using MySQL, a widely-used open-source relational database management system (RDBMS). MySQL was chosen due to its reliability, performance, and compatibility with PHP and Laravel, making it an ideal choice for managing structured data in a web-based application. MySQL serves as the central data repository for the entire system, storing and managing information related to Admins, Vendors, Customers, Products, Transactions, Item Categories, and Vendor Locations. The relational structure of MySQL enables data to be organized efficiently using tables with clearly defined relationships, ensuring consistency and minimizing redundancy through the use of primary keys and foreign keys.


The database schema was carefully designed to support the three distinct modules of the system:

- Admin Module: Stores admin login credentials, business categories, and vendor approval status.
- Vendor Module: Maintains vendor profiles, products, prices, stock quantities, sales transactions, and profit/loss records.
- Customer Module: Contains user registration details and activity history, including vendor interactions and GPS-based searches.

### **Key features of MySQL utilized in the system include:**

- ACID Compliance: Ensuring that transactions are processed reliably and data integrity is maintained.
- Structured Query Language (SQL): Used to perform queries, updates, inserts, and deletions across the system's data.
- Indexes and Joins: Enhancing the performance of search and filter operations, especially when locating vendors based on item categories or GPS location.
- User Access Control: Enabling secure access to the database by defining specific privileges for different user roles.

## V. RESULT



Vendors List	
Vendor	Harshitha
Distance	2.65
Mobile	9876543210
Category	Vegetable Seller
INFO	
Vendor	Chinnimayi
Distance	2.65
Mobile	9876543211
Category	Vegetable Seller
INFO	

The snapshot displays a list of vendors, showing details such as vendor name, distance from the user, mobile number, and vendor category. This helps users easily identify and contact nearby vendors based on their specific needs.

## VI. CONCLUSION

The Smart Street Vendor Management System provides an innovative and practical digital solution to enhance the efficiency, visibility, and profitability of street vending businesses. By integrating technologies such as GPS tracking, digital payments, and real-time product management, the system addresses the challenges faced by vendors, customers, and administrators. It empowers vendors to manage their sales, pricing, and inventory with ease, while allowing customers to locate nearby vendors and access essential goods conveniently. Administrators benefit from centralized control over vendor registration, product categorization, and transaction monitoring. This system not only modernizes traditional street vending practices but also promotes digital inclusion, economic growth, and smart urban development. Overall, the implementation of such a technology-driven platform contributes to creating a transparent, efficient, and accessible marketplace that benefits all stakeholders involved.

## REFERENCES

- [1].P. Singh, S. Dash, A. K. Gupta, N. Singh and P. D. Yadav, "Utilizing Blockchain for Effective Urban Street Vendor Management," 2023 4th International Conference on Computation, Automation and Knowledge Management (ICCAKM), Dubai, United Arab Emirates, 2023, pp. 1-5,doi:10.1109/ICCAKM58659.2023.10449555.
- [2]. Mir, I. U. R., & Wani, M. I. (2023). Street vendors using smartphones for digital payments: A Qualitative Study of Digital Opportunities and Inequalities from Kashmir Region in India. Journal of Asian and African Studies. <https://doi.org/10.1177/00219096231218437>.
- [3]. Dasaklis, T., & Casino, F. (2019). Improving vendor-managed inventory strategy based on internet of things (IoT) applications and blockchain technology. 2021 IEEE International Conference on Blockchain and Cryptocurrency (ICBC), 5055.<https://doi.org/10.1109/bloc.2019.8751478>
- [4].Son, H. H., Lien, T. T. P., Thao, N. T., Nam, N. T., & Van Anh, H. (2019). Street vendor management. Huu Hoang, 40, 268–273.<https://doi.org/10.1145/3305160.3305180>.
- [5]. Nauval, I., Widyanto, R. A., Setiawan, A., Nuryanto, N., Prabowo, N. A., & Purnomo, T. A. (2023). Implementation of GPS for tracking of street vendor. AIP Conference Proceedings, 2954, 060006. <https://doi.org/10.1063/5.0154610>





INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details