"**Android-based POS System**: Personalized Point-of-Sale Solutions for A-OK CONSTRUCTION SUPPLIES"

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6. **Related Works**

This long-held dominance is under danger from new rivals thanks to the growth of e-commerce, mobile shopping, and most recently, smart technology. We examine how digitization began to undermine institutional retailing as the key interface to the customer by adopting a value-creation viewpoint (Reinartz et.al, 2019). Recognizing the criticality of efficient inventory management for businesses, particularly in the retail sector where it directly impacts sales, customer satisfaction, and overall business performance (Tsung et.al, 2018). According to Shah and Tandel (2017), the design and development of an Android-based Point of Sale (POS) application for small businesses was conducted to enhance the efficiency of sales processes and improve business operations. For Al-Qudah and Abdullah (2020), the development of an Android-based mobile POS system catered to the specific needs of small businesses by offering affordability, ease of implementation, and essential features for sales management. The research emphasized the importance of providing accessible and efficient POS solutions to support the growth and success of small businesses in various industries. Li et.al (2017) conducted research with the primary objective of addressing the need for a POS system that enables real-time data processing and communication, emphasizing the significance of seamless wireless communication between the mobile device and the admin for efficient and accurate information exchange. Nguyen et.al (2020) focus on developing and implementing an Android-based POS system that prioritizes user-friendly interfaces and robust synchronization algorithms, enabling businesses to efficiently manage sales transactions, inventory, and other relevant data through an intuitive Android application. Chen et.al (2019) developed a real-time Android POS system with cloud data synchronization, as presented in their research paper titled "Real-time Android POS System with Cloud Data Synchronization" at the 2019 IEEE 3rd Information Technology, Networking, Electronic and Automation Control Conference (ITNEC). Furthermore, Kumar et.al (2018) contribute to the field by presenting a real-time Android-based POS system that demonstrates the potential of Android devices in transforming traditional POS systems into modern and dynamic solutions, offering convenience, efficiency, and reliability in transaction processing. Hu et.al (2018) also proposed and developed robust POS system for retail chains that utilizes Blockchain and Edge Computing to enable offline functionality in "weak" Internet environments, ensuring reliable transactions and automated synchronization with the POS cloud upon Internet availability, reducing the impact of network failures. Fu et.al (2017) make a significant contribution to the field by addressing the limitations of traditional POS systems and presenting a real-time Android-based POS solution that incorporates cloud synchronization capabilities.

**Gaps**

Based on the existing studies, it has been determined that the features of the current system and applications do not meet the specific requirements of the company. The company needs tailored features that are suitable for their specific needs, enabling them to conveniently manage their inventories.

**II. Problem of the Study**

The market currently lacks comprehensive mobile-based POS systems, especially ones that cater to specific needs like A-OK Construction Supplies. While some mobile POS solutions exist, they often fall short in providing the desired features and functionalities required for efficient inventory management. Developing a customized mobile app-based POS system for A-OK Construction Supplies is essential to fill this gap and deliver a tailored solution that fulfills their unique requirements, enhancing their inventory management capabilities and decision-making processes.

**Specific Problem**

Existing mobile POS systems do not offer the necessary features for efficient inventory management at A-OK Construction Supplies.

**III. Object of the Study**

**Objective**

To design and deploy a customized mobile app-based POS system for A-OK Construction Supplies, incorporating the specific features they require to efficiently manage inventory and streamline operations.

**Specific Objective**

1. Develop a customized Android mobile app-based POS system for A-OK Construction Supplies, incorporating customizable product categorization, accounting software integration, and real-time data synchronization.
2. Optimize the Android mobile app's performance and user experience, ensuring efficient inventory management and intuitive navigation for A-OK Construction Supplies' staff.

**IV. Scope and Limitation**

The scope of this project involves developing a customized mobile app-based POS system for A-OK Construction Supplies, specifically designed for Android devices. The system will include features such as customizable product categorization, integration with accounting software, and robust reporting capabilities. The mobile app will be developed using Android-specific technologies and frameworks. Real-time data synchronization will be achieved through WebSocket communication.

**Limitations**

However, it is important to note that the customized mobile app-based POS system will be designed exclusively for Android devices and Computers and may not be compatible with other platforms. Integration with existing infrastructure and systems may require additional customization. The system's performance and scalability may be influenced by factors such as network connectivity and server resources. Ongoing maintenance and updates will be necessary to address potential bugs, security vulnerabilities, and evolving business requirements.

**V. Tech Stacks**

* Node.js with Express.js: These technologies facilitate efficient backend development and routing, handling concurrent requests and ensuring scalability.
* MongoDB: This flexible NoSQL database can handle large amounts of data, providing scalability and seamless integration with Node.js.
* WebSocket: It enables real-time data synchronization between the mobile app and the server, ensuring live updates of inventory data.

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