Auction Information System

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A R T I C L E I N F O

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A B S T R A K

Information technology has brought significant changes in various aspects of life, including in the process of buying and selling goods. One method of buying and selling that is often used is auction, especially for used goods that have high collection value. However, the current used goods auction process still faces several problems, such as limited market reach, difficulty for sellers in marketing goods, and lack of a safe platform for collectors to transact and share information. This research aims to design a website-based auction information system that can answer these problems. This system is designed to reach many buyers in various locations, make it easier for sellers to market their used goods, and provide a safe and comfortable platform for used goods collectors. This information system is equipped with automatic auction features, item categories, E-Wallet for payment methods, and is designed responsively to be accessed via desktop or smartphone. The results of this research show that the designed auction system successfully fulfills the main objectives of the research by providing an effective and efficient platform for buying and selling used goods.

INTRODUCTION

Many people are taking advantage of increasingly advanced technological developments to carry out the process of buying and selling goods using websites such as Tokopedia and BliBli. These websites are marketplace platforms that connect sellers and buyers for mutual transactions. In practice, the sale of second-hand goods is often conducted using an auction concept, because second-hand items have uncertain prices and high demand, so they must be sold through auctions. Many second-hand item collectors find it difficult to sell their goods due to the lack of a platform that connects fellow collectors for buying and selling second-hand items. In addition, fraud often occurs because the money has already been given to the seller, but the seller does not deliver the item to the buyer, resulting in the buyer becoming a victim of fraud.

Therefore, an auction information system will be designed that focuses on the sale of second-hand goods. This system will carry out the buying and selling process of second-hand items using an auction concept, so that the distinctive characteristics of second-hand goods sold through auctions can be preserved. In addition, this application will handle payments using an E-Wallet concept, meaning the application balance must be topped up first in order to make auction purchases [3]. Furthermore, the application will address payment issues through a code mechanism that is only released once the auction item has arrived at the buyer, ensuring both the seller and buyer feel secure in the transaction process. In this study, shipping services are not provided, so the delivery of goods is the responsibility of the seller, who is only required to input the shipping tracking number into the system.

The purpose of the research is to build auction information system for second- hand goods to reach many second-hand buyers in various locations so the sellers can market their goods online. The System also can support the sellers to market their goods.

LITERARURE

A public sale or auction is the sale of goods conducted in front of the general public where the price of the goods offered to buyers increases over time. In another provision, the definition of auction is regulated in the main auction rules brought by the Dutch, known asthe*VenduReglement* (VR), Article1, whichstates: “An auction or public sale is a sale of goods conducted in public, with bids that increase, decrease, or are submitted in written form, or where invited individuals who have been previously notified about the auction or sale, or are permitted to attend it, are given the opportunity to submit price bids either by raising or lowering the price, or by registering the price. According to the Minister of Finance Regulation No. 304/KMK.01/2002 concerning Auction Implementation Guidelines, Article1paragraph(1) states: "An auction is a sale of goods open to the

public either directly or through electronic media by offering prices orally and/or in writing, preceded by efforts to gather interested parties."

From Article 1 paragraph (1), it can be interpreted that auctions can be conducted physically, but can also be held over the internet. Online auctions or auctions through social media are, in principle, not much different from general electronic transactions (E-Commerce). The main difference lies in the bidding process, where in an online auction, participants bid by increasing the price until an appropriate price is reached, and the buyer or winner is determined by the seller [7].

Web programming is the creation of application programs using scripting languages that result in an application accessed through a web browser [6]. There are several terms often used when studying web programming, including [5]:

1. **Internet**
   The internet is a network of computers connected into several interconnected networks. The system connects computers globally and uses TCP/IP as a protocol. Through the internet, information exchange can be done without limits as long as both parties are connected to the same network.
2. **World Wide Web (WWW)**
   WWW is a collection of web servers worldwide that provide data and information for mass use.
3. **Website**
   A website is a term referring to a web page name that can be accessed if connected to the internet. To access a website, besides being connected to the internet, you must open it through a web browser application.
4. **Web Server**
   A web server is software used to receive requests via the HTTP or HTTPS protocol from clients, then send back responses in the form of web pages. Examples of web servers: Xampp, Apache2Triad, etc.
5. **URL (Universal Resource Locator)**
   A URL is an address that indicates a specific page on the internet. Example URL: http://www.google.com.
6. **HTTP (Hypertext Transfer Protocol)**
   HTTP is part of the URL used to identify the location of the web and is used in the HTML protocol.
7. **DNS (Domain Name System)**
   DNS is a distributed database system that is not much affected by database growth. DNS ensures the latest host information is distributed to the network as needed.
8. **IP (Internet Protocol)**
   IP (Internet Protocol) is the protocol used on the internet, technically meaning a

form of data and information addressing and packaging to be sent through the internet.

9. **Hyperlink**
   A hyperlink or link is a tool that plays a role in popularizing the use of the internet. Hyperlinks can reference a text or image to another address on the internet.
10. **Web browser**
    Using a web browser is easy; all you need is the web address to be opened. This address is commonly called a Uniform Resource Locator (URL). If using the Windows operating system, there is a built-in web browser program called Internet Explorer. There are many alternative web browser programs, most of which are free, such as Firefox, Opera, Safari, Chrome, and so on.

METODOLOGI

This research employs a qualitative approach combined with a quantitative approach. Considering that the aim of this study is to develop an information system for second-hand goods auctions that addresses existing issues in the auction process, the qualitative approach will assist in gaining an in-depth understanding of the needs, challenges, and dynamics within this context. The qualitative approach enables the researcher to explore the perceptions, views, and experiences of stakeholders such as sellers and buyers regarding the problems faced and their expectations toward the proposed solution.

In addition, the quantitative approach can be used to statistically analyze data related to the effectiveness of the developed auction information system. The quantitative approach can also help in obtaining a more objective overview of the impact of the system's implementation on the company's performance and operational efficiency.

The system development method used in this research is the **Waterfall Model**. The Waterfall Model is also known as the **linear sequential model** or **classic life cycle model**. This model proposes a systematic and sequential approach to software development, starting from the system level and progressing through each phase [28]. The Waterfall Model is often referred to as the waterfall method.

With the waterfall-based development method, analysts and users proceed sequentially from one phase to the next. The deliverables for each phase are typically very extensive (often hundreds of pages) and are presented to the project sponsor for approval before the project can move on to the next phase. Once the sponsor approves the work done in a given phase, that phase ends and the next phase begins. This method is called the waterfall model because it progresses from one phase to another in a manner similar to a waterfall [29].

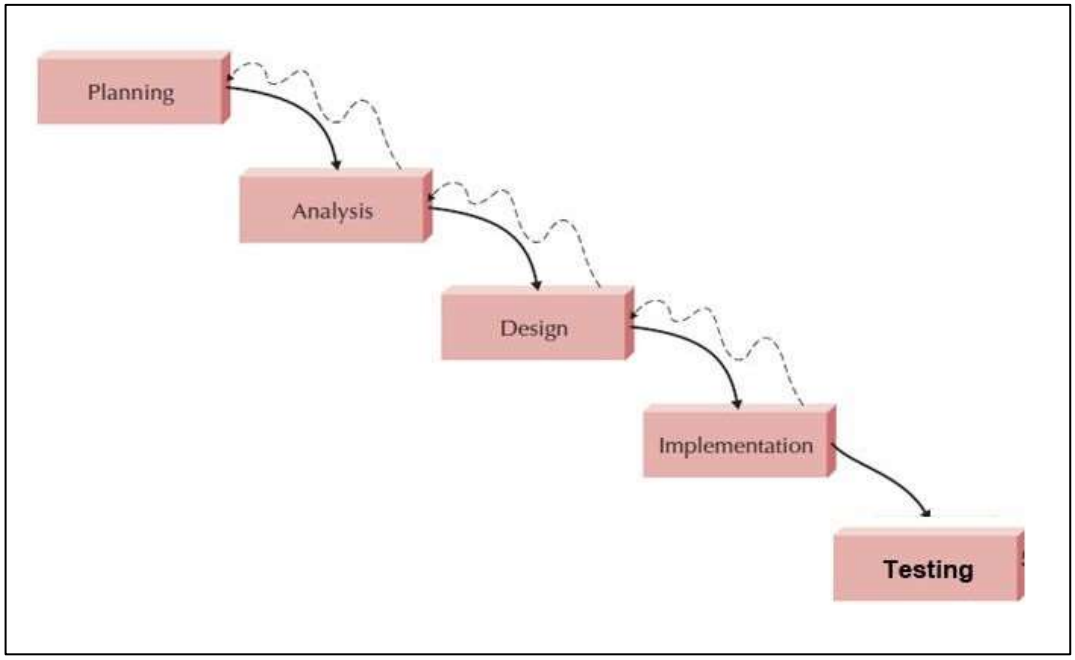


Figure 1. Phases of Waterfall model [29]

RESEARCH RESULT

The initial display is the interface presented to users when they first launch the application. The initial display results of the auction information system are shown in Figure 2 below

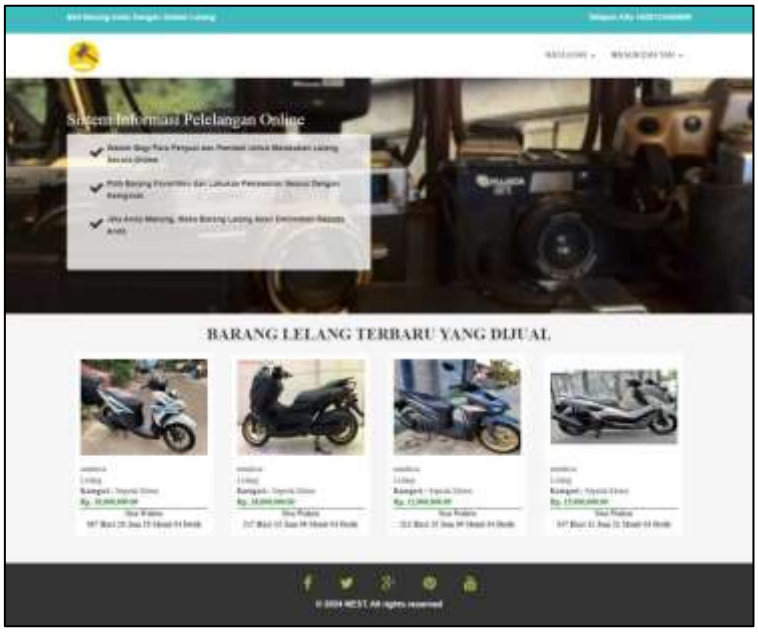


Figure 2. Frontpage of the Website

This is the display for visitors to log in in order to access the system and use its features. The login display of the auction information system is shown in Figure 3 below.



Figure 3. Loggin Window

The item detail display contains detailed information about the item being auctioned. The item detail display in the auction information system is shown in Figure. 4 below.



Figure 4. Item information

The auction history display shows all information related to ongoing or previously listed auctions/sales by the respective auction participant. In this view, all past auction activities can be seen. The auction history display in the auction information system is shown in Figure 5 below.

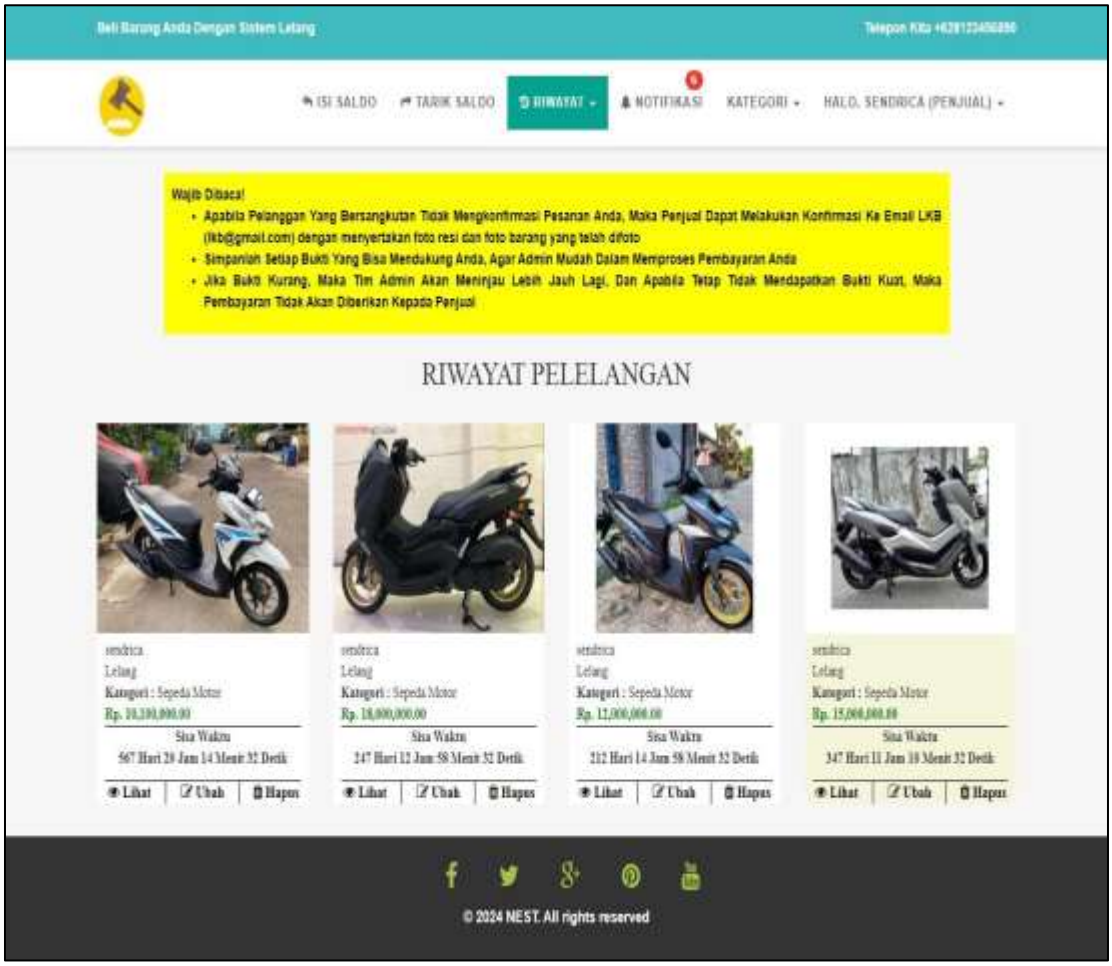


Figure 5. Auction History

The bid history display contains information on all previous bids that have been made. It shows detailed information about each bid placed by the auction participant, including the bid date. The bid history display in the auction information system is shown in Figure 6 below.

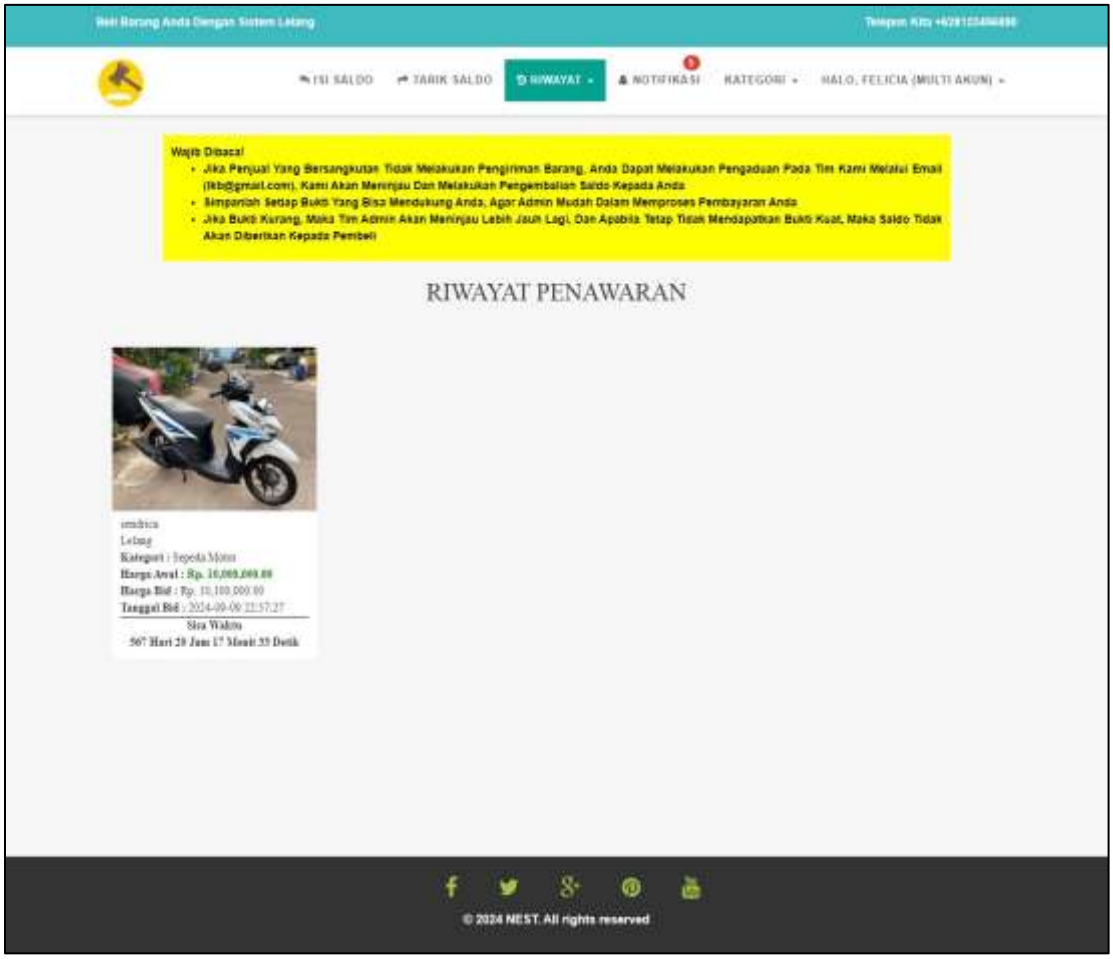


Figure 6. Bid History

The auction history display contains all information related to ongoing or previously listed auctions/sales by the respective auction participant. In this view, all auction activities that have been conducted can be seen. The auction/sales history display in the auction information system is shown in Figure 7 below.

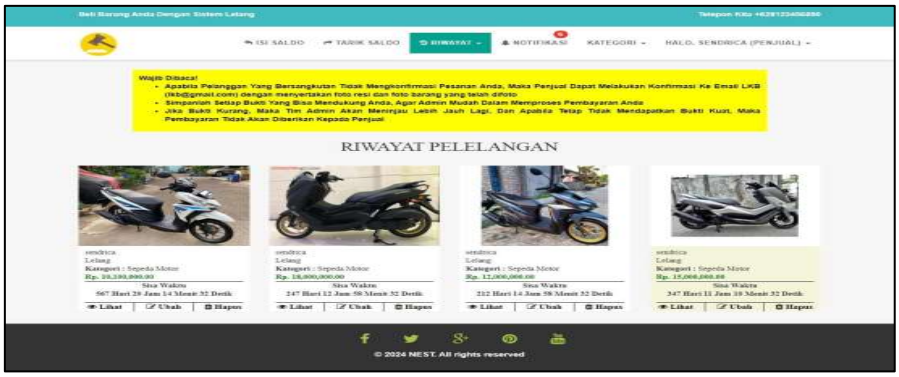


Figure 7. Auction History

DISCUSSION

The strengths of the system include: Ease of Access : The system can be accessed from anywhere and at any time as long as the user has an internet connection. This allows users to participate in auctions without having to be physically present. **Structured Auction Item Management:** The system provides features for managing auction items with structured categories, making it easier for users to search for desired items. **Transparency in the Auction Process:** The system displays clear and detailed information about auction items, bidding history, and auction status, ensuring transparency in the auction process. **Secure Verification Features:** The system offers verification features for sellers and auction items, enhancing security and building user trust in the items being auctioned. **Easy Account Management:** Users can easily register an account, log in, and manage their profile information, including electronic balance settings. **Real-Time Notifications:** The system provides real-time notifications to users about important activities such as new bids, balance verification, and payment information. **Comprehensive Reports and History:** The system offers detailed views of bidding history, auction records, and transactions, allowing users to easily track all their activities.

The weaknesses of the system. Limited to Indonesia: The system is only available within Indonesia, which limits its market potential and can only be accessed by domestic users. This restricts opportunities for international buyers and sellers who might be interested in rare second-hand items. Additionally, logistical challenges in shipping items to remote areas in Indonesia can be an added difficulty. **Focus on Rare Second-Hand Items:**Focusing on rare items means availability can be very limited and inconsistent, which may reduce the number and frequency of auctions. Furthermore, verifying the authenticity of rare second-hand items can be complex and may require specialized expertise that the verification team may not always possess, increasing the risk of counterfeit or misrepresented goods. **Auction Mechanism and Auto-Closing System:** The buy-and-sell process using an auction concept with automatic closing by the system at the end of the auction period may cause uncertainty for users regarding the final price of an item. Users may feel dissatisfied if they do not have the opportunity to place a final bid due to automatic closing. Additionally, automatic closing could be problematic in the event of technical issues or bid delays in the final moments. **Use of E-Wallet Payment Method:** The use of E-Wallets limits access for users who may be unfamiliar with or lack access to E-Wallet services. This may reduce the number of auction participants. Moreover, E-Wallet systems require high technology.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The web-based second-hand goods auction information system has been successfully designed to reach a wide range of buyers. With responsive features and accessibility

across various devices, the system is able to attract buyer interest. The system provides convenience for second-hand item sellers in marketing their products. Features such as item categories, item details, and the automated auction process help sellers promote their rare second-hand goods more efficiently. The system has also successfully served as a platform for second-hand collectors to share information and conduct buying and selling transactions. With features like notifications, bid history, and discussion forums, collectors can interact and exchange knowledge about rare second-hand items.

REFERENCES

[1] N. H. Sabila and C. Budihartanti, "Perancangan Sistem Informasi Administrasi Lelang Kendaraan Pada Pt Balai Lelang Megatama," *Swabumi*, vol. 8, no. 1, pp. 80–87, 2020, doi: 10.31294/swabumi.v8i1.7682.

[2] M. F. P. Herawan and R. Rachman, "Perancangan Sistem Informasi Lelang Elektronik Kendaraan Menggunakan Metode Prototype," *JIKA (Jurnal Inform.*, vol. 7, no. 1, pp. 37–45, 2023, doi: 10.31000/jika.v7i1.7116.

[3] P. Wulandari and R. Idayanti, "Peran Aplikasi Dompet Digital Indonesia (DANA) dalam Memudahkan Masyarakat melakukan Pembayaran Digital," *Islam. Bank. Financ.*, vol. 3, no. 2, pp. 429–441, 2023, doi: 10.30863/ibf.v3i2.5438.

[4] Sitanggang Rianto, Urian Dachi Teddy, and Manurung H G Immanuel, "Rancang Bangun Sistem Penjualan Tanaman Hiasberbasis Web Menggunakan Php Dan Mysql," *Tekesnos*, vol. 4, no. 1, pp. 84–90, 2022.

[5] A. O. Sari, A. Abdilah, and Sunarti, *Web Programming*. Yogyakarta: Graha Ilmu, 2019.

[6] M. Marbun, H. Situmorang, D. M. Hutagalung, and R. Sitanggang, "SISTEM INFORMASI KLINIK BERBASIS WEBSITE (Studi Kasus : Praktek Umum dr.Karo Malem Sinulingga)," *J. TEKESNOS*, vol. 3, no. 1, pp. 229–235, 2021.

[7] S. Oktaviani, "Keabsahan Pelaksanaan Lelang Melalui Sosial Media Instagram," *J. Kertha Semaya*, vol. 9, no. 12, pp. 2404–2414, 2021, [Online]. Available: https://doi.org/10.24843/KS.2021.v09.i12.p12.

[8] R. Wijaya and A. J. S. Adiwijaya, "Optimalisasi Asas Kemanfaatan Hasil Lelang Eksekusi Dalam Perspektif Hukum Investasi," *J. Living Law*, vol. XIII, no. 1, pp. 46–56, 2021.

[9] D. Apriyani, E. S. Putri, R. Trisnawan, S. N. Muttaqin, A. P. A. Santoso, and Agus Suyatno, "Analisis penjualan barang antik dimasa pandemic covid-19 (studi kasus pasar Triwindu Surakarta)," in *Seminar Nasional & Call For Paper*, 2021, pp. 145–147.

[10] I. Kumala and I. Mutia, "Pemanfaatan Aplikasi DOMPET Digital Terhadap Transaksi

Retail Mahasiswa," *Semin. Nas. Ris. dan Teknol. (SEMNAS RISTEK)*, pp. 64–69, 2020.

[11] A. A. L. Gunawan and A. Winarti, "Pengaruh Aplikasi Dompet Digital Terhadap Transaksi Dimasa Kini," *J. Ilm. Multidisiplin*, vol. 1, no. 5, pp. 352–356, 2022.

[12] R. Sitanggang, I. H. G. Manurung, and H. Situmorang, "Pelatihan Pembuatan Video Pembelajaran Microsoft Office Power Point Pada Guru Smp Swasta Masehi Sibolangit," *J. Abdimas Mutiara*, vol. 2, no. 2, pp. 304–312, 2021.

[13] R. A. Sukamto and M. Shalahuddin, "Rekayasa Perangkat Lunak Terstruktur dan Berorientasi Objek." Informatika, Bandung, 2018.

[14] Dona, H. Maradona, and Masdewi, "Sistem Pakar Diagnosa Penyakit Jantung Dengan Metode Case Based Reasoning (Cbr)," *Zo. J. Sist. Inf.*, vol. 3, no. 1, pp. 1–12, 2021, doi: 10.31849/zn.v3i1.6442.

[15] D. A. Pratiwi, *Artikel Ilmiah Pengantar Sistem Informasi*, no. 43219010158. 2020.

[16] A. Yoraeni *et al.*, *Sistem Informasi Manajemen*, no. November. Jakarta: PT. Scifintech Andrew Wijaya, 2023.

[17] N. Azis, *Analisis Perancangan Sistem Informasi*. Bandung: Widina Bhakti Persada, 2022.

[18] P. E. Sudjiman and L. Siregar, "KOMPUTER DALAM PROSES PENGAMBILAN KEPUTUSAN," *J. TeIKa*, vol. 8, pp. 55–67, 2018.

[19] R. Ernayani *et al.*, *Dasar dan Teori Sistem Informasi Manajemen*. Batam: Yayasan Cendikia Mulia Mandiri, 2022.

[20] R. U. Ginting and J. B. Manurung, "Pengembangan Promosi Kerajinan Tekstil Khas Batak Di Siantar Berbasis Website," *JuSiTik J. Sist. dan Teknol. Inf. Komun.*, vol. 7, no. 1, pp. 29–36, 2023, doi: 10.32524/jusitik.v7i1.1059.

[21] S. Hidayatullah, D. A. Prasetya, D. A. Purnomo, and I. K. Rachmawati, *Hot Fit Model Pengembangan Sistem Informasi*. Ponorogo: Uwais Inspirasi Indonesia, 2022.

[22] J. Dalle, A. . Karim, and Baharuddin, *Pengantar Teknologi Informasi*. Depok: PT