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JOURNAL

Development of an AppSheet-Based Inventory Level System Application at PT Java Akshara

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Abstract:
This study aims to develop an inventory level system application based on AppSheet at PT Java Akshara, a cosmetics retail company that manages both online and offline sales channels. The background of this study is the company's inventory recording process, which was previously carried out manually using separate spreadsheets and informal communication between departments. This condition caused delayed stock updates, mixed online and offline stock data, potential stock discrepancies, and difficulties in monitoring inventory in real time. This study used a Research and Development (R&D) approach with the ADDIE development model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. Data were collected through observation, interviews, documentation, pre-research questionnaires, user acceptance testing, and media expert validation. The application was developed using AppSheet integrated with Google Sheets as the main database. The main features include master product data, online sales transaction recording, offline sales transaction recording, stock-in recording, automatic stock reduction, automatic total price calculation, and inventory monitoring dashboard. The user acceptance testing result showed a feasibility score of 91.43%, while the media expert validation obtained 88.57%. Both results are categorized as highly feasible. Therefore, the AppSheet-based inventory level system application is considered feasible to support inventory recording, stock monitoring, and data management at PT Java Akshara in a more structured, efficient, and integrated manner.

Keywords: *AppSheet; inventory level; inventory system; Google Sheets; ADDIE; digitalization*

BACKGROUND

Inventory management is an important element in business operations, especially for retail companies that sell products through more than one sales channel. Accurate inventory data help companies maintain product availability, prevent stock-outs, avoid overstocking, and support operational decision-making. In a cosmetics retail business, inventory management becomes more complex because product movements occur quickly and involve various product attributes such as brand, category, shade, and expiration date.

PT Java Akshara is a cosmetics retail company that manages product sales through online and offline channels. Based on the initial observation, the company's inventory recording process had not been fully optimized. Stock data were still recorded manually using separate spreadsheet files, and coordination between related parties was often carried out through informal communication. This condition caused several problems, including delayed stock updates, discrepancies between physical stock and recorded stock, and unclear separation between online and offline stock allocations.

Pre-research conducted with 20 respondents involved in the inventory operation showed that users perceived the manual recording process as less effective in supporting operational activities. The respondents also indicated the need for a digital system that could separate and monitor online and offline stock in an integrated manner. This finding shows that the inventory management problem was not only experienced by one department, but also affected warehouse staff, store administrators, and management who required accurate and accessible stock information.

To address these problems, this study developed an inventory level system application based on AppSheet. AppSheet was selected because it is a no-code platform that can be integrated with Google Sheets, making it suitable for users with non-IT backgrounds and organizations that need practical digitalization. The application was designed to record stock movements, separate online and offline stock, display inventory level information, and provide a monitoring dashboard for operational and managerial needs.

The purpose of this study is to develop an AppSheet-based inventory level system application for PT Java Akshara, analyze its role in improving inventory recording accuracy, examine its ability to separate and integrate online-offline stock data, and evaluate its feasibility based on user acceptance and media expert validation.

THEORETICAL FRAMEWORK

Inventory Management

Inventory refers to goods owned by a company to support sales, production, or future demand. Inventory management aims to maintain the balance between product availability and storage efficiency. If inventory is too low, the company may face stock-outs and lost sales

opportunities. Conversely, excessive inventory can increase storage costs and the risk of unsold or expired products (Sari, 2022; Brahmantyo et al., 2023).

In the context of PT Java Akshara, inventory management is closely related to the need to monitor stock across online and offline channels. The system must not only record product quantities but also support the separation of stock based on sales channels so that each transaction can be traced and controlled more accurately.

Digitalization and Information System

Digitalization in business operations refers to the use of digital technology to transform manual work processes into structured, documented, and data-based processes. In inventory management, digital systems can reduce human error, improve data accuracy, accelerate reporting, and provide more transparent information for decision-making (Safitri, 2025; Supriyadi et al., 2025).

An information system consists of interconnected components that process data into useful information for users. In business operations, an information system helps organizations minimize manual errors and improve the speed and accuracy of decision-making (Kadir, 2014; Suprihadi, 2020).

AppSheet as a No-Code Platform

AppSheet is a no-code application development platform that enables users to create mobile and web applications without complex programming. AppSheet can be integrated with data sources such as Google Sheets, allowing organizations to build practical applications for data recording, monitoring, and reporting (Yasmin & Nugraha, 2024; Ma'shum et al., 2025).

For this study, AppSheet was used as the main development platform because it supports form-based input, real-time data synchronization, role-based access configuration, and dashboard display. These characteristics match the operational needs of PT Java Akshara, whose users include warehouse staff, store administrators, and supervisors.

ADDIE Development Model

The ADDIE model consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. This model is commonly used in product development because it provides a systematic workflow from identifying user needs to evaluating the final product (Sihombing, 2022; Machmudi et al., 2023).

In this study, ADDIE was used to guide the development of the AppSheet-based inventory level system. The model helped the researcher analyze existing problems, design data structures and workflows, develop the application, implement it in the operational environment, and evaluate its feasibility.

METHOD

This study used a Research and Development (R&D) approach because the study aimed to produce a digital product in the form of an inventory level system application. The development process used the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages.

The research was conducted at PT Java Akshara, a cosmetics retail company located at JL. Dago Vibes AC1 No. 10, Serpong. The research process was carried out from October 2025 to March 2026. The subjects involved in this study included warehouse staff, store administrators, supervisors or management representatives, users involved in application testing, and one media expert validator.

The data used in this study consisted of qualitative and quantitative data. Qualitative data were obtained through observation, interviews, documentation, and comments from users and the media expert. Quantitative data were obtained through questionnaires using a five-point Likert scale. The user acceptance testing questionnaire measured user perceptions of the application, while the media expert validation instrument measured usability, functionality, and visual communication aspects.

The feasibility percentage was calculated by comparing the total obtained score with the expected maximum score. The interpretation category used in this study was: 81%-100% highly feasible, 61%-80% feasible, 41%-60% fairly feasible, 21%-40% not feasible, and 0%-20% highly not feasible.

RESULT

Analysis Stage

The analysis stage identified three main user groups. First, warehouse staff were responsible for recording stock-in and stock-out activities and ensuring that physical stock matched system data. Second, store administrators managed stock movements related to online and offline sales and checked stock consistency in each channel. Third, supervisors or management used inventory information to monitor stock availability, view current stock positions, and support decisions related to procurement and product distribution.

Before the application was developed, inventory management at PT Java Akshara was still carried out manually using separate spreadsheets and informal communication between departments. This caused stock updates to be delayed, online and offline stock data to be mixed, and discrepancies between physical and recorded stock to occur. The main system requirements identified were direct transaction recording, online-offline stock separation, inventory level display, summary reports, and transaction history.

The non-functional requirements included user-friendly interface design, data accuracy and consistency, and online accessibility through smartphones and laptops. These requirements were important because most users came from non-IT backgrounds and needed a simple application that could support daily operations.

Design Stage

The design stage produced the system workflow, activity diagram, component diagram, database structure, and dashboard design. The main database was designed using Google Sheets and consisted of Master Barang, Barang Keluar Offline, and Barang Keluar Online. The Master Barang table stored product information such as SKU, SKU Name, Shade, Brand, Category, Stock Offline, Stock Online, Near ED, Retail Buying Price, and Retail Price Customer.

The Barang Keluar Offline and Barang Keluar Online tables were designed to record transactions based on sales channels. Each table included transaction number, date, SKU, quantity, selling price, discount, and total price. This structure allowed the system to separate stock movement between online and offline sales while keeping the data integrated in one database ecosystem.

Development Stage

The application was developed using AppSheet and integrated with Google Sheets. The main features include Master Barang, Barang Keluar Offline, Barang Keluar Online, automatic total price calculation, automatic stock reduction, stock-in recording, and inventory monitoring dashboard. The SKU field was configured using a reference mechanism so users could select product data from the master table instead of typing product information manually.

The automatic total price feature calculates the transaction amount based on quantity and selling price, while considering discount when applicable. The automatic stock reduction feature updates online or offline stock depending on the transaction channel. If a transaction is recorded in Barang Keluar Online, the online stock decreases. If it is recorded in Barang Keluar Offline, the offline stock decreases.

Implementation Stage

The application was implemented in the operational environment of PT Java Akshara. Users accessed the application through smartphones, laptops, or computers connected to the internet. The implementation activities included opening the application, checking master product data, recording online sales transactions, recording offline sales transactions, recording stock-in activities, and monitoring stock through the dashboard.

The application display included Data Stock Barang, Dashboard Monitoring Persediaan, Form Penjualan Online, Form Penjualan Offline, and Form Barang Masuk. These displays helped users manage stock data more practically and monitor inventory information in a structured way. Screenshots of these application displays can be inserted into the final article as supporting figures.

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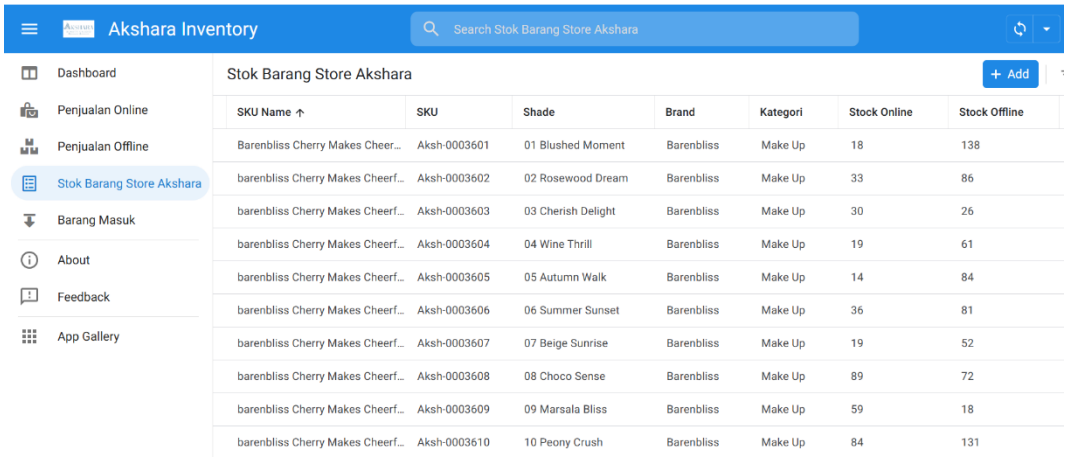


Figure 1. Inventory Data Display in the AppSheet Application. [Insert screenshot here]

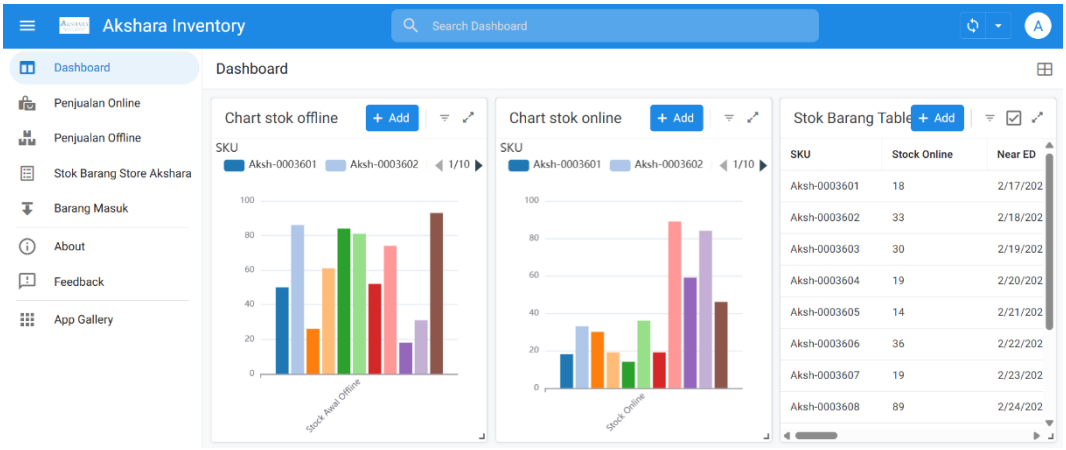
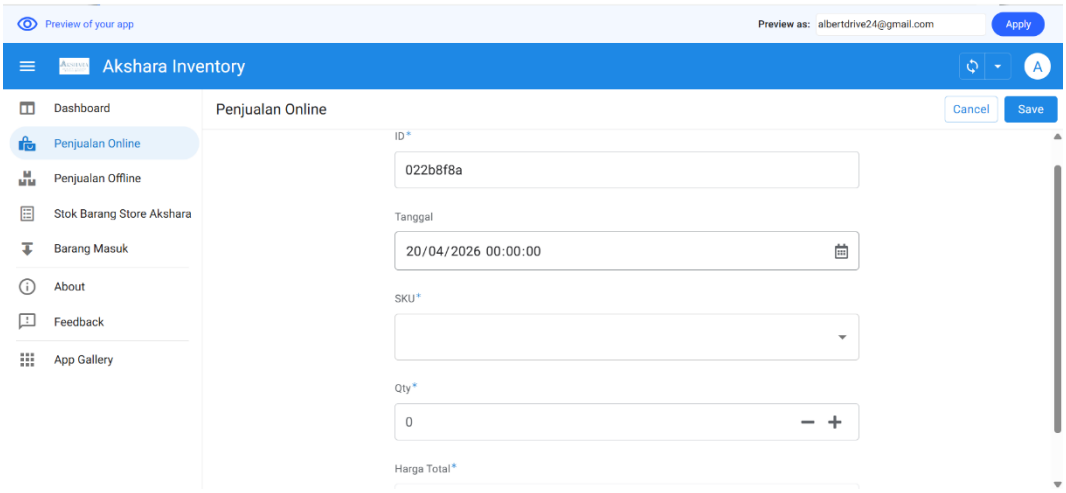


Figure 2. Inventory Monitoring Dashboard.



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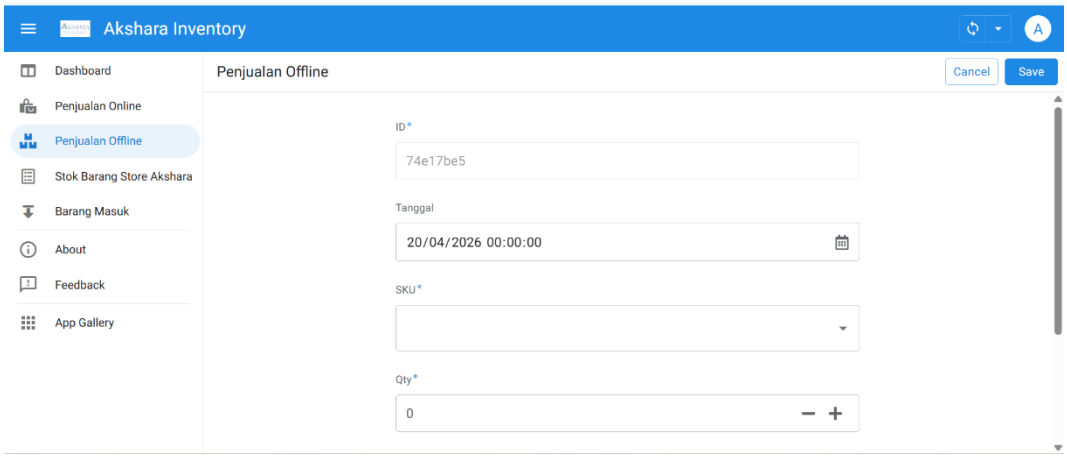


Figure 3. Online and Offline Sales Forms.

User Acceptance Testing Result

User acceptance testing was conducted using a questionnaire distributed to application users. The questionnaire consisted of seven indicators related to ease of use, feature accessibility, input process, stock information accuracy, data storage, monitoring effectiveness, and overall feasibility. The result is shown in Table 1.

No	Indicator	Score	Percentage
1	The application is easy to understand and use	48/50	96%
2	Menus and features are easy to access	45/50	90%
3	Inventory data input runs smoothly	45/50	90%
4	The application displays accurate inventory information	47/50	94%
5	Inventory data are stored neatly and can be accessed again	44/50	88%
6	The application helps monitor stock more efficiently	46/50	92%
7	The application is feasible for operational activities	45/50	90%
Total	**Overall feasibility**	**320/350**	**91.43%**

Table 1. User Acceptance Testing Result

The total score obtained from the user acceptance testing was 320 out of the expected score of 350, resulting in a feasibility percentage of 91.43%. Based on the feasibility criteria, this result is categorized as highly feasible.

Media Expert Validation Result

The application was also validated by one media expert, Sabo Hermawan, S.Kom., M.Si. The validation measured three aspects: usability, functionality, and visual communication. The result is shown in Table 2.

No	Aspect	Items	Score	Percentage
1	Usability	4	17/20	85%
2	Functionality	6	27/30	90%
3	Visual Communication	4	18/20	90%
Total	**Overall feasibility**	**14**	**62/70**	**88.57%**

Table 2. Media Expert Validation Result

The total score from the media expert validation was 62 out of 70, with a feasibility percentage of 88.57%. This result indicates that the application is highly feasible in terms of usability, functionality, and visual communication.

DISCUSSION

The results show that the AppSheet-based inventory level system application can address the main problems identified in the analysis stage. Before the application was developed, PT Java Akshara relied on separate spreadsheets and informal communication, which caused delayed stock updates and unclear stock separation. After the application was implemented, inventory data could be recorded through structured forms, stored in an integrated Google Sheets database, and monitored through the AppSheet dashboard.

The separation of online and offline stock is one of the most important contributions of the application. This feature enables users to record transactions based on sales channels and prevents stock data from being mixed. The automatic stock reduction mechanism also reduces the need for manual calculations, thereby minimizing human error and improving data consistency.

The user acceptance testing result of 91.43% indicates that users perceived the application as easy to use, useful for monitoring stock, and feasible for operational activities. This result is consistent with the purpose of using AppSheet as a no-code platform, namely to provide a practical application that can be operated by users without advanced programming knowledge.

The media expert validation result of 88.57% also supports the feasibility of the application. The highest scores were obtained in functionality and visual communication, showing that the application features functioned according to inventory management needs and that the interface was clear enough for users. The expert also provided suggestions, including the improvement of dashboard menus, stock menus, online and offline sales menus, automatic total price calculation, SKU dropdown, and automatic discount calculation. These suggestions were used as the basis for application refinement.

Overall, the developed application supports operational digitalization at PT Java Akshara. It improves inventory data organization, accelerates stock monitoring, supports more accurate reporting, and provides management with better information for decision-making. However, the application still has limitations, including dependence on internet connectivity, limited testing scale, and the absence of some advanced features such as stock minimum notification and integrated return management.

CONCLUSION

This study successfully developed an AppSheet-based inventory level system application for PT Java Akshara using the ADDIE development model. The application includes key features such as master product management, online sales recording, offline sales recording, stock-in recording, automatic stock reduction, automatic total price calculation, and inventory monitoring dashboard.

The implementation result shows that the application can support inventory recording and monitoring more effectively than the previous manual process. The application separates online and offline stock, stores data in an integrated database, and provides stock information that can be accessed through smartphones and laptops.

The feasibility testing shows that the application is highly feasible. The user acceptance testing obtained a score of 91.43%, while the media expert validation obtained a score of 88.57%. These results indicate that the application is accepted by users and considered feasible in terms of usability, functionality, and visual communication.

For future development, the application can be improved by adding return management, stock adjustment, minimum stock notification, more interactive dashboard visualization, and broader user testing. These improvements are expected to make the system more comprehensive and suitable for larger-scale operational use.

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