ProBisnis : Jurnal Manajemen, 16 (2) (2025) pp. 41-48

Published by: Lembaga Riset, Publikasi, dan Konsultasi Jonhariono

ProBisnis : Jurnal Manajemen

Journal homepage: www.jonhariono.org/index.php/ProBisnis

Website Design for Spiritual Items at The Catholic Church of Saint Lukas Parish Samarinda Using The Waterfall Method

Teresa Dominika Palayukan[1], Pajar Pahrudin[2], Rizky Zakariyya Rasyad[3],

[1 2] Prodi Sistem Informasi STMIK Widya Cipta Dharma Samarinda Indonesia

[3] Prodi Bisnis Digital STMIK Widya Cipta Dharma Samarinda Indonesia

ARTICLE INFO

Article history:

Received April 10, 2025
Revised April 20, 2025
Accepted April 28, 2025

Keywords:

Catholic church
information system
waterfall
website

ABSTRACT

The purpose of this study is to design and build a website that provides information about spiritual objects in the Saint Luke Parish Catholic Church in Samarinda, with the hope of making it easier for the congregation to access the information. The method used in developing this website is the Waterfall method. This process includes the stages of needs analysis, system design, implementation, testing, and maintenance. Each stage is carried out sequentially to ensure that all aspects of the website can function properly. The results of this study indicate that the website that was built can provide accurate and easily accessible information about spiritual objects. In addition, this website is also equipped with features that make it easy for users to search for and obtain the information they need. The original value of this study lies in the development of a website that is specific to the needs of the Saint Luke Parish Catholic Church in Samarinda, which does not yet have an adequate digital platform to convey information about spiritual objects. This website is expected to be a useful source of information for the congregation and increase their involvement in church activities.

Corresponding Author:

Teresa Dominika Palayukan,
Prodi Sistem Informasi STMIK Widya Cipta Dharma Samarinda Indonesia,
Jl. M. Yamin No.25, Gn. Kelua, Kalimantan Timur Indonesia 75123.
Email: 2141029@wicida.ac.id

1. INTRODUCTION

The development of information and communication technology has had a significant impact on various aspects of life, including in the field of religion. The church as a religious institution is not immune from the influence of this technological development, which enables new ways of interacting, worshiping, and disseminating information to the congregation. One innovation that can be applied is the creation of a website as a means of information and communication for church members. In this context, this study focuses on the design and development of a website for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda using the waterfall method.

The website for spiritual objects plays an important role in supporting church activities and providing wider access to information to the congregation. Through this website, visitors can find various information about available spiritual objects, such as spiritual books, worship tools, and various other products that support spiritual life. In addition, this website can also be a platform for disseminating information about church activities, announcements, and ongoing programs, thereby increasing the involvement of the congregation in church life.

The waterfall method is one approach to software development that has clear and structured stages, starting from needs analysis, design, implementation, testing, to maintenance. This method is very suitable for projects that have clear specifications, such as the development of this spiritual

objects website. By following systematic stages, it is expected that the final result of this project can meet user needs and function properly.

The waterfall method is a structured approach to software development characterized by distinct stages: requirements analysis, design, implementation, testing, and maintenance. This method is particularly effective in projects that require clear documentation and sequential progress, as evidenced by its wide range of applications across domains. (Narendra et al., 2023).

The importance of this research lies not only in the development of the website itself, but also in its contribution to improving the quality of church services to the congregation. In today's digital era, people increasingly rely on technology to search for information. Therefore, the church needs to adapt to this development in order to remain relevant and reach more people. This spiritual object website is expected to be a bridge between the church and the congregation, as well as provide ease in accessing information related to spiritual life. While focusing on user experience is essential, it is also important to balance aesthetic appeal with functionality. Overly complicated designs can detract from the user's spiritual journey, emphasizing the need for simplicity along with creativity (Cindy & Zulaikha, 2023).

In the context of the Saint Luke Parish Catholic Church in Samarinda, the development of this website is also a strategic step to improve internal and external church communication. With a website, information about church activities can be conveyed more efficiently and effectively. The congregation can easily access the latest information about mass, social activities, and other spiritual programs. In addition, the website can also be a means to collect feedback from the congregation regarding church services, so that the church can continue to improve and increase the quality of service.

The design and development of this spiritual object website must also consider the user experience aspect. (Narendra et al., 2023). An attractive design and easy navigation will greatly affect the level of user engagement. Therefore, in the process of developing this website, it is necessary to conduct research on user preferences and usability testing to ensure that the website can be used easily by all groups, including those without a technical background.

Data security is also a very important aspect in the development of this website. With features that allow users to make transactions, such as purchasing spiritual objects online, the church must ensure that users' personal data is well protected. Therefore, implementing proper security protocols and testing system security should be an integral part of the website development process. Utilizing encryption methods, such as HTTPS and HMAC SHA-256, ensures that data transmitted over the internet is safe from interception by malicious actors (Li, 2023).,(Rana, 2023).

This spiritual objects website must also have relevant and quality content. The content presented must be able to attract the attention of users and provide useful information. Therefore, cooperation is needed between the development team and church administrators to determine the type of content to be included, as well as an interesting way of presenting it. In the increasingly advanced digital era, the presence of a spiritual objects website at the Saint Luke Parish Catholic Church in Samarinda is expected to have a positive impact on the congregation. This website not only functions as a means of information, but also as a tool to strengthen the church community and increase congregation participation in various spiritual activities. By utilizing information technology properly, the church can answer the challenges of the times and provide better services to the congregation. Limiting access to sensitive data to authorized personnel is essential. This includes implementing multi-factor authentication and regular audits to ensure compliance with security policies (Desai et al., 2014) (Jaya et al., 2022). In this study, the author will explain in detail the process of designing and building a website for spiritual objects, starting from needs analysis, design, implementation, to testing and maintenance. This study is expected to contribute to the development of information technology in the field of religion, as well as being a reference for other churches who want to do the same. Thus, it is hoped that this website can be a means to strengthen the faith and spiritual life of Catholics in Samarinda. Following the assessment, recommendations such as adopting HTTPS and improving password management practices can significantly improve security (Jaya et al., 2022).

2. RESEARCH METHOD

The method used in this study is the Waterfall method, which is one of the most classic and widely used software development models. This model has clear and structured stages, making it very suitable for projects that have predetermined specifications. In the context of designing a website for spiritual objects at the Saint Lukas Parish Catholic Church in Samarinda, the Waterfall method will help manage the development process more effectively and efficiently.

Waterfall Method Stages: The Waterfall method consists of several stages that must be passed sequentially. These stages are:

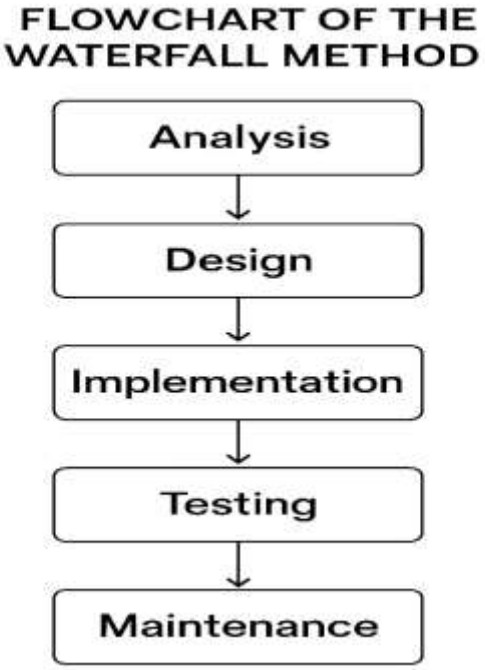

Image 1. Waterfall Method Flowchart

Needs Analysis: The first stage in the Waterfall method is needs analysis. At this stage, information is collected regarding the needs of users and stakeholders related to the spiritual objects website. The methods used in this stage are interviews and questionnaires. Interviews were conducted with church administrators and several members of the congregation to gather information regarding the features and functions expected on the website. In addition, questionnaires were distributed to the congregation to obtain broader input regarding their expectations for the website. Requirements Analysis: This initial phase involves a thorough examination of user requirements and existing processes, ensuring that the system meets specific needs (Arta et al., 2024) (Irmayanti & Ruspita, 2024). After the data is collected, analysis is carried out to identify functional and non-functional needs. Functional needs include features that must be present on the website, such as a product catalog, ordering system, and church activity information. Non-functional needs include aspects such as security, access speed, and ease of use. The results of this analysis are then stated in a requirements specification document which becomes a reference for the next stage.

System Design : After the needs are analyzed and documented, the next stage is system design. At this stage, the website architecture is designed, including the user interface (UI) and user experience (UX) designs. The design is done using tools such as wireframes and mockups to provide a visual depiction of how the website will look and function.

UI design focuses on ease of navigation, readability, and aesthetics that are in accordance with the spiritual theme. In addition, UX design considers the user flow in accessing information and making transactions. Some of the design principles applied include consistency, feedback, and accessibility. Design: After the analysis, a detailed design plan is created, outlining the system architecture, user interface, and workflow, which is critical to guide subsequent implementation (Alda et al., 2023).,(Mahardika & Abdillah, 2024).After the design is complete, a review is conducted with the development team and stakeholders to ensure that the design is in

accordance with the previously identified needs. Revisions are made if necessary before proceeding to the implementation stage.

Implementation : The implementation phase is the phase where website development is carried out based on the approved design. Development is carried out using the latest web technologies, such as HTML, CSS, JavaScript for the front-end, and PHP and MySQL for the back-end. In addition, frameworks such as Bootstrap can be used to speed up the development process and ensure website responsiveness. The actual development of the software occurs at this phase, where the design is translated into a functional appl ication, as seen in the development of various systems such as mobile applications for student internships (Alda et al., 2023).

At this stage, developers must also pay attention to security aspects, especially in the management of user data and transactions. The use of the HTTPS protocol, user input sanitization, and the use of a strong authentication system are the main focuses to protect data from potential threats. The development process is carried out iteratively, where each feature that is completed will be tested directly. This aims to identify and fix bugs or problems that may arise during the development process.

Testing : After the implementation is complete, the next stage is testing. Testing: Rigorous testing is conducted to validate the functionality and performance of the system, ensuring it meets the requirements set before implementation (Mahardika & Abdillah, 2024).,(Yusman et al., 2023). Testing is done to ensure that the website functions according to the specifications that have been set. At this stage, various types of testing are carried out, including:

Functional Testing: Testing each feature and function of the website to ensure everything works properly. This testing involves users to test the flow of use and provide feedback. : Usability Testing: Measuring how easy and intuitive the website is to use by users. This testing is done by involving a number of users who are asked to complete certain tasks on the website : Security Testing: Identifying potential vulnerabilities in the system, including testing for common attacks such as SQL injection and Cross-Site Scripting (XSS): Performance Testing: Measuring the response time of the website and how the website functions under different loads. Tools such as Apache JMeter can be used to perform this testing.

After all the tests are carried out, the results are analyzed and if any problems are found, fixes are made before the website is launched to the public. After all testing is done, the results are analyzed and if any problems are found, fixes are made before the website is launched to the public.

Maintenance: The last stage in the Waterfall method is maintenance. After implementation, ongoing maintenance is essential to address issues and adapt to changing user needs, thereby increasing the longevity and effectiveness of the system (Arta et al., 2024).,(Yusman et al., 2023). After the website is launched, it is important to perform regular maintenance to ensure that the website continues to function properly and securely. Maintenance includes: Content Updates: Ensuring that the information displayed on the website is always up to date, including information about spiritual objects and church activities. Bug Fixes: Addressing technical issues that may arise after launch, including bugs that were not detected during testing. Feature Enhancements: Based on user feedback, new features can be added to improve the user experience. Security Monitoring: Conducting regular monitoring of website security to identify and address potential threats.

The Waterfall method provides a clear and structured framework for designing a website for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda. By following the predetermined stages, it is hoped that the resulting website can meet user needs and provide benefits for the congregation in accessing information about spiritual objects and church activities. The success of this project is highly dependent on good communication between the development team and stakeholders, as well as a commitment to ongoing maintenance after launch.

The Waterfall method provides a clear and structured framework for designing a website for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda. By following the predetermined stages, it is hoped that the resulting website can meet user needs and provide benefits for the congregation in accessing information about spiritual objects and church activities. The success of this project is highly dependent on good communication between the development team and stakeholders, as well as a commitment to ongoing maintenance after launch.

3. RESULTS AND DISCUSSIONS

In this study, the author has designed and built a website specifically for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda using the Waterfall software development method. The use of the Waterfall method in this project was chosen because of its structured and systematic nature, which is very suitable for projects that have clear and well-defined needs. This method allows each phase of development to be completed sequentially, starting from needs analysis, design, implementation, testing, to maintenance.

One of the important findings of this study is that the website that was built can increase the accessibility of information about spiritual objects for the congregation. Previously, information about these objects may only be available in a limited way through announcements in the church or printed brochures. With the website, the congregation can easily access this information anytime and anywhere. This is in line with the rapid development of information technology, where people are now more likely to search for information online. (Huang & Liu, 2012).

This website is also designed to facilitate interaction between the congregation and church administrators. Features such as discussion forums and question and answer columns are expected to encourage active participation from the congregation in church activities. This is important to build a more solid and supportive community. With the existence of a digital platform, it is hoped that the relationship between the congregation and church administrators can be better and more transparent. The digital attendance system, as implemented in GMIT Sion Oepura, has replaced manual methods, leading to real-time data accuracy and timely information dissemination (Dethan et al., 2024).

There are several challenges faced during the development process of this website. However, one of them is ensuring that all information presented on the website is accurate and always updated. In this context, it is important for church administrators to have a team that is responsible for managing website content. In addition, training for church administrators and congregations on how to use the website is also very necessary so that all parties can utilize this website optimally.

From a technical perspective, the author found that choosing the right technology greatly affects website performance. In this project, the author uses a platform that is user-friendly and easily accessible to various groups, including those without a technical background. This is important so that all congregants, including older ones, can easily access the information they need.

It is important to note that even though the website has been launched, ongoing maintenance and development are still needed. In an ever-changing digital world, websites must always be updated to meet user needs and keep up with technological developments. Therefore, the author recommends that churches conduct regular evaluations of their websites to ensure that all features are functioning properly and that the information presented remains relevant. IT improves service delivery, making processes such as issuing identity documents faster and more efficient (Mayadi & Kustanto, 2024).

Finally, the author hopes that this project will not only benefit the Saint Luke Parish Catholic Church in Samarinda, but can also be a model for other churches in developing similar digital platforms. With more churches utilizing information technology, it is hoped that services to the congregation can be improved, and church communities can become more inclusive and responsive to the needs of their members. Many organizations face infrastructure deficiencies that hinder effective IT implementation (Eke, 2024).

Thus, this study shows that developing a website for spiritual objects using the Waterfall method can have a significant positive impact on church communities. However, the long-term success of this website depends heavily on the commitment of the church administrators and the active participation of the congregation in utilizing and managing the platform that has been built.

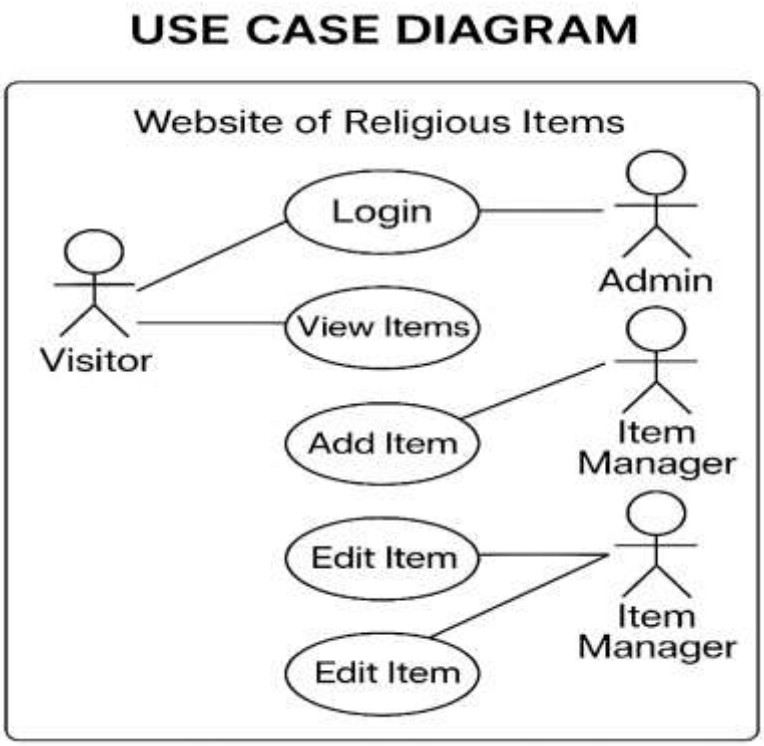

Image 2. Use Case Diagram of Spiritual Objects

4. CONCLUSION

In this study, a website design has been carried out which aims to facilitate the management and dissemination of information about spiritual objects at the Saint Luke Parish Catholic Church in Samarinda. The use of the waterfall method in developing this website has proven effective in providing a systematic structure and process, so that each stage of development can be carried out clearly and measurably. Through this approach, the author can ensure that every aspect of the website is carefully designed and implemented, from needs analysis to testing and maintenance. One of the main findings of this study is the importance of a deep understanding of user needs. In the needs analysis stage, the author involved various parties, including church administrators and congregations, to identify the features and functions expected from the website. The results of the analysis became the basis for designing a system that not only meets technical needs but also provides a good user experience. This shows that active participation from end users is crucial in the information system development process. Furthermore, in the design stage, the author focused on an intuitive and easily accessible user interface. A user-friendly website design is expected to increase congregation interaction with the information provided. The author applied good design principles, such as consistency, readability, and clear navigation, to ensure that users can easily find the information they need. Trials of design prototypes were also conducted to obtain constructive feedback, so that improvements could be made before final implementation. The website implementation was carried out by paying attention to the right technology and in accordance with system needs. The author chose a development platform that supports data reliability and security, considering that the information stored on this website is sensitive and important for the spiritual life of the congregation. In addition, the author also applies best practices in coding and testing to ensure that the website functions well across devices and browsers. Testing is an important stage in website development. The author conducted various types of testing, including functional testing, usability

testing, and security testing. The results of these tests provide valuable insights into the performance of the website and areas that need improvement. Through a thorough testing process, the author can ensure that the website not only functions as expected, but is also safe and reliable for users. After the website is launched, the maintenance phase becomes very important to ensure that the system continues to run smoothly. The author planned a maintenance strategy that includes regular content updates, performance monitoring, and handling technical issues that may arise. This is important to maintain the relevance and reliability of the website in the long term. In addition, the author also proposed to conduct training for church administrators so that they can manage and update information on the website effectively. From the results of this study, the author concluded that the development of a website for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda using the waterfall method provides many benefits. This website not only functions as a medium of information, but also as a means to strengthen the church community. With the website, the congregation can more easily access information about spiritual objects, church activity schedules, and other important news and announcements. Furthermore, the existence of this website is expected to increase congregation participation in church activities. With easier access to information, it is expected that the congregation will be more actively involved in activities and services organized by the church. In addition, this website can also be a platform to promote social activities and community services carried out by the church, so that it can attract more people to join and contribute. However, the author also realizes that website development is not without challenges. Some of the obstacles faced during the development process include limited human resources who have expertise in the field of information technology, as well as challenges in educating the congregation about the use of the website. Therefore, it is important for the church to continue to invest in developing human resource capacity and provide the necessary training so that all parties can make maximum use of this technology. In the future, the author recommends that the church continue to evaluate the website and take feedback from users for continuous improvement. Thus, the website can remain relevant and meet the needs of the congregation along with the times. In addition, exploration of new features, such as integration with social media or mobile applications, can also be considered to increase congregation interaction and involvement. The design of the website for spiritual objects at the Saint Luke Parish Catholic Church in Samarinda shows that information technology can be an effective tool in supporting religious activities and strengthening the community. With the right approach, this website is not only a means of information, but also a place to build closer relationships between the church and the congregation. The author hopes that the results of this study can be a reference for other churches in developing similar information systems, so that they can provide wider benefits to the community. Thus, it can be concluded that website development using the waterfall method has made a significant contribution in facilitating the management of information on spiritual objects and strengthening the role of the church in the life of the congregation. The author hopes that this initiative can be a good first step for the church in utilizing information technology to support the church's mission and vision in the future.

REFERENCES

Arta, I. G., Sutha, D., Ali, A., & Putra, Y. B. (2024). Perancangan Sistem Informasi Peminjaman dan Pengembalian Berkas Rekam Medis Rawat Jalan dengan Metode Waterfall. *Jikom : Jurnal Informatika Dan Komputer*, *14*(1), 25–36. https://doi.org/10.55794/jikom.v14i1.129

Irmayanti, A., & Ruspita, D. (2024). Rancangan Aplikasi Kasir Toko Kelontong Berbasis Website Menggunakan Metode Waterfall. *IKRA-ITH Informatika*, *9*(1), 56–61. https://doi.org/10.37817/ikraith-informatika.v9i1.4376

Alda, M., Wanandi, B. S., Bancin, H., & Panjaitan, M. A. (2023). Implementasi Aplikasi Pencatatan Data Magang Mahasiswa Berbasis Mobile Menggunakan Kodular Menggunakan Metode Waterfall. *Bulletin of Computer Science Research*, *4*(1), 34–39. https://doi.org/10.47065/bulletincsr.v4i1.317

Mahardika, F., & Abdillah, M. L. (2024). *Design of Unified Modeling Language Information System for Motorcycle Unit Selling and Buying Transactions using the Waterfall Method*. https://doi.org/10.56211/hanif.v1i2.15

Yusman, Y., Siregar, N., Putra, R. R., & Nadriati, S. (2023). Sistem Informasi Perangkat Desa (SINPERDES) Berbasis Website Dengan Metode Waterfall Dalam Pelaksanaan Pembangunan Desa. *Bulletin of Computer Science Research*, *3*(6), 408–412. https://doi.org/10.47065/bulletincsr.v3i6.274

Li, L. (2023). *Data Security Technology in Electronic Commerce System Development*. https://doi.org/10.1109/icaisc58445.2023.10200851

Desai, V., Thakkar, R. G., & Lala, N. (2014). *E-Governance Website Accessibility, Identity Access Management and Data Security*.

Jaya, I. K. N. A., Dewi, I. A. U., & Mahendra, G. S. (2022). Implementation of Wireshark Application in Data Security Analysis on LMS Website. *Journal of Computer Networks, Architecture and High Performance Computing*, *4*(1), 79–86. https://doi.org/10.47709/cnahpc.v4i1.1345

Huang, L., & Liu, G. (2012). On data security in e-commerce. *IEEE Symposium on Electrical & Electronics Engineering*, 94–97. https://doi.org/10.1109/EEESYM.2012.6258596

Dethan, M. A., Oematan, H. M., & Windya, Y. E. C. (2024). Aplikasi presensi jemaat berbasis digital pada gereja sion oepura kupang. *Jurnal Abdimas Musi Charitas*, *8*(2), 134–141. https://doi.org/10.32524/jamc.v8i2.1243

Eke, G. J. (2024). Utilization of Information Technology is an Elixir to Maximizing Efficiency in Business Organizations. *IIARD International Journal of Economics and Business Management*. https://doi.org/10.56201/ijebm.v9.no2.2023.pg26.33

Mayadi, M., & Kustanto, P. (2024). Pelatihan Sistem Informasi Pelayanan Surat Pengantar Untuk Perangkat Desa Mangunjaya Kecamatan Tambun Selatan Kabupaten Bekasi. *Jurnal ABDIMAS (Pengabdian Kepada Masyarakat) UBJ*, *5*(1), 11–22. https://doi.org/10.31599/qyn62248

Narendra, P. R. P., Wirdiani, N. K. A., & Mandenni, N. M. I. (2023). Website Based UI/UX Application Design of Balinese Traditional Products Using the Design Thinking Method. *Jurnal Ilmiah Merpati (Menara Penelitian Akademika Teknologi Informasi)*. https://doi.org/10.24843/jim.2023.v11.i02.p05

Narendra, P. R. P., Wirdiani, N. K. A., & Mandenni, N. M. I. (2023). Website Based UI/UX Application Design of Balinese Traditional Products Using the Design Thinking Method. *Jurnal Ilmiah Merpati (Menara Penelitian Akademika Teknologi Informasi)*. https://doi.org/10.24843/jim.2023.v11.i02.p05

Cindy, C., & Zulaikha, S. R. (2023). Penggunaan konsep user experience terhadap layanan situs web perpustakaan universitas islam sumatera utara. *Jurnal Pustaka Budaya*. https://doi.org/10.31849/pb.v10i2.14683