DECISION SUPPORT SYSTEM METHODS FOR E-COMMERCE PLATFORM SELECTION : A SYSTEMATIC LITERATURE REVIEW

Kanaya Deva Cahyarani[1]*, Azzahra Rahmadani[2], Randy Yufid Dika[3], Ganes Dwi Febrianti[4], Pramudya Abimanyu[5]
[1,2,3,4,5]*Universitas Pembangunan Nasional Veteran Jawa Timur (Indonesia)*
*) *email: 22082010165@studennt.upnjatim.ac.id*

Abstract

The rapid expansion of the digital economy has intensified competition among e-commerce platforms, creating a complex decision-making environment for consumers. To address this challenge, this study conducts a Systematic Literature Review (SLR) to evaluate the application of Decision Support System (DSS) methods. Analyzing 20 selected peer-reviewed articles, the review identifies Simple Additive Weighting (SAW) and Analytical Hierarchy Process (AHP) as the dominant Multi-Criteria Decision-Making (MCDM) approaches, favored for their computational efficiency and structural capability. The findings confirm that these methods effectively mitigate user subjectivity by transforming qualitative preferences into rational, quantitative rankings. Furthermore, the analysis establishes that platform selection is driven by a holistic balance of economic factors (pricing, fees), service quality (delivery speed), and technical usability (security, interface). These insights provide a robust framework for optimizing consumer decision-making and highlight a growing trend toward hybrid models and AI integration.

Keywords: Decision Support System, E-commerce Selection, Systematic Literature Review

1. INTRODUCTION

Decision Support Systems (DSS) are essential for navigating Indonesia's massive e-commerce market, valued at USD 68.5 billion in 2024 (Standard Insights, 2023). DSS is an interactive, computer-based system intended to help decision-makers use data and models to identify and solve problems and make decisions (Turban, 2005). In this context, stakeholders must choose between competing platforms like Shopee, Tokopedia, and Lazada, a process that is inherently complex and requires balancing conflicting criteria such as service quality, transaction fees, and security. Relying on subjective judgment rather than systematic analysis increases the risk of operational inefficiency and poor user experience..

Recent studies highlight how different DSS methodologies yield varied outcomes based on specific contexts. For instance, the AHP-TOPSIS method was utilized to rank Shopee as the top choice for SMEs in Tuban (Muqtadir et al., 2022), while the COPRAS method with entropy weighting was employed to minimize bias among leading platforms (Citra et al., 2024). Conversely, research using the

Weighted Product method found Tokopedia to be the preferred choice for university students (Sim et al., 2023). These discrepancies emphasize that ranking results are highly sensitive to method selection, weighting criteria, and target demographics, necessitating a deeper comparative analysis.

This study conducts a systematic literature review (SLR) to examine DSS applications in the Indonesian e-commerce sector. By synthesizing existing research, this study aims to provide evidence-based guidance for researchers and practitioners in selecting the most reliable methodologies. This contribution addresses the current lack of comprehensive synthesis regarding the effectiveness and applicability of various DSS methods within Indonesia's unique digital ecosystem.

2. METHODOLOGY

This study employs a Systematic Literature Review (SLR) to synthesize findings on Decision Support System (DSS) methods for e-commerce platform selection. Unlike narrative reviews, this approach follows a structured protocol to ensure transparency, reproducibility, and rigorous evaluation of prior studies (Ramayanti et al., 2025)(Sauer & Seuring, 2023). The process encompasses five distinct stages: research question formulation, systematic searching, screening via inclusion/exclusion criteria, quality assessment, and data extraction (Norlita et al., 2023).

2.1 Research Question

The study is guided by three primary research questions (RQs) that define the scope of the review:

1. RQ1: What decision support system (DSS) methods are most commonly used for selection problems in e-commerce platforms?
2. RQ2: Has the decision support system method used been proven effective in selecting the best e-commerce platform?
3. RQ3: What criteria are commonly used in DSS-based selection of e-commerce platforms?

These research questions serve as the primary reference for all subsequent stages of the SLR process.

2.2 Searching Literature

Literature was retrieved using Google Scholar to ensure broad coverage of peer-reviewed articles. The search utilized specific keywords including “Decision Support System”, “E-commerce platform selection”, “DSS e-commerce”.

2.3 Inclusion and Exclusion Criteria

To ensure that only relevant and high-quality studies are included in the review, inclusion and exclusion criteria are established prior to the literature

screening process. These criteria are applied consistently to all identified studies during the selection stage.

The inclusion criteria for this study are as follows:

- The study is published as a journal article or conference proceeding.
- The study discusses decision support system (DSS) methods.
- The study focuses on the selection or evaluation of e-commerce platforms in Indonesia.

The exclusion criteria applied in this study include:

- Non-academic publications.
- Studies that do not discuss DSS methods.
- Studies that are not related to e-commerce platform selection.
- Duplicate publications.

2.4 Quality Assessment

Selected studies underwent a quality assessment to evaluate methodological soundness. Criteria included the clarity of research objectives, adequacy of method descriptions, and consistency of results. Studies failing to meet these standards were excluded.

2.5 Data Collection

Finally, data were systematically extracted from the qualified studies, focusing on the applied DSS methods, selection criteria used, and the reported effectiveness of the solutions to facilitate comparative analysis.

3. FINDINGS AND DISCUSSION

This section discusses the main findings of the Systematic Literature Review related to decision support system methods for e-commerce platform selection, as analyzed based on the formulated research questions.

Table 1. The results of the Search Process include Journal Search and Grouping.

Number	Article	Journal
1	(Sinaga & Susilawati, 2025)	Jurnal Informatika dan Teknik Elektro Terapan
2	(Fransiska, 2023)	Jurnal PROSISKO : Jurnal Pengembangan & Observasi Sistem Komputer
3	(Fitria & Gunawan, 2023)	Jurnal Riset Matematika
4	(Sakti et al., 2025)	JATI (Jurnal Mahasiswa Teknik Informatika)
5	(Pradana et al., 2025)	JATI (Jurnal Mahasiswa Teknik Informatika)
6	(Putra et al., 2024)	JATI (Jurnal Mahasiswa Teknik Informatika)
7	(Wijianto, 2021)	Jurnal Informatics and Computer Engineering Journal
8	(Maulana et al., 2025)	JATI (Jurnal Mahasiswa Teknik Informatika)
9	(Prayitno et al., 2024)	Sunan Kalijaga: Islamic Economics Journal
10	(Muqtadir et al., 2022)	Journal of Applied Science and Technology
11	(Aprilia, 2023)	G-Tech: Jurnal Teknologi Terapan
12	(Tsaniya & Sulaiman, 2021)	MATHunesa: Jurnal Ilmiah Matematika

Number	Article	Journal
13	(Mahendra, 2021)	JOURNALOFTECH-E
14	(Citra et al., 2024)	Jurnal Ilmiah Informatika Dan Ilmu Komputer (JIMA-ILKOM)
15	(Hardini et al., 2023)	JURNAL PENDIDIKAN DAN APLIKASI INDUSTRI
16	(Wiriadikusumah & Permana, 2021)	Edsence: Jurnal Pendidikan Multimedia
17	(Wahyuni et al., 2025)	Proximal: Jurnal Penelitian Matematika Dan Pendidikan Matematika
18	(Saputra & Purnomo, 2024)	JATISI (Jurnal Teknik Informatika dan Sistem Informasi)
19	(Anastasya et al., 2023)	INFOMATEK: Jurnal Informatika, Manajemen dan Teknologi
20	(Ahlamiyah et al., 2022)	Bianglala Informatika

After applying the inclusion and exclusion criteria, a total of 20 articles were selected for further quality assessment and analysis.

Table 2. Quality Assessment Results

Number	Author	Journal Title	QA1	QA2	QA3	Result
1	(Sinaga & Susilawati, 2025)	Sistem Pendukung Keputusan Pembelian Laptop Gaming Di E-Commerce Dengan Metode Simple Additive Weighting	1	1	1	V
2	ransiska, 2023)	Sistem Pendukung Keputusan Menentukan E-Commerce Terbaik Menggunakan Metode Weighted Product	1	1	1	V
3	(Fitria & Gunawan, 2023)	Penerapan Metode Moosra Pada Sistem Pendukung Keputusan Pemilihan E-Commerce Dalam Pembelian Produk Fashion	1	1	1	V
4	(Sakti et al., 2025)	Analisis Perbandingan Platform E-Commerce Dengan Metode Simple Additive Weighting (Saw)	1	1	1	V
5	(Pradana et al., 2025)	Penilaian E-Commerce Terbaik Menggunakan Metode Kombinasi Smart Dan Topsis Berbasis Web	1	1	1	V
6	(Putra et al., 2024)	Penerapan Metode Promethee Dalam Sistem E-Commerce Berbasis Website Untuk Menentukan Produk Unggulan Studi Kasus : Cv Trindo Jaya, Desa Jatimulyo, Kecamatan	1	1	1	V

Number	Author	Journal Title	QA1	QA2	QA3	Result
		Lowokwaru, Kota Malang				
7	(Wijianto, 2021)	Analisa Pemilihan Minat E-Commerce Berdasarkan Konsumen Menggunakan Metode Analytical Hierarchy Process (Ahp)	1	1	1	√
8	(Maulana et al., 2025)	Penggunaan Ahp Dalam Sistem Pengambilan Keputusan Pemilihan Marketplace (Studi Kasus : Marketplace E-Commerce Di Era Digital)	1	1	1	√
9	(Prayitno et al., 2024)	Analisis Pemilihan Platform E-Commerce Menggunakan Metode Ahp : Studi Kasus Perilaku Konsumen Online	1	1	1	√
10	(Muqtadir et al., 2022)	Decision Support System Of Determining E-Commerce With The Topsis And Comparation With Ahp For Umkm In The Tuban Regency Area	1	1	1	√
11	(Aprilia, 2023)	Pemilihan Pembelanjaan Online Dengan Metode Fuzzy Multiple Atrribute Decision Making	1	1	1	√
12	(Tsaniya & Sulaiman, 2021)	Aplikasi Intuitionistic Fuzzy Multisets Dalam Pemilihan E-Commerce Terbaik	1	1	1	√
13	(Mahendra, 2021)	Implementation Of The Fucom-Saw Method On E-Commerce Selection Dss In Indonesia	1	1	1	√
14	(Citra et al., 2024)	Sistem Pendukung Keputusan Pemilihan E-Commerce Menggunakan Pembobotan Entropy Dan Copras	1	1	1	√
15	(Hardini et al., 2023)	Pemilihan E-Commerce Menggunakan Analytical Hierarchy Process (Ahp) Sebagai Sistem Pendukung Keputusan	1	1	1	√

Number	Author	Journal Title	QA1	QA2	QA3	Result
16	(Wiriadikusumah & Permana, 2021)	Sistem Pendukung Keputusan Pemilihan Platform E-Commerce Dengan Metode Simple Additive Weighting	1	1	1	√
17	(Wahyuni et al., 2025)	Implementasi Metode Ahp-Moora Dan Ahp-Saw Pada Sistem Pendukung Keputusan Pemilihan E-Commerce Terbaik	1	1	1	√
18	(Saputra & Purnomo, 2024)	Spk Best E-Commerce Platform Recommendation Using Method (Saw)	1	1	1	√
19	(Anastasya et al., 2023)	Implementasi Metode Weighted Product Dalam Menentukan E-Commerce Terbaik	1	1	1	√
20	(Ahlamiyah et al., 2022)	Komparasi Pemilihan Platform Belanja Online Dengan Menggunakan Metode Simple Additive (Saw) Dan Profile Matching	1	1	1	√

RQ1: What decision support system (DSS) methods are most commonly used for selection problems in e-commerce platforms?

The review reveals that the landscape of e-commerce platform selection is heavily dominated by Multi-Criteria Decision-Making (MCDM) approaches, reflecting the complexity of evaluating platforms based on conflicting attributes. Simple Additive Weighting (SAW) and Analytical Hierarchy Process (AHP) emerge as the most prevalent methods across the analyzed literature. SAW is widely favored by researchers for its computational simplicity and efficiency in aggregating performance ratings across multiple criteria. In contrast, AHP is frequently adopted for its structured ability to decompose complex problems into hierarchies, allowing for the quantification of subjective expert judgments through pairwise comparisons. Beyond these dominant techniques, other methods such as TOPSIS, Weighted Product (WP), and MOORA are also utilized to rank alternatives based on specific distance or ratio-based logic. Furthermore, recent trends indicate a growing interest in hybrid models—combining two or more methods—to leverage the strengths of each approach and minimize potential biases found in single-method calculations.

RQ2: Has the decision support system method used been proven effective in selecting the best e-commerce platform?

The synthesized evidence confirms that DSS methods are highly effective tools for solving the selection problem in the e-commerce domain. These mathematical models succeed in transforming qualitative user preferences into quantitative rankings, thereby providing a rational and objective basis for decision-making. The literature demonstrates that these methods significantly reduce the subjectivity and cognitive load associated with manual selection processes. While standalone methods like SAW and AHP are proven to be sufficient for general evaluation purposes, comparative studies highlight that hybrid approaches often yield superior stability and accuracy. Moreover, sensitivity analyses performed in various studies further validate the robustness of these methods, showing that the final rankings remain consistent even when weight variations occur. Ultimately, the use of DSS provides a justifiable framework that aligns the technical capabilities of platforms with the specific needs of the users.

RQ3: What criteria are commonly used in DSS-based selection of e-commerce platforms?

A consistent and multidimensional pattern of evaluation criteria is observed throughout the reviewed articles, indicating that users evaluate platforms holistically rather than based on a single attribute. The criteria can be broadly categorized into economic, technical, and service-oriented factors. Economic factors, such as product pricing, administration fees, and the availability of discounts, remain the primary drivers for user preference. Service quality is equally critical, with delivery speed, responsiveness of customer support, and return policies playing a major role in platform reliability. Additionally, technical usability—encompassing user interface (UI) design and ease of navigation—is essential for ensuring a positive user experience. Finally, security and trust regarding payment gateways and data protection act as fundamental prerequisites. This comprehensive set of criteria suggests that an effective e-commerce platform must balance cost-efficiency with a secure and user-friendly technical environment.

4. CONCLUSION

This study presents a comprehensive systematic literature review on the application of Decision Support System (DSS) methods for e-commerce platform selection. Synthesizing findings from 20 selected articles, the research concludes that Multi-Criteria Decision-Making (MCDM) methods are instrumental in addressing the complexity of platform evaluation. Specifically, Simple Additive Weighting (SAW) and Analytical Hierarchy Process (AHP) are identified as the most dominant approaches, favored for their computational efficiency and structural capability, respectively, while a growing trend towards hybrid models indicates a shift towards maximizing decision accuracy. The review further confirms that these mathematical

models effectively mitigate user subjectivity, transforming qualitative preferences into rational, quantitative rankings. In terms of evaluation criteria, findings demonstrate that users consistently adopt a holistic perspective, prioritizing a balance of economic factors (pricing, fees), service quality (delivery speed, responsiveness), and technical aspects (usability, security). Ultimately, this study establishes that DSS integration provides a robust framework for optimal decision-making, with future research directions suggested towards exploring Artificial Intelligence (AI) integration to handle increasingly dynamic e-commerce data.

REFERENCES

Ahlamiyah, Q., Handayani, R. I., & Cahyanti, F. L. D. (2022). Bianglala Informatika. *Komparasi Pemilihan Platform Belanja Online Dengan Menggunakan Metode Simple Additive Weighting (SAW) Dan Profile Matching*, *10*(2), 96-103. https://doi.org/10.31294/bi.v10i2.13181

Anastasya, D., Fahri, S., Situmorang, S., & Niska, D. Y. (2023, 6 29). INFOMATEK. *Implementasi Metode Weighted Product dalam Menentukan E-Commerce Terbaik*, *25*(1), 55–60. https://doi.org/10.23969/infomatek.v25i1.7699

Aprilia, R. (2023, 1 3). G-Tech: Jurnal Teknologi Terapan. *Pemilihan Pembelanjaan Online Dengan Metode Fuzzy Multiple Atrribute Decision Making*, *7*(1), 14-20. https://doi.org/10.33379/gtech.v7i1.1848

Citra, P., Santoso, H. B., & Sriyasa, I. W. (2024, 3 22). Jurnal Ilmiah Informatika Dan Ilmu Komputer (JIMA-ILKOM). *Sistem Pendukung Keputusan Pemilihan E-Commerce Menggunakan Pembobotan Entropy dan COPRAS*, *3*(1), 36-45. https://doi.org/10.58602/jima-ilkom.v3i1.25

Fitria, E., & Gunawan, G. (2023, 7 17). Jurnal Riset Matematika (JRM). *Penerapan Metode MOOSRA pada Sistem Pendukung Keputusan Pemilihan E-commerce dalam Pembelian Produk Fashion*, *3*(1), 55-64. https://doi.org/10.29313/jrm.v3i1.1745

Fransiska, D. (2023, 4 5). Jurnal PROSISKO : Jurnal Pengembangan & Observasi Sistem Komputer. *SISTEM PENDUKUNG KEPUTUSAN MENENTUKAN E-COMMERCE TERBAIK MENGGUNAKAN METODE WEIGHTED PRODUCT*, *10*(1), 41-48. https://doi.org/10.30656/prosisko.v10i1.5957

Hardini, I. S., Khamaludin, & Rahayu, M. (2023, 10 4). JURNAL PENDIDIKAN DAN APLIKASI INDUSTRI. *Pemilihan E-Commerce Menggunakan Analytical Hierarchy Process (AHP) Sebagai Sistem Pendukung Keputusan*, *10*(2), 116-123. https://doi.org/10.33592/unistek.v10i2.3767

Mahendra, G. S. (2021, 9 29). JOURNAL TECH-E. *Implementation of the FUCOM-SAW Method on E-Commerce Selection DSS in Indonesia*, *5*(1), 75-85. https://doi.org/10.31253/te.v5i1.662

Maulana, M. R., Ariza, R., Hidayat, C., Anshor, A. H., & Fatchan, M. (2025). JATI (Jurnal Mahasiswa Teknik Informatika). *PENGGUNAAN AHP DALAM*

SISTEM PENGAMBILAN KEPUTUSAN PEMILIHAN MARKETPLACE (STUDI KASUS : MARKETPLACE E-COMMERCE DI ERA DIGITAL). https://doi.org/10.36040/jati.v9i1.12447

Muqtadir, A., Alfaridzi, R. A., & Arifia, A. (2022, 7). JAST : Journal of Applied Science and Technology. *Decision Support System of Determining E-Commerce With The Topsis and Comparation With Ahp for UMKM In the Tuban Regency Area*, *2*(2), 9-15. https://dx.doi.org/10.30659/jast.2.02.9-15

Norlita, D., Nageta, P. W., Faradhila, S. A., Aryanti, M. P., Fakhriyah, F., & Ismayam, E. A. (2023, 4). Systematic Literature Review (SLR) : Pendidikan Karakter di Sekolah Dasar. *Jurnal Ilmu Sosial, Pendidikan dan Humaniora*, *2*(1), 209-219. https://doi.org/10.56910/jispendiora.v2i1.743

Pradana, H. R., Ririd, A. R. T. H., & Hamdana, E. N. (2025). JATI (Jurnal Mahasiswa Teknik Informatika). *PENILAIAN E-COMMERCE TERBAIK MENGGUNAKAN METODE KOMBINASI SMART DAN TOPSIS BERBASIS WEB*, *9*(1), 1537-1544. https://doi.org/10.36040/jati.v9i1.12380

Prayitno, S., Rahmawati, A. S., Rifani, D. A., & Nurdiansyah, R. M. (2024, 4 22). Sunan Kalijaga Islamic Economics Journal. *Analisis Pemilihan Platform E-Commerce Menggunakan Metode AHP : Studi Kasus Perilaku Konsumen Online*, *3*(2), 85-101. https://doi.org/10.14421/skiej.2024.3.2.2459

Putra, H. M. A., Mahmudi, A., & Pranoto, Y. A. (2024). JATI (Jurnal Mahasiswa Teknik Informatika). *PENERAPAN METODE PROMETHEE DALAM SISTEM E-COMMERCE BERBASIS WEBSITE UNTUK MENENTUKAN PRODUK UNGGULAN STUDI KASUS : CV TRINDO JAYA, DESA JATIMULYO, KECAMATAN LOWOKWARU, KOTA MALANG*, *8*(6), 12400-12407. https://doi.org/10.36040/jati.v8i6.10553

Putri, D. A., & Wijianto, R. (2021, 7 10). Jurnal Informatics and Computer Engineering Journal. *ANALISA PEMILIHAN MINAT E-COMMERCE BERDASARKAN KONSUMEN MENGGUNAKAN METODE ANALYTICAL HIERARCHY PROCESS (AHP)*, *1*(2), 24-33. https://doi.org/10.31294/icej.v1i2.458

Ramayanti, R., Rachmawati, N. A., Azhar, Z., & Azman, N. H. N. (2025). *Langkah Demi Langkah Systematic Literature Review Dan Meta-Analysis*. PT. RajaGrafindo Persada. https://info.trilogi.ac.id/repository/assets/uploads/AKT/1c5b5-buku-slr.pdf

Sakti, A. F. A., Nurkholik, D., Solihin, M. R., Ramadhan, A. Y., & Anshor, A. H. (2025). JATI (Jurnal Mahasiswa Teknik Informatika). *ANALISIS PERBANDINGAN PLATFORM E-COMMERCE DENGAN METODE SIMPLE ADDITIVE WEIGHTING (SAW)*, *9*(2), 1836-1841. https://doi.org/10.36040/jati.v9i2.12732

Saputra, M. O. (2024, 9 13). JATISI (Jurnal Teknik Informatika dan Sistem Informasi). *SPK Best E-Commerce Platform Recommendation Using Method (SAW)*, *11*(3), 91-107. https://doi.org/10.35957/jatisi.v11i3.8055

Sauer, P., & Seuring, S. (2023, July). How to conduct systematic literature reviews in management research: a guide in 6 steps and 14 decisions. *Review of Managerial Science*, *17*(-), 1899 - 1933. https://doi.org/10.1007/s11846-023-00668-3

Sim, L. S., Christopher, M., Nafitra, H. D., Panjaitan, J. S. V., & Rakhmawati, N. A. (2023). Pemilihan Platform E-Commerce pada Kalangan Mahasiswa ITS dengan Menggunakan Metode Weighted Product. *Jurnal Teknoinfo*, *17*(1), 194-204. https://doi.org/10.33365/jti.v17i1.2252

Sinaga, M. J., & Susilawati, I. (2025, 7 13). Jurnal Informatika dan Teknik Elektro Terapan. *SISTEM PENDUKUNG KEPUTUSAN PEMBELIAN LAPTOP GAMING DI E-COMMERCE DENGAN METODE SIMPLE ADDITIVE WEIGHTING*, *13*(3), 1324-1337. https://doi.org/10.23960/jitet.v13i3.7264

Standard Insights. (2023). *eCommerce in Indonesia: Shopper Trends & Top Platforms Report*. Retrieved January 31, 2026, from https://standard-insights.com/insights/the-rise-of-ecommerce-in-indonesia/

Tsaniya, E. A., & Sulaiman, R. (2021, 12 31). MATHunesa: Jurnal Ilmiah Matematika. *Aplikasi Intuitionistic Fuzzy Multisets Dalam Pemilihan E-commerce Terbaik*, *9*(3), 484-493. https://doi.org/10.26740/mathunesa.v9n3.p484-493

Turban, E. (2005). *Decision Support Systems And Intelligent Systems 7Th Ed.* Prentice-Hall Of India Pvt. Limited.

Wahyuni, S., Nasution, H., & Aprilia, R. (2025, 7 23). Proximal: Jurnal Penelitian Matematika Dan Pendidikan Matematika. *Implementasi Metode AHP-MOORA dan AHP-SAW Pada Sistem Pendukung Keputusan Pemilihan E-Commerce Terbaik*, *8*(3), 875–891. https://doi.org/10.30605/proximal.v8i3.6587

Wiriadikusumah, A. N., & Permana, F. C. (2021, 6). Jurnal Pendidikan Multimedia. *Sistem Pendukung Keputusan Pemilihan Platform E-commerce Dengan Metode Simple Additive Weighting*, *3*(1), 37-44. https://doi.org/10.17509/edsence.v3i1.35281