ITEJ
Information Technology Engineering Journals
eISSN : 2548-2157

Url : https://itej.uinssc.ac.id
Email : itej@syekhnurjati.ac.id

SCM For Monitoring Stock And Demand Online Shop Products

Nadrah Umi Kalsum
Information System
Royal University
Kisaran, Indonesia
nadrahumi15@gmail.com

Riki Andri Yusda
Computer System
Royal University
Kisaran, Indonesia
rikiandriyusda@gmail.com

Sumantri
Information System
Royal University
Kisaran, Indonesia
sumantrisuherman35@gmail.com

Abstract— The rapid growth of e-commerce has increased the complexity of managing product inventory and responding to dynamic customer demand. Ineffective coordination between stock availability and demand forecasting can lead to stock shortages, overstock conditions, delayed order fulfillment, and reduced customer satisfaction. This study aims to develop and implement a Supply Chain Management (SCM) system for monitoring stock levels and demand for online shop products in real time. The proposed system integrates inventory management, demand tracking, and reporting functions to provide accurate and timely information that supports operational decision-making. The system records product inflows and outflows, monitors current stock conditions, analyzes demand trends based on transaction data, and generates informative reports to assist managers in planning procurement and replenishment activities. The implementation results demonstrate that the SCM-based monitoring system improves inventory visibility, enhances responsiveness to fluctuations in customer demand, and supports more effective stock control. Consequently, the proposed approach contributes to improving supply chain performance, minimizing inventory-related risks, and increasing the efficiency and competitiveness of online retail businesses.

Keywords—Supply chain management, stock monitoring, product demand, information systems, online shop.

Article info: Date Submitted: 14/03/2026 | Date Revised: 20/04/2026 | Date Accepted: 11/06/2026
This is an open access article under the CC BY-SA license

I. INTRODUCTION

In today's increasingly competitive business environment, businesses that succeed in winning the market competition usually pay special attention to their marketing strategies [1]. The development of digital technology has brought about major transformations in the business world, especially in the online shopping sector [2] [3]. One business sector that has experienced significant growth is the Muslim fashion business, particularly syar'i clothing. Increased public awareness of Islamic values and the growing trend of modest clothing have driven demand for syar'i clothing products in various regions, including Kisaran.

However, behind this convenience lies a new challenge related to the efficient management of stock and product demand from various suppliers.

A common problem is the imbalance between stock availability and market demand [4]. Olshop Syar'i Kisaran faces difficulties in accurately monitoring and managing stock, and in procuring stock for Olshop Syar'i Kisaran. Many online stores run out of stock on products with high demand, while on the other hand experiencing a backlog of goods on

less popular products [5]. Low operational efficiency due to the time-consuming process of stock management hinders work [6]. This condition not only hinders capital turnover, but also reduces customer satisfaction, because product availability is not always in line with actual market needs [7]. Monitoring is a set of elements that interact with each other as a whole to perform a supervisory function with the aim that every process that is initiated runs according to established procedures [8].

In this context, the implementation of Supply Chain Management (SCM) becomes very important [9]. SCM is a systematic approach that aims to integrate all activities in the supply chain, from suppliers and distribution to end consumers, in order to create an efficient flow of goods, information, and finance [10] [11]. For online shops selling syar'i fashion in Kisaran, SCM can help monitor product stock from each supplier in real-time, manage procurement cycles, and estimate demand based on historical sales data [12]. Supply Chain Management is a series of processes and activities in production, starting from obtaining raw materials from suppliers, the value-added process that transforms raw materials into finished goods, the storage of goods, to the delivery of finished goods to retailers and consumers [13].

Without an integrated SCM system, businesses often find it difficult to monitor product availability, analyze the most popular products, and determine the right time to restock [14]. Errors in estimating demand can lead to two major risks, namely stockouts, which result in lost sales opportunities and consumer trust, and overstocking, which increases storage costs and slows down capital turnover [15].

Through the effective implementation of SCM, online shops can build a stock and product demand monitoring system that connects the purchasing, warehouse, and online sales departments [16]. Data from suppliers can be integrated into a single system, giving businesses a comprehensive overview of which products sell quickly, customer purchasing trends, and the stock of each supplier that needs to be updated [17]. In addition, the implementation of SCM also strengthens the relationship between stores and suppliers. Good coordination allows stores to procure products on time, avoid delivery delays, and ensure stock availability when there is a surge in demand, for example, ahead of Ramadan or major promotional seasons [18].

The integration of digital technology in SCM, such as inventory management systems, web-based stock dashboards, and automated sales analysis, allows online shop owners to monitor stock conditions from various suppliers on a single platform. This enables businesses to more quickly adjust their promotional and sales strategies to products that are currently trending in the market [19].

From a business perspective, SCM not only improves operational efficiency and stock data accuracy, but also has an impact on increasing customer satisfaction [20]. Products that are always available, fast ordering processes, and responsive service will increase consumer loyalty to the syar'i fashion online shop in Kisaran.

Previous studies have implemented Supply Chain Management (SCM) systems for inventory monitoring and distribution optimization in various business sectors [4], [14], [15] and [19]. However, most prior research primarily focused on general inventory recording systems, ERP integration, or distribution tracking without emphasizing demand-based monitoring and real-time synchronization between sales trends and supplier stock availability. Furthermore, existing studies rarely address SCM implementation specifically in small-scale online fashion businesses that rely on multiple suppliers with dynamic demand patterns.

The novelty of this research lies in the development of a web-based SCM system that integrates stock monitoring, supplier data management, and demand tracking within a unified dashboard specifically tailored for an online syar'i fashion business. Unlike previous SCM implementations that mainly concentrate on stock recording, this system incorporates monthly sales trend analysis, supplier-based stock categorization, and demand

monitoring features to support procurement decision-making. The system enables business owners to identify high-demand products, monitor supplier stock contributions, and reduce the risk of overstock and stockouts through structured data analysis.

Thus, this study contributes by proposing an applied SCM model designed for multi-supplier online shops, emphasizing demand-driven stock control and real-time monitoring integration. The research aims to design and implement a web-based SCM system that improves stock accuracy, procurement responsiveness, and operational efficiency at Olshop Syar'i Kisaran.

Based on the above description, the implementation of Supply Chain Management (SCM) is a strategic solution for syar'i fashion online shops in Kisaran in facing the dynamics of demand and inventory management from various suppliers.

II. METHODOLOGY

This study used several stages, as shown in Figure 1 below.

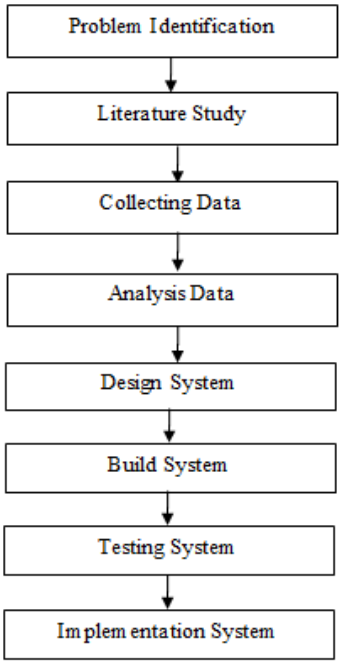

Figure 1. Research Method

A. Problem Identification

Problem identification is the process of determining the core issues of a study. Here, the author found several problems, including frequent accumulation of goods that are less in demand. Difficulties in accurately monitoring and managing stock.

B. Literature Study

A literature study was conducted to obtain a relevant, accurate, and supportive theoretical basis for the analysis of supply chain management at Olshop Syar'i Kisaran. This study covers the main theories related to supply chain management, inventory management, supplier selection, and distribution systems.

C. Collecting Data

Data collection was conducted to obtain complete, accurate, and relevant information related to the supply chain process at Olshop Syar'i Kisaran. All procedures were systematically arranged so that the data obtained could support empirical research analysis. Data collection used three main methods, namely observation, interviews, and documentation.

D. Analysis Data

Data analysis was conducted to process and interpret all information obtained through observation, interviews, and documentation. The analysis stages were designed to gain an in-depth understanding of how the supply chain process works at Olshop Syar'i Kisaran and to identify factors that affect its smooth operation.

E. Design System

Here is the inventory management system design for Olshop Syar'i Kisaran using PHP and MySQL.

F. Building System

The process of creating an SCM application based on a system design built using Visual Studio Code editor.

G. Testing System

System testing was conducted using the blackbox method, which is a testing technique that focuses on system functions without looking at the program code inside. This testing aims to ensure that each feature works according to user requirements and produces the correct output based on the input provided.

H. Implementation System

System implementation is the stage of realizing the design that has been created into an application that functions according to operational needs. At this stage, all system components, from the interface and program logic to the database, are integrated so that they are ready for use by users in the Olshop Syar'i Kisaran environment.

III. RESULT AND DIISCUSSION

A. Analysis Data

The data input requirements for the designed system are product data, sales data, product or menu data, customer data, supplier data, user data, and reports. This data is then converted into data that can be interconnected in a website-based system. The initial data is data on products sold, which can be seen in Table 1 below.

Table 1. Product Data

Mounth	Syar'i Gamis A	Syar'i Gamis B	Set Syar'i Khimar + Dress	Black Abaya	Long Sleeve Shirt	Short Sleeve Shirt	Sirwal Pants	Men Muslim Set
January	32	27	18	21	26	22	18	12
February	28	25	20	19	24	20	17	11
Maret	35	30	22	24	28	24	19	13
April	40	33	26	28	33	27	22	15
May	45	38	29	31	37	30	25	18
June	42	36	27	30	35	29	23	17

July	38	34	25	28	32	26	22	16
August	41	37	28	29	34	28	23	17
September	39	35	26	27	33	27	22	16
October	44	40	30	33	36	30	24	18
November	47	42	32	35	38	32	26	19
December	55	48	36	40	45	38	30	22

B. Design System

A use case diagram is a diagram that presents the interaction between use cases and actors. Actors can be people, equipment, or other systems that interact with the system being built. The following is the design of a use case diagram for the SCM system that was created.

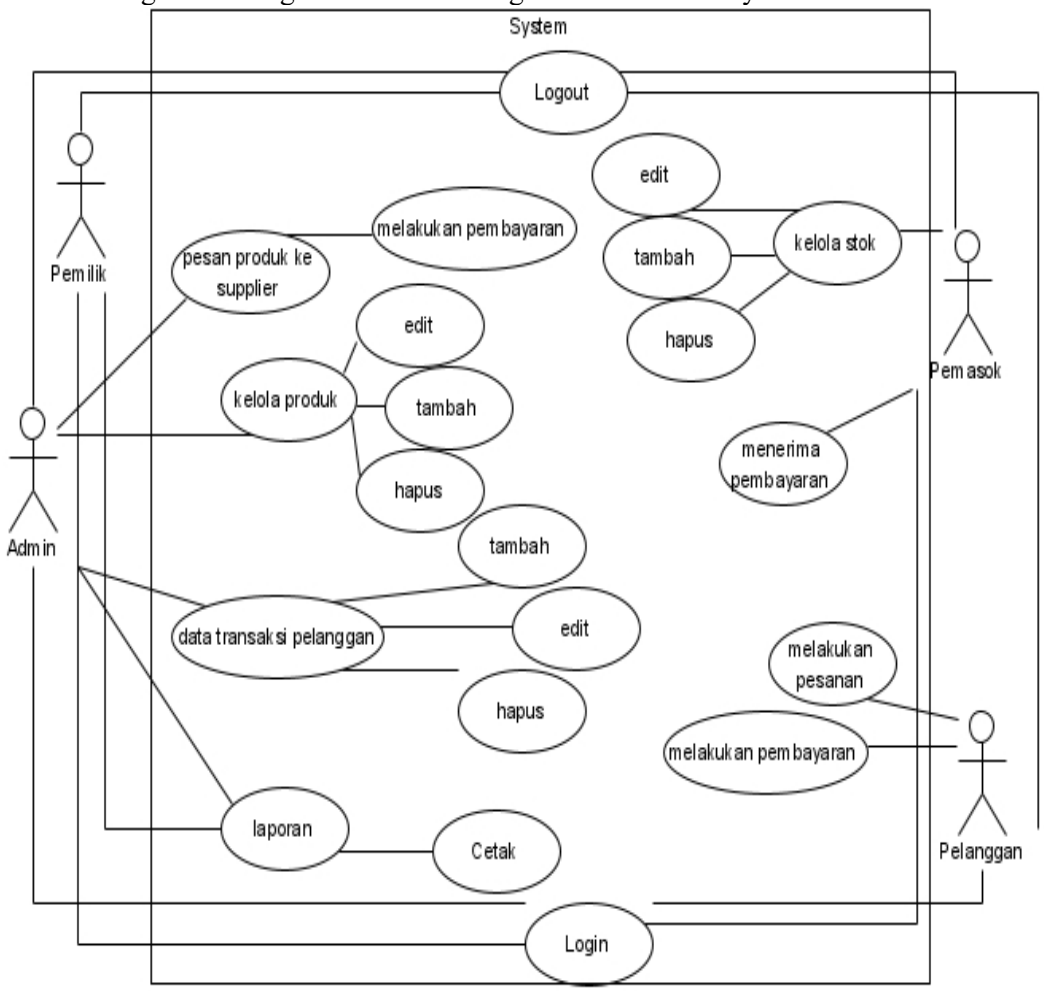

Figure 2. Use Case Diagram

C. Implementation System

1. Main Page

In the era of digital commerce, online shopping platforms have become an effective medium for connecting businesses with customers while providing convenience, accessibility, and efficiency in the purchasing process. To support the promotion and distribution of modest fashion products, Olshop Syar'i Kisaran offers a user-friendly web-based platform designed to showcase various products and facilitate

customer interactions. The homepage interface, as illustrated in the following figure, presents the identity of the store along with essential navigation menus that enable visitors to explore products, learn more about the business, and access the login feature seamlessly.

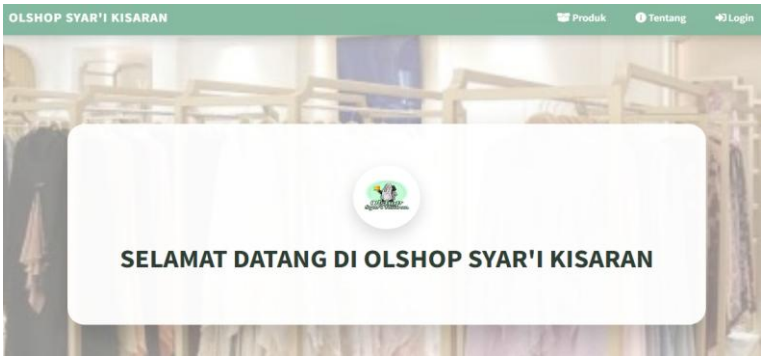

Figure 3. Main Page

2. Login Page

The login interface serves as the primary access point to the online shop system, ensuring that only authorized users can utilize the features provided by the application. Through this page, registered users can securely authenticate themselves by entering their username and password before accessing the system. In addition, the interface provides a customer registration feature that allows new users to create an account independently, thereby facilitating broader access to the platform. The inclusion of a password visibility option further enhances usability by helping users verify the accuracy of their input during the login process. Overall, this interface is designed to provide a balance between security, accessibility, and user convenience in supporting online shopping activities. The implementation of the login interface is presented in Figure 4.

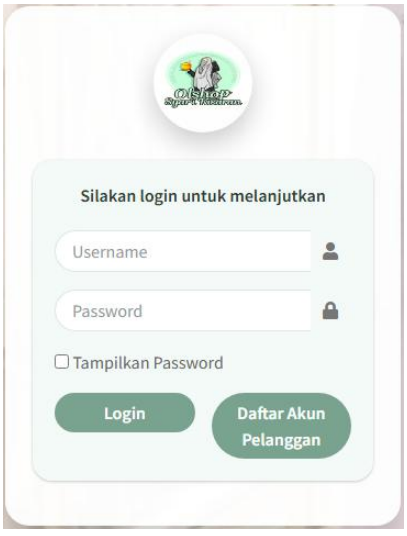

Figure 4. Login Page

3. Form Admin Page

The System Admin form is used to manage product data, incoming product data, outgoing product data, supplier data, customer data, user data, and bank account data. It handles sales transactions, supplier order transactions, and customer incoming transactions. It prints product reports, incoming product reports, supplier reports, customer reports, and admin order reports. To ensure effective management of business operations, the system provides an administrative dashboard that enables administrators to monitor and control various activities within the online store. The dashboard integrates essential information, including stock availability alerts, summaries of products and transactions, user statistics, and graphical representations of inventory levels. Through this interface, administrators can efficiently manage product data, suppliers, customers, financial records, and transaction processes, thereby supporting timely decision-making and improving the overall operational performance of Olshop Syar'i Kisaran. The following figure illustrates the main dashboard of the administrator panel.

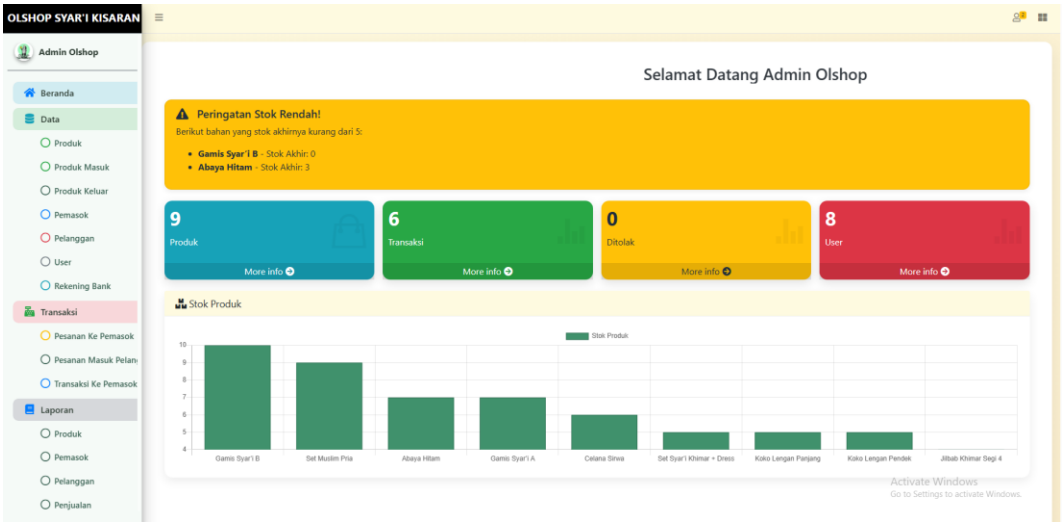

Figure 5. Form Admin Page

4. Incoming Product Page

The incoming product form displays incoming product data or products ordered from suppliers on Olshop Syari Kisaran.

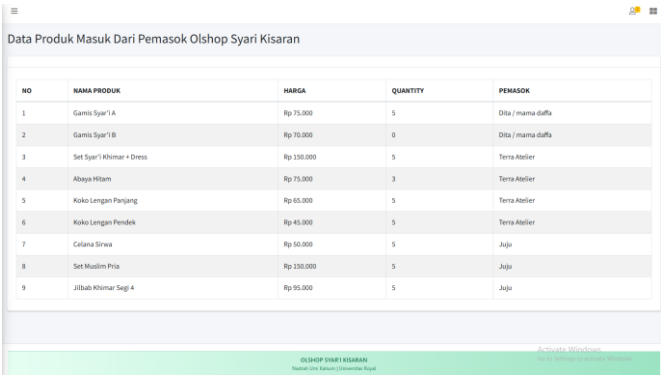

Figure 6. Incoming Product Page

5. Consumer Page

Customer page form where customers can purchase items available in the store.

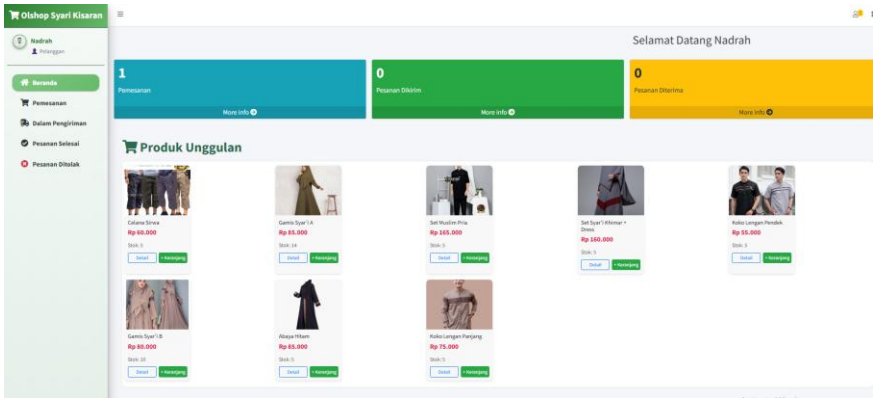

Figure 7. Consumer Page

D. User Evaluation Results (Before and After System Implementation)

To measure the effectiveness of the developed SCM system, a user survey was conducted involving 5 respondents (admin and business owner). The assessment used a Likert scale (1–5), where 1 = very poor and 5 = very good. The evaluation focused on efficiency, data accuracy, ease of monitoring, and decision-making support.

Table 2. User Survey Results Before and After SCM Implementation

Indicator	Before System	After System	Improvement
Stock Monitoring Accuracy	2.6	4.4	+69%
Procurement Decision Speed	2.8	4.5	+61%
Data Recording Efficiency	2.4	4.6	+92%
Ease of Demand Analysis	2.2	4.3	+95%
Overall User Satisfaction	2.8	4.5	+61%

The survey results indicate a significant improvement after the implementation of the SCM system. The highest increase occurred in demand analysis capability (95%), showing that the system effectively supports data-driven procurement decisions. Data recording efficiency improved by 92%, reflecting reduced manual errors and faster administrative processes. Overall user satisfaction increased from 2.8 to 4.5, demonstrating that the system successfully enhances operational efficiency and monitoring performance at Olshop Syar'i Kisaran.

IV. CONCLUSION

There are several conclusions that can be drawn from the results of this study, namely that the SCM information system that was developed is capable of assisting the data management process in a more structured and computerized manner compared to the manual system that was previously used, and that the system that was designed can reduce data recording errors and increase the time efficiency and performance of users in carrying out administrative activities.

REFERENCES

[1] M. D. Firmansyah and H. Y. Zhang, “Analisis Faktor Pengaruh Terhadap Kepercayaan Manajemen Penggunaan Basis Data Dalam Layanan Bisnis UMKM

Indonesia," *RABIT J. Teknol. dan Sist. Inf. Univrab*, vol. 10, no. 1, pp. 139–157, 2025, doi: https://doi.org/10.36341/rabit.v10i1.5634.

[2] F. Adam, L. Probo Sumirat, and B. Santoso, "Pengembangan Sistem Informasi Manajemen Stok Berbasis Website Pada Prop Noodle Bar Manyar," *Rabit J. Teknol. dan Sist. Inf. Univrab*, vol. 10, no. 1, pp. 158–167, 2025, doi: 10.36341/rabit.v10i1.5710.

[3] L. Nur Anisa, S. Andawiah, D. Putra Utama, and I. Afan, "Implementasi Supply Chain Management Untuk Meningkatkan Kinerja Logistik Perusahaan," *J. Masharif al-Syariah J. Ekon. dan Perbank. Syariah*, vol. 1o, no. 1, pp. 460–471, 2025, doi: https://doi.org/10.30651/jms.v10i1.25469.

[4] C. Fuad Lubis, Z. Azhar, and R. Fauziah, "Penerapan Metode E-SCM Dalam Upaya Optimalisasi Distribusi Produk Mie Pada UD. Mie Ferri," *JUTSI (Jurnal Teknol. dan Sist. Informasi)*, vol. 4, no. 1, pp. 72–82, 2024.

[5] A. R. Ramadhan and M. Valentino, "Implementasi Sistem Manajemen Persediaan Berbasis Web Untuk Efisiensi Stok Barang," *Bul. Ilm. Ilmu Komput. …*, vol. 2, no. 1, pp. 96–107, 2024, [Online]. Available: http://jurnalmahasiswa.com/index.php/biikma/article/view/1136%0Ahttps://jurnalmahasiswa.com/index.php/biikma/article/download/1136/701

[6] R. H. Wiarso and T. Anwar, "IMPLEMENTASI FRAMEWORK TAILWINDCSS PADA FRONTEND WEBSITE SUPPLY CHAIN MANAGEMENT CV . MARVELINDO UTAMA," *JATI (Jurnal Mhs. Tek. Inform.*, vol. 8, no. 4, pp. 7561–7569, 2024.

[7] M. Wisnu Aji Saputra and A. Udi Firmansyah, "Implementasi Supply Chain Management (SCM) Untuk Mendukung E-Commerce Pada PT. Colombus Berbasis Web," *J. Inf. dan Komput.*, vol. 11, no. 1, pp. 149–155, 2023.

[8] F. Nur Sa'adah and A. Voutama, "Perancangan Aplikasi Penjualan Fashion Dan Aksesoris Berbasis Web Pada Toko Fitrin," *JATI (Jurnal Mhs. Tek. Inform.*, vol. 7, no. 2, pp. 1364–1371, 2023, doi: 10.36040/jati.v7i2.6809.

[9] C. Khotantri, V. Wijaya, and S. Nasution, "Perancangan Sistem Informasi Pemesanan Buah Berbasis Web Menggunakan Supply Chain Management Pada PT. Sukses Jaya Segar Sakti Medan," *J. Mahanjana Inf.*, vol. 7, no. 2, pp. 143–150, 2023, [Online]. Available: http://e-journal.sari-mutiara.ac.id/index.php/7

[10] F. Z. Nisa, S. F. A. Wati, A. Rahmadani, A. D. Setiawan, and M. P. S, "Penerapan Supply Chain Management Literature Study : Strategies and Challenges in Implementing," 2023.

[11] P. Mutiara, "Analisis Supply Chain Pengangkutan Kelapa Sawit menggunakan Kapal Tanker di PT. Bhaita Jaya Samudra," *J. Manag. Ind. Eng. Sekol. Tinggi Teknol. Nusant. Lampung*, vol. 2, pp. 31–45, 2023.

[12] D. A. G. Pratiwi, G. A. A. Putri, and I. P. A. E. Pratama, "Implementasi Supply Chain Management Menggunakan Software Odoo (Studi Kasus Perusahaan Furniture)," *JITTER J. Ilm. Teknol. dan Komput.*, vol. 3, no. 2, p. 1020, 2022, doi: 10.24843/jtrti.2022.v03.i02.p01.

[13] R. Wahdini, T. I. Mahira, and S. Aisyah, "Pengaruh Supply Chain Management Indomie Terhadap Keloyalitas Konsumen (Studi: Pedagang Grosir Tradisional Makanan dan Minuman Ringan Tradisional di Kabupaten Mandailing Natal)," *ADI Bisnis Digit. Interdisiplin J.*, vol. 3, no. 2, pp. 56–59, 2022, doi: 10.34306/abdi.v3i2.772.

[14] I. N. Sari, E. Kurniawan, and T. Christy, "Penerapan SCM Untuk Pendistribusian Dan Pengelolaan Stok Barang Berbasis Web Pada PT.Indofood CBP Sukses Makmur Tbk. Cabang Kisaran," *JUTSI (Jurnal Teknol. dan Sist. Informasi)*, vol. 2, no. 3, pp. 237–244, 2022, doi: 10.33330/jutsi.v2i3.1922.

[15] S. W. Nasution, N. Manurung, and E. Rahayu, "Penerapan Supply Chain Management (SCM) Dalam Pemantauan Stok Barang Berbasis Web," *Build.*

Informatics, Technol. Sci., vol. 4, no. 2, pp. 361–368, 2022, doi: 10.47065/bits.v4i2.1781.

[16] A. Fitrian, K. Kwek, L. Then, and S. Arifin, "Analisis Penerapan ERP Dan SCM PT. Indofood Sukses Makmur," *J. Inov. Penelit.*, vol. 3, no. 1, pp. 4403–4414, 2022.

[17] A. Indri, Nurwati, and N. Marpaung, "Analisis Metode Supply Chain Management dalam Persediaan Bahan Baku dan Distribusi Kripik pada UD. Bu Sri Berbasis Web," *J. Tek. Inform.*, vol. 3, no. 2, pp. 331–339, 2022, [Online]. Available: https://doi.org/10.20884/1.jutif.2022.3.2.225

[18] M. Basirun, H. Saputra, and P. Putri, "Penerapan SCM Dalam Upaya Pengelolaan Stock Bahan Baku Produksi Tahu Pada Pabrik Tahu Helen," *J-Com (Journal Comput.*, vol. 2, no. 3, pp. 211–218, 2022.

[19] S. Riyadi and A. Manan, "Sistem Informasi Distribusi Vape Pada Grandline Vapor Dengan Metode Supply Chain Management Dan Inventory Management Berbasis Website," *EJECTS E-Journal Comput. Technol. Informations Syst.*, vol. 02, no. 01, pp. 1–7, 2022.

[20] N. M. Dwi Alfino, W. Safitri, and A. Izzaty Jamhur, "Implementasi Supply Chain Management Pada Toko Grosir dan Eceran Berbasis Web (Studi Kasus : Toko Anugrah)," *J. Sains Inform. Terap.*, vol. 1, no. 1, pp. 34–38, 2022, doi: 10.62357/jsit.v1i1.46.