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APP-BASED SOLUTION TO PROVIDE MARKET ACESS TO SMALL ENTERPRISES

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Abstract: Micro and small enterprises (MSEs) play a significant role in the global economy, contributing to employment generation, income generation, and poverty reduction. However, these enterprises often face challenges in accessing markets, limiting their growth potential. In response, this research paper proposes a mobile app-based solution aimed at bridging the gap between MSEs and potential customers, thereby providing market access to these businesses. The paper focuses on the development, implementation, and potential impact of such a platform, using Bhawani Silver, an online hub for silver jewelry, as a case study. The study explores the design, features, and usability of the platform, as well as its potential to facilitate economic empowerment and inclusive growth.

Keywords*:* Micro and small enterprises, market access, mobile app platform, economic empowerment, inclusive growth.

I. INTRODUCTION

Micro and small enterprises (MSEs) form the backbone of economies worldwide, contributing significantly to employment generation, income generation, and poverty reduction. Despite their vital role, MSEs often encounter numerous challenges, with one of the most critical being limited access to markets. The inability to reach potential customers hampers their growth potential and inhibits their ability to thrive in increasingly competitive environments.

In recent years, however, technological advancements, particularly in the realm of mobile applications, have presented a promising solution to this longstanding problem. Mobile app platforms offer MSEs a unique opportunity to showcase their products and services to a broader audience in a cost-effective and efficient manner. By leveraging the ubiquity of smartphones and the internet, these platforms can bridge the gap between MSEs and potential customers, thereby unlocking new avenues for growth and prosperity.

This research paper aims to explore the development, implementation, and potential impact of a mobile app-based solution designed to provide market access to micro and small enterprises. Through a detailed examination of the platform's features, usability, and impact, this paper seeks to shed light on its effectiveness in empowering MSEs and fostering inclusive economic growth.

To illustrate the practical application of such a solution, this paper will focus on Bhawani Silver, an online hub for exquisite silver jewelry. Bhawani Silver represents a quintessential micro-enterprise seeking to expand its reach and establish a foothold in the market. By adopting the proposed mobile app platform, Bhawani Silver aims to overcome the barriers to market access and unlock its full growth potential.

Through this case study and broader analysis, this research paper endeavors to contribute to the existing literature on market access solutions for MSEs, while also providing practical insights for policymakers, businesses, and researchers alike. Ultimately, the goal is to foster an environment where MSEs can thrive, innovate, and contribute meaningfully to economic development and societal well-being..

II. LITERATURE SURVEY

Jain, Deepak, et al. [1], examined the adoption of e-commerce platforms by micro and small enterprises (MSEs) in developing economies. Their study conducted a thorough analysis of scholarly works published between 2010 and 2022, focusing on the adoption rates, challenges, and impacts of e-commerce on MSEs. Using content analysis, the researchers identified key factors influencing MSEs' decision to adopt e-commerce, such as infrastructure, digital literacy, regulatory environment, and access to markets. The study aimed to provide insights into strategies for promoting e-commerce adoption among MSEs in resource-constrained settings.

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Smith, Emma, et al. [2], investigated the effectiveness of mobile applications in enhancing market access for MSEs. Their research focused on the development and deployment of app-based solutions tailored for MSEs, drawing on case studies from various industries. The study explored how mobile apps facilitate business growth, customer engagement, and operational efficiency for MSEs. By analyzing user feedback and adoption metrics, the researchers highlighted best practices and challenges in leveraging mobile platforms to empower MSEs in reaching broader

Gupta, Rajesh, et al. [3], examined the role of digital platforms in promoting inclusive growth and economic empowerment among MSEs. Their study reviewed literature published in prominent journals and databases, focusing on the impact of e-commerce on MSEs' access to finance, markets, and technology. Through a comparative analysis of case studies, the researchers highlighted successful strategies for integrating MSEs into digital ecosystems and overcoming barriers to market entry. The study aimed to inform policymakers and practitioners on effective interventions to support MSEs' participation in the digital economy.

Patel, Ankit, et al. [4], investigated the challenges and opportunities of online marketplaces for micro and small enterprises (MSEs) in emerging markets. Their research synthesized existing literature on e-commerce platforms and MSEs' market access, emphasizing the importance of user-centered design and technological innovation. By analyzing case studies and industry reports, the researchers identified key success factors for MSEs operating on online platforms, such as product visibility, customer trust, and logistics management. The study aimed to provide actionable insights for MSEs seeking to leverage e-commerce for business expansion and sustainability.

Singh, Ravi, et al. [5], explored the impact of regulatory frameworks on MSEs' participation in digital marketplaces. Their study conducted a comprehensive review of regulatory policies and their implications for MSEs' access to e- commerce platforms. By analyzing case studies and policy documents, the researchers identified regulatory barriers hindering MSEs' market access and proposed policy recommendations to foster an enabling environment for digital entrepreneurship. The study aimed to contribute to policy discourse on inclusive economic development through e- commerce adoption among MSEs.

III. PROBLEM STATEMENT

App based solution to provide market access to micro and Small enterprises.

IV. OBJECTIVE

To investigate the effectiveness of app-based solutions in enhancing market access for micro and small enterprises (MSEs) and facilitating their growth and sustainability in the digital economy. The research aims to:

- Evaluate the impact of app-based platforms on MSEs' market reach and customer engagement.
- Analyze the factors influencing MSEs' adoption and utilization of app-based solutions for business expansion.
- Assess the role of user-centric design, technological innovation, and regulatory compliance in enhancing MSEs' competitiveness in digital marketplaces.
- Identify challenges and opportunities associated with the development and implementation of app-based solutions for MSEs.
- Provide actionable insights and recommendations for policymakers, entrepreneurs, and stakeholders to support MSEs in leveraging app-based platforms for sustainable growth and economic empowerment.requirements.

V. METHODOLOGY

The methodology employed in this research involves a comprehensive analysis of the effectiveness of app-based solutions in enhancing market access for micro and small enterprises (MSEs). Firstly, a detailed examination of existing app-based platforms catering to MSEs will be conducted, focusing on design, layout, and user interface. This analysis will entail assessing the navigation structure, search features, and product categorization to gauge user- friendliness. Usability testing methods, such as task-based testing and heuristic evaluation, will be utilized to identify any usability issues and areas requiring improvement.

Subsequently, the user experience (UX) will be evaluated through qualitative research methods, including surveys and interviews, to gather feedback on user satisfaction, perceptions, and preferences related to app browsing, transaction processes, and customer support. User behavior data, such as clickstream analysis and heatmaps, will also be analyzed to uncover patterns and pain points in the user journey. Additionally, the effectiveness of digital marketing strategies, including SEO, social media marketing, and email marketing, will be assessed through key performance indicators (KPIs) such as app downloads, user retention rates, and transaction volumes. Competitive analysis will be conducted to benchmark the app's performance against industry standards and identify opportunities for differentiation.

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Furthermore, an evaluation of the supply chain and business model supporting MSEs using app-based solutions will be undertaken. This evaluation will focus on ensuring product authenticity, quality, and ethical standards are maintained throughout the supply chain.

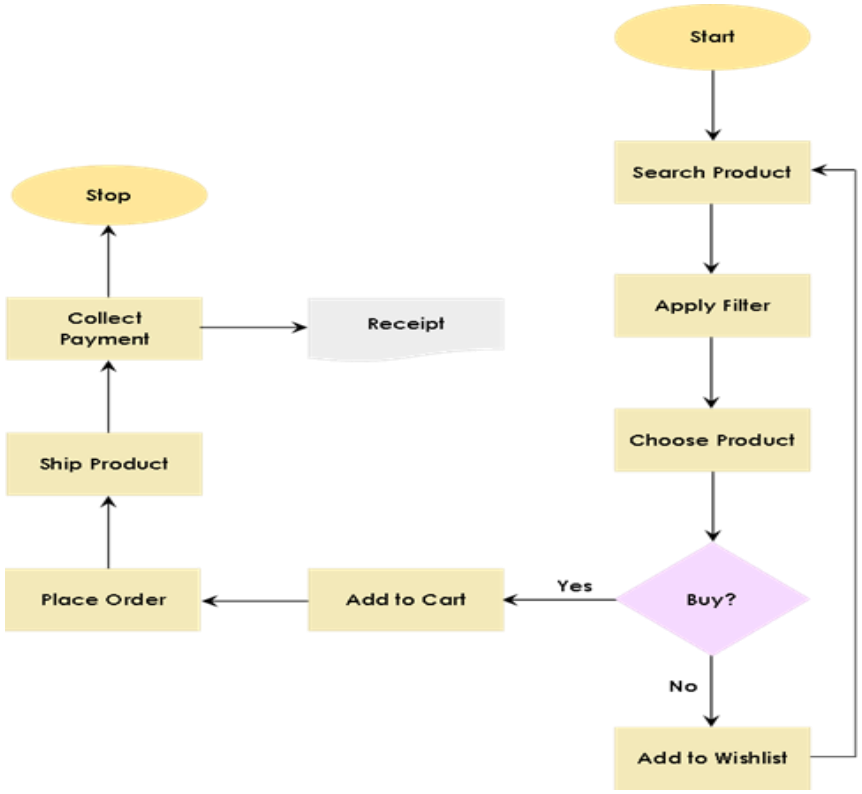

Fig.1 Flow of the Application

VI. SOFTWARE IMPLEMENTATION

The platform was developed using the Flutter framework for cross-platform mobile application development, Firebase as a backend and database solution, and Dart as the programming language for app development. Flutter was chosen due to its flexibility, performance, and ability to create visually appealing and responsive user interfaces across multiple platforms.

For the frontend of the application, Flutter's rich set of pre-designed widgets and components were utilized to create a seamless and intuitive user interface. The design principles followed were based on Material Design, which offers clean, consistent, and ready-to-use UI components that enhance user experience and usability.

Firebase was chosen as the backend and database solution due to its real-time database capabilities, scalability, and seamless integration with Flutter. Firebase Database was used to store and manage user data, product information, and transaction details. Additionally, Firebase Authentication was implemented to handle user registration, login, and authentication processes securely.

The RESTful API was built using Dart and integrated with Firebase Cloud Functions to handle data retrieval, storage, and manipulation operations. Firebase Cloud Functions provide a serverless environment that allows for scalable and efficient execution of backend code without managing server infrastructure.

A. Static decomposition and Dependency Description

This section contains the system DFD diagram for the application for Sellers and also has a detailed explanation for each use case in the system. The system's use case shows the user a detailed view of the system and how the actors would interact with each other and with the system. The explanation for each use case is then provided below. The system use case for the administrator and the user helping the user to understand who the actors are as well as giving the description for each use case along with its pretend post-conditions that should be satisfied once the use case is implemented in the software. The use case of an administrator shows where he or she has access to the application.

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The administrator can access the home page, select a category, or add/delete items from the cart demonstrating the use case for users where they have access to the online shopping cart application. They can access the homepage, select a category, add/delete items to/from the cart, view the shopping cart, and decide to either continue shopping or check out. They are required to go through the user authentication form (login) which would only allow them to place an order for the items they selected.

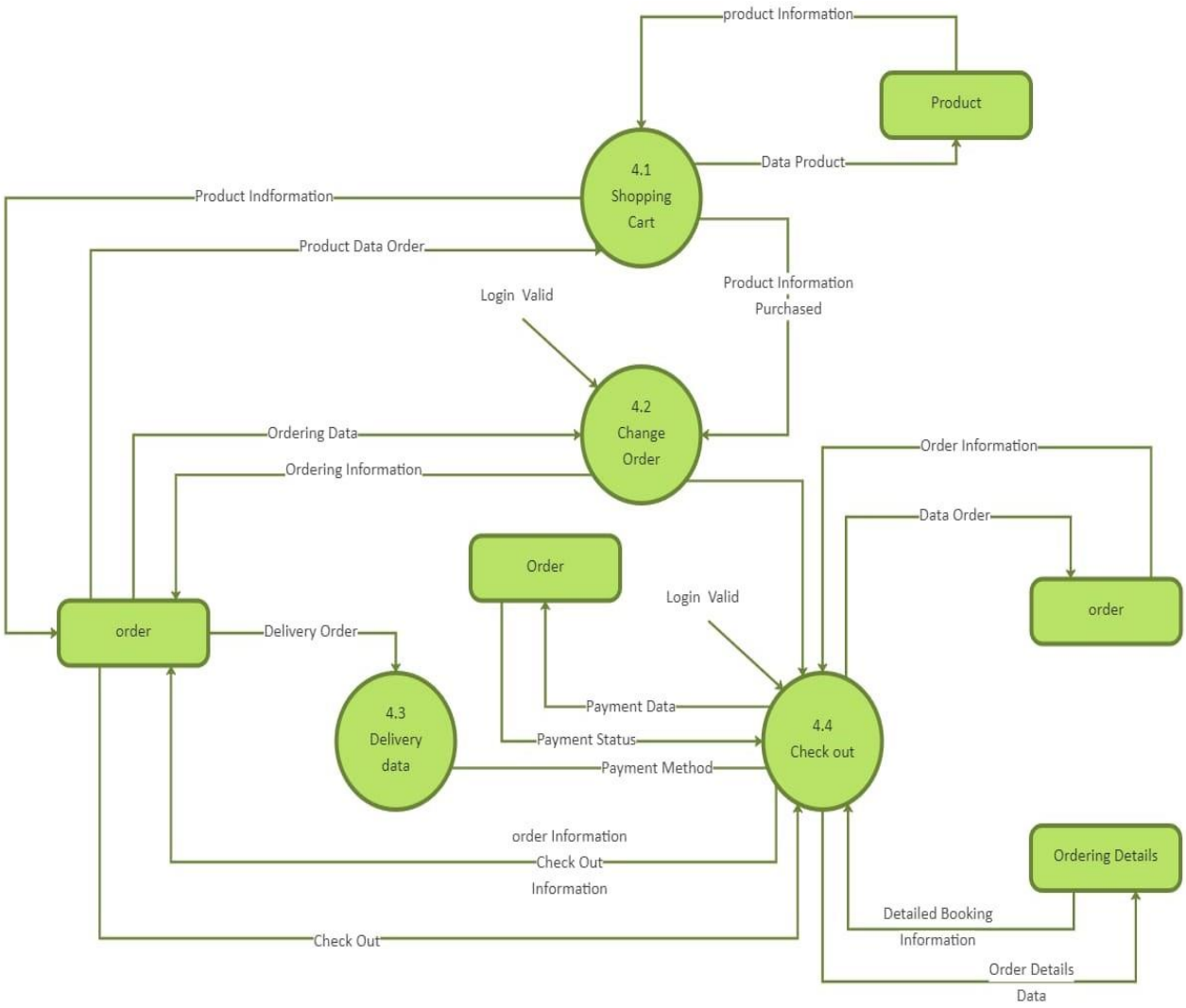

Fig.2

B. User Panel

There are two panels in this paper i.e., Admin Panel, and Customer Panel. All are having their own level of privileges.

i) Admin:

- They show all products, update, delete and add new products.
- They can also provide privileges to customers as well as other admins. They can delete the account.
- Admin can also add product to home screen list and can also track the data about the items bought or sold, consumer visited count.

ii) Customer:

- Customers can view all products.
- They can add it to Cart and Wishlist for future purchase.
- They can delete and update it from Wishlist or Cart.
- Transactions will be done by customers including all taxes and shipping charges.

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- Customers can give stars and feedback to products and vendors in feedback form.

Fig.3 Home Page

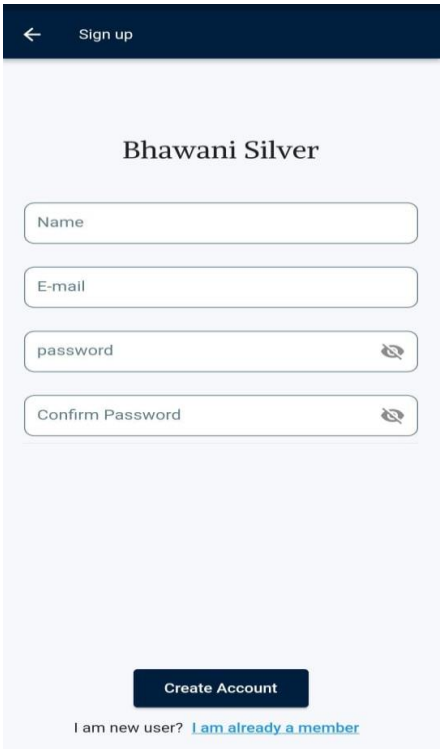

Fig.4. Customer Registration

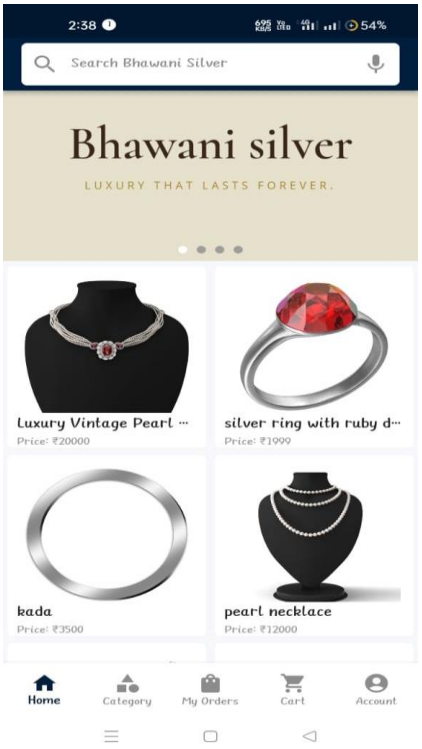

Fig.5 Product Page

VII. CONCLUSION

In the dynamic world of e-commerce, our "Bhawani Silver" mobile application stands out as a premier destination for exquisite silver jewellery, offering a seamless and enriching shopping experience to discerning consumers. Grounded in the principles of craftsmanship, quality, and authenticity, we showcase a curated selection of high- quality silver jewellery pieces that resonate with elegance and sophistication.

Through our intuitive and user-friendly interface, customers are invited on a captivating journey of discovery, exploring a diverse range of silver jewellery options that cater to their unique tastes and preferences. From timeless classics to contemporary designs, every purchase on our platform represents a conscious choice towards embracing elegance and celebrating individuality.

The salient features of this mobile application include:

- Users can choose their preferred payment gateway (Stripe/Razorpay).
- The simplicity and intuitiveness of the app design.
- User-friendly navigation and seamless browsing experience.
- Quick display of products based on categories, designs, and price range.

REFERENCES

[1]. Flutter Documentation: Official documentation for Flutter framework. Available at: https://flutter.dev/docs
[2]. Firebase Documentation: Official documentation for Firebase platform. Available at: https://firebase.google.com/docs
[3]. Dart Documentation: Official documentation for Dart programming language. Available at: https://dart.dev/guides
[4]. Nielsen, J. (1993). Usability Engineering. Academic Press. ISBN-13: 978-0125184069.
[5]. Patel, M., Choudhary, N. (2017). Designing an Enhanced Simulation Module for Multimedia Transmission Over Wireless Standards. In: Modi, N., Verma, P., Trivedi, B. (eds) Proceedings of International Conference on Communication and Networks. Advances in Intelligent Systems and Computing, vol 508. Springer, Singapore. https://doi.org/10.1007/978-981-10-2750-5_17
[6]. K. C. Giri, M. Patel, A. Sinhal and D. Gautam, "A Novel Paradigm of Melanoma Diagnosis Using Machine Learning and Information Theory," 2019 International Conference on Advances in Computing and Communication Engineering (ICACCE), Sathyamangalam, India, 2019, pp. 1-7, doi: https://doi.org/10.1109/ICACCE46606.2019.9079975.

[7]. Shekhawat, V.S., Tiwari, M., Patel, M. (2021). A Secured Steganography Algorithm for Hiding an Image and Data in an Image Using LSB Technique. In: Singh, V., Asari, V.K., Kumar, S., Patel, R.B. (eds) Computational Methods and Data Engineering. Advances in Intelligent Systems and Computing, vol 1257. Springer, Singapore. https://doi.org/10.1007/978-981-15-7907-3_35

[8]. A.Maru, A. K. Sharma and M. Patel, "Hybrid Machine Learning Classification Technique for Improve Accuracy of Heart Disease," 2021 6th International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, 2021, pp. 1107-1110, doi: 10.1109/ICICT50816.2021.9358616.

[9]. Ankita, S., Mayank, P. & Manish, T. (2019). A comparative study to detect fraud financial statement using data mining and machine learning algorithms. International Research Journal of Engineering and Technology (IRJET), 6(8), 1492-1495.

[10]. Tiwari, K., Patel, M. (2020). Facial Expression Recognition Using Random Forest Classifier. In: Mathur, G., Sharma, H., Bundele, M., Dey, N., Paprzycki, M. (eds) International Conference on Artificial Intelligence: Advances and Applications 2019. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-15-1059-5_15

[11]. Taunk, D., Patel, M. (2021). Hybrid Restricted Boltzmann Algorithm for Audio Genre Classification. In: Sheth, A., Sinhal, A., Shrivastava, A., Pandey, A.K. (eds) Intelligent Systems. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-16-2248-9_11

[12]. Cooper, A., Reimann, R., & Cronin, D. (2007). About Face 3: The Essentials of Interaction Design. Wiley. ISBN-13: 978- 0470084113.

[13]. Razorpay Documentation: Official documentation for Razorpay payment gateway integration. Available at: https://razorpay.com/docs

[14]. Material Design Guidelines: Official guidelines for Material Design principles and components. Available at: https://material.io/design