International Journal of Engineering Business and Social Science
Vol. 3 No. 1, September-October 2024, pages:
e-ISSN: 2980-4108, p-ISSN: 2980-4272
https://ijebss.ph/index.php/ijebss

Digilite Content Management System Digital Library Lite

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Keywords
CMS, Digital Library, content management sustem.

Abstract
Digital library is a system that organizes and provides access to digital information content. Unlike conventional publishing, which has physical content like books, journals, and journals, digital publishing offers content in electronic format that can be accessed through a computer or other device connected to the internet. It allows users to search, download, and create various types of content, such as e-books, articles, videos, and more, from various sources. In the rapidly evolving digital era, effective and efficient content management is crucial for organizations, businesses, and individuals who want to build online presence. Content Management Systems (CMS) are a useful tool for creating, editing, and distributing content on the web without technical knowledge about coding. CMS provides user-friendly tools, allowing users to easily use text, images, videos, and other elements in their sites. Web-based digital library is a platform that uses CMS to create and distribute content without requiring technical knowledge. Users can search, download, and create digital content from various sources connected to the internet. CMS also provides a user-friendly interface and allows users to manage content efficiently, making it an ideal solution for various web publishing needs, from personal blogs to large business portals. Digital library is designed for ease of use and infrastructure, avoiding various issues. It can help create a modern, literate culture and contribute to the development of a more efficient and user-friendly system.

1. Introduction

A digital library is a system that stores, organizes, and provides access to a collection of information resources in digital form; unlike conventional libraries that have physical collections such as books, magazines, and journals, digital libraries present content in an electronic format that can be accessed through computer devices or other devices connected to the internet (Iroaganachi, 2018). The library allows users to search, download, and read different types of materials, such as e-books, scientific articles, images, and videos, from anywhere and anytime (Maideen, 2017). With easy access and efficiency in information management, digital libraries effectively support learning, research, and the dissemination of science in the digital era (Vrana, 2017).

Effective and efficient content management has become critical in this fast-paced digital age, especially for organizations, businesses, and individuals looking to build an online presence (Strauβ & Jonkman, 2017). One of the most important tools to support this is the Content Management System (CMS) (Wan et al., 2016).

A Content Management System (CMS) is software that allows users to create, manage, and modify content on a website without technical programming knowledge (Ang, 2019). The CMS provides a user-friendly interface so users can easily organize text, images, videos, and various other elements on their site (Kaluarachchi & Wickramasinghe, 2023). With a CMS, users can quickly publish content, set page layouts, and keep websites up-to-date (Camden & Rinaldi, 2022). The platform also supports user collaboration, allowing teams with different roles to work together on managing content (Papadonikolaki et al., 2019). CMS is widely used for its ease of use, efficiency, and flexibility (Abdullah et al., 2016). It is an ideal solution for various website management needs, from personal blogs to large business portals (Cesaroni & Consoli, 2015).

A simple web-based digital library CMS is a platform that utilizes a Content Management System (CMS) to manage and provide access to a collection of books, journals, articles, and other digital materials through the internet. These libraries can be easily created and managed using a CMS without requiring in-depth technical skills. Users can search, download, and read digital content from various internet-connected devices. The platform offers a user-friendly interface and allows library managers to update collections efficiently, making it easier to disseminate information and support learning and research needs.

Literature Review

Digital Library

Digital libraries are complex information systems designed to support various user needs (Chen, 2022). Advancements have significantly influenced the development of digital libraries in information and communication technologies (H. G. Sastry et al., 2014). These libraries function similarly to traditional libraries but operate based on digital mechanisms using personal computers and digital technologies (Azir et al., 2022). One of the key advantages of digital libraries is their ability to store vast amounts of digital information and make it accessible to users worldwide through communication networks (Jamaludin & Mahmud, 2011).

The development and management of digital libraries require specific competencies to handle electronic infrastructures and services effectively (Khan & Bhatti, 2017). User interface design in digital libraries is crucial in ensuring convenient access to high-quality information (H. Sastry et al., 2011). Evaluation of digital libraries is essential to guarantee their proper evolution and user acceptance (Fuhr et al., 2007). These libraries store a wide range of document types and formats, making them versatile repositories of information (Monch & Drobnik, 1998).

Research on digital libraries encompasses various aspects such as architecture, systems, tools, content, metadata, interoperability, standards, and user experience (Shiri, 2003). The information architecture of digital libraries is crucial in meeting the needs of both learners and educators in specific domains like science, mathematics, engineering, and technology education (Dong & Agogino, 2001). The demand for digital libraries has led to the emergence of roles like systems librarians or digital librarians to manage these complex information systems effectively (Singh & Nyaichyai, 2023).

In conclusion, digital libraries have become indispensable in the digital age, offering vast resources and information accessible to users globally. Their development, management, and usability are critical areas of research and practice to ensure they continue to evolve effectively and meet the needs of their users.

Digital library management systems play a crucial role in ensuring the coordination of different parts of the library Rahmani (2022). These systems serve as online platforms, providing access to a variety of digital information resources (Khan & Shahzad, 2024). The resources available in digital libraries encompass a wide range of materials such as e-books, digitized archives, academic journals, and research data ("Management and preservation of digital library resources", 2023). Digital librarians are essential in managing digital information systems, adding value to digital libraries by organizing information effectively and ensuring user-friendliness (Sreenivasulu, 2000). Additionally, disaster management is crucial for digital libraries to maintain information integrity and continuity (Ifijeh et al., 2016).

In essence, the management of digital library systems involves addressing challenges, ensuring access to diverse digital resources, preserving information, leveraging the expertise of digital librarians, and implementing disaster management strategies to safeguard digital assets.

CMS

Content management systems are crucial for the effective organization and dissemination of digital library resources Rahmani (2022). Librarians' digital competencies are essential for utilizing emerging educational technologies and managing digital libraries efficiently (Bolasco, 2023). While revising digital library content in response to user requests can enrich libraries with user-contributed content, it also poses challenges related to trust, authenticity, methodology, and sustainability (Dawson, 2006). The British Library's digital library program defines digital libraries as systems that acquire, store, conserve, and provide access to information using digital technologies (Meyyappan et al., 2000). Multimedia Content Management Systems like MILOS can be instrumental in building digital library applications and enhancing user experiences (Amato et al., 2006).

Digital libraries serve as essential infrastructure for document management, necessitating robust content and knowledge management systems to ensure efficient search and retrieval of information (Kannan & Andrès, 2010). The development of digital libraries requires the implementation of standards and protocols to ensure effective organization and management of content (Oguche, 2023). Assessing and adapting content management systems like Drupal for digital library applications can enhance interactivity and user experience (Moore, 2008). Policy decision trees can offer flexible solutions for managing digital collections in academic and university libraries, ensuring effective access and reproduction policies (Koulouris & Kapidakis, n.d.; Koulouris & Kapidakis, 2005). Additionally, a cooperative service architecture based on grid technology can enhance the federation of digital libraries, improving content organization and service delivery (Huang & Wei, 2010).

In conclusion, content management systems are integral to the successful operation of digital libraries, requiring librarians with digital competencies to navigate emerging technologies and user demands effectively. Implementing robust systems, adhering to standards, and developing policies are essential for managing digital content efficiently and ensuring seamless access for users.

Digital library management involves coordinating different digital library components to help achieve its objectives Rahmani (2022). One crucial aspect of digital library development is the management of digital library content, which has not received adequate attention (Yeh et al., 2000). A Digital Content Management System is a software system designed to offer preservation, organization, and dissemination services for digital collections (Matusiak et al., 2017). The Metadata Encoding and Transmission Standard (METS) provides a standardized way to capture descriptive, administrative, structural, and behavioral metadata necessary for managing and providing access to intricate digital content (Formenton & Gracioso, 2023).

Software Engineering

Williams (2004) "Software Engineering for Internet Applications" (2021). "Software engineering: A practitioner's approach" (1983) "Software engineering: A practitioner's approach" Advances in engineering software (2021). Chen (2022) "DevOps practices in digital library development" (2021). Khan & Shahzad (2024) "Key features of digital library management system (DLMS) for developing digital libraries: An investigation from LIS practitioners in Pakistan" Journal of librarianship and information science (2023). Khan & Bhatti (2017) "Digital competencies for developing and managing digital libraries", The electronic library (2018). Lagoze et al. (2005) "Fedora: an architecture for complex objects and their relationships" International journal on digital libraries (2005). McDonough (2006) Mcdonough "METS: standardized encoding for digital library objects" International journal on digital libraries (2006). Manghi et al. (2010) "Realizing and Maintaining Aggregative Digital Library Systems: D-NET Software Toolkit and OAIster System" D-lib magazine (2010).

Waterflow

Based on the provided references, the software development life cycle (SDLC) plays a crucial role in the development and management of software projects. Various methodologies such as the Waterfall, Prototype, Spiral, Agile, and Incremental or Rapid Application Development models are commonly employed in the SDLC process Agarwal et al. (2023). The SDLC process involves phases like problem definition, requirement analysis, system design, coding, debugging and testing, acceptance and operation, maintenance, and upgrade to disposal (Yuge, 2023). Additionally, the SDLC model is essential for ensuring software reliability in different phases of development (Kumar et al., 2018).

The SDLC approach is vital for incorporating quality assurance practices throughout the software development life cycle, ensuring software quality analyst involvement and adherence to software quality assurance practices at different stages of development ("A Methodology for Incorporating Quality Assurance Practices during Software Development Life Cycle", 2021). Furthermore, security considerations should be integrated into every phase of the SDLC, from requirements gathering to design, implementation, testing, and deployment, to enhance software security (Futcher & Solms, 2007).

In conclusion, the SDLC is a structured sequence of software engineering phases that contributes to software product development, ensuring reliability, quality, and security throughout the software development life cycle.

2. Materials and Methods

The research method for developing this CMS-based digital library applies the Waterfall SDLC model, consisting of several phases. The first phase is requirement analysis, where features such as user management, content uploading, and e-book accessibility are identified through discussions with stakeholders. Next is the system design phase, where the technical architecture, user interface, and diagrams like Use Case are created to visualize the key functionalities. In the implementation phase, the system is developed using web technologies according to the designed plan, focusing on features like login pages, dashboards, and content upload forms. This is followed by integration and testing to ensure all components function as expected, including interface usability and system responsiveness. The system is then deployed on a server to be accessible to users, with the final phase being maintenance, involving monitoring, bug fixes, and further enhancements based on user feedback.

3. Results and Discussions

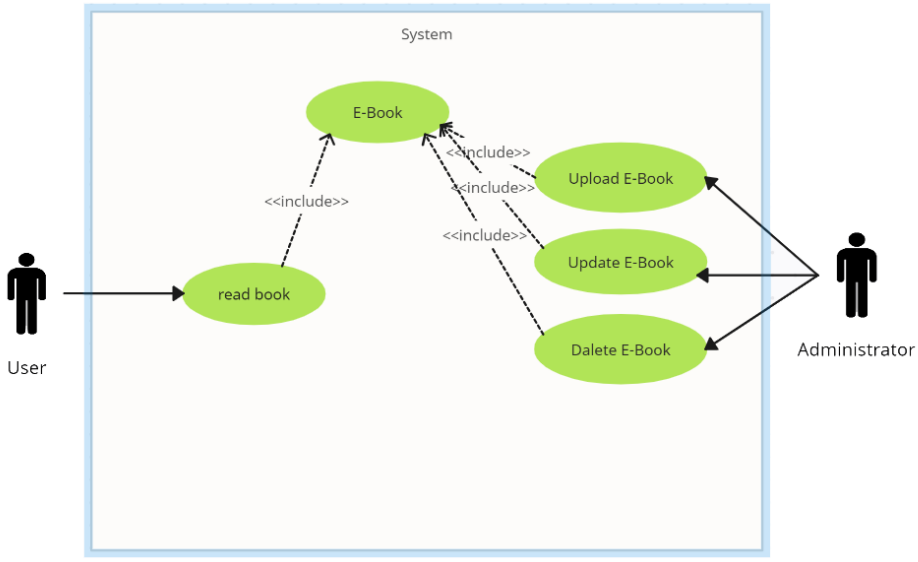

Figure 1. Use Case Diagram

The use case diagram states that the user can read the book in the system, which is an ebook. Administrators can upload, update, and delete e-books.

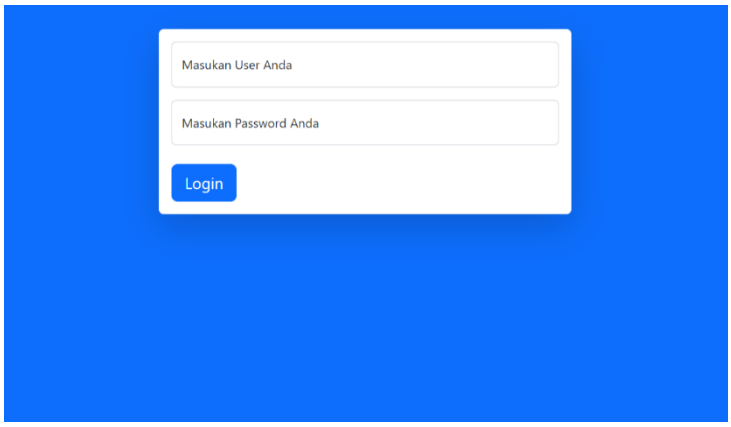

Figure 2. Login Display Figure

The image above shows the login display from the CMS Digital Library system. We are making an effort to create security for the login.

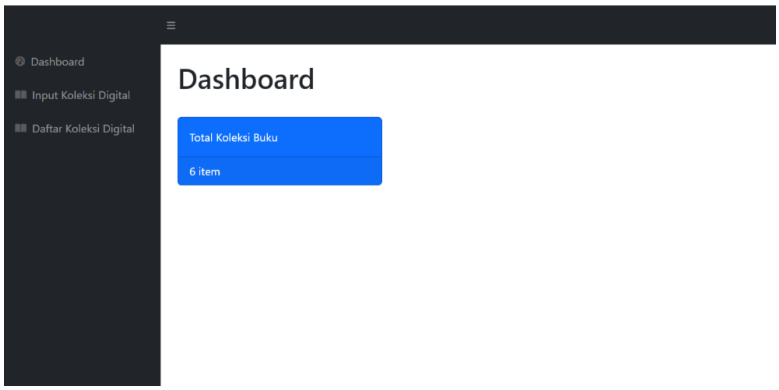

Figure 3. Dashboard

The image above shows the main display. After logging in, the system's main display will appear. This display has the total information of the existing digital collection.

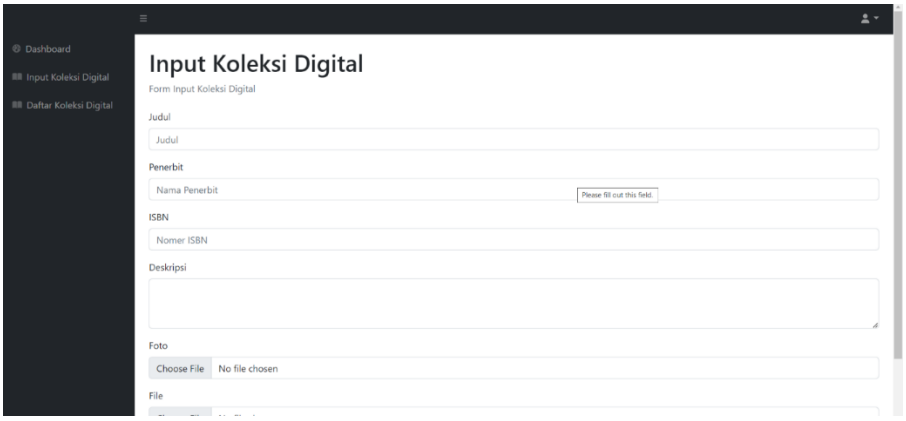

Figure 4. Digital Collection Input Figure

The picture above points to the digital collection input page. This page is a form. The form is filled out according to the information of the digital collection, both the content and the e-book or other literature in digital form. In the form, you can upload a photo of the cover content and content.

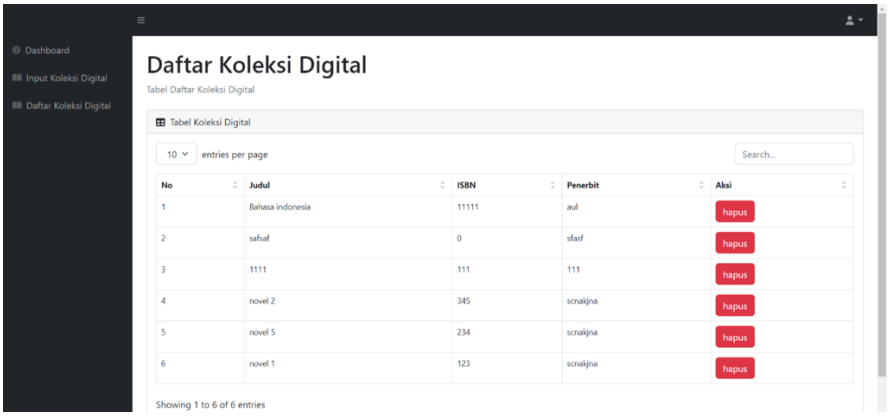

Figure 5. Digital Collection List Figure

The image above is a list of digital collections. This page is in the form of a list of digital content that has been uploaded. In the list, we can take actions to delete content as needed.

4. Conclusion

This digital library is made simple because it is to make it easier for users. The simplicity of this system is also intended to facilitate infrastructure so that it does not burden various aspects. It is hoped that the existence of a lightweight digital library can build a culture of reading and literacy. This system is still under development, and many things need to be developed; of course, we who are researching also still take into account the aspect of convenience and a light system that is an effort to support and not burdensome in the infrastructure aspect.

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