Designing Digital Mading Information and Communication System (DMICS) as a Website-based Trusted Information Provider and Management Service

M. Miftach Fakhri[1*], Ainun Zahra Adistia[2], Jumadil Ahmad Safi'i[3], Rezka Haris[4], Awaluddin Yunus[5]

fakhri@unm.ac.id[1], annzahradistia@gmail.com[2], jumadilahmadsafi21@gmail.com[3], rezkaharis123@gmail.com[4], awaluddinjhi14@gmail.com[5]
[12345]Universitas Negeri Makassar

Abstract

Technological advancement, today's technical sophistication makes everything easier. The internet is a component of today's technological sophistication. The purpose of this research is to develop a digital magazine system that will facilitate information assistance and the ability to provide information directly through the digital magazine website and play a role in increasing student reading and digital literacy. The development method used in this DMICS design is the agile method. The population used in this study were 48 students and lecturers in Makassar. Data obtained by data collection techniques in the form of literature study and online questionnaire distribution. The designed system is tested using Blackbox Testing to test the function of its features. The results of the study can be concluded that the Digital Mading Information & Communication System (DMICS) can be used as an information container for users. This is indicated from the results of the analysis of each construct has an average value of a good category where each construct of Behavioural Intention to Use (BI), Perceived Enjoyment (PE), Information Quality (IQ), Perceived Usefulness (PU), and System Quality (SQ) obtained a value range of 3.17-3.25. This shows that there is a relationship or influence from the dependent variable, namely, Behavioural intention to use (X1), Perceived enjoyment (X2), Information quality (X3), Perceived usefulness (X4), and System quality (X5) on the independent variable construct, namely actual usage behaviour (Y). Thus, the design of a digital mading information system or Digital Mading Information & Communication System (DMICS) is proven to be good for potential users as a forum for increasing digital literacy.

Keywords: Digital Mading; Agile Method; Information System; System Quality

Abstrak

Kemajuan teknologi, kecanggihan teknis saat ini mempermudah segalanya. Internet merupakan komponen dari kecanggihan teknologi saat ini. Tujuan penelitian ini adalah mengembangkan sistem majalah digital akan memudahkan bantuan informasi dan kemampuan untuk memberikan informasi secara langsung melalui *website* majalah digital dan berperan dalam peningkatan Literasi baca dan digital siswa. Metode pengembangan yang digunakan dalam desain DMICS ini adalah metode agile. Populasi yang digunakan pada penelitian ini sebanyak 48 orang Mahasiswa dan Dosen di Makassar. Data diperoleh dengan Teknik pengumpulan data berupa studi pustaka dan penyebaran kusioner *online*. Sistem yang dirancang diuji menggunakan Blackbox Testing untuk menguji fungsi fitur-fiturnya. Hasil penelitian dapat disimpulkan bahwa *Digital Mading Information & Communication System* (DMICS) dapat digunakan sebagai wadah informasi bagi pengguna. Hal ini ditunjukkan dari hasil analisis data kuesioner menunjukkan setiap konstruk memiliki nilai rata-rata kategori baik dimana masing-masing konstruk Behavioral Intention to Use (BI), Perceived Enjoyment (PE), Information Quality (IQ), Perceived Usefulness (PU), dan System Quality (SQ) memperoleh rentang nilai 3,17-3,25. Hal ini menunjukkan adanya hubungan atau pengaruh dari variabel dependen (terikat) yaitu, Behavioral intention to use (X1), Perceived enjoyment (X2), Information quality (X3), Perceived usefulness (X4), dan System quality (X5) terhadap konstruk variabel independen (bebas) yaitu perilaku penggunaan sesungguhnya (Y). Dengan demikian, perancangan sistem informasi mading digital atau Digital Mading Information & Communication System (DMICS) terbukti baik bagi calon pengguna sebagai wadah peningkatan literasi digital.

Keywords: Mading Digital; Metode Agile; Sistem Informasi; Kualitas Sistem

1. Introduction

With the advancement of technology, today's technical sophistication makes everything easier. The internet is a component of today's technological sophistication [1]. The internet is associated with communication between people around the world through electronic communication networks made possible by the connectivity of computer networks [2]. In other terms, the internet refers to millions of computers around the world that are connected to each other. The internet, as one of the consequences of new technical breakthroughs, can serve as a portal to information from around the world [3].

Wall magazines or Mading allow people to interact, create and express themselves. Digital Mading is an expression used in Indonesia to describe the use of digital technology to produce and display information or announcements. Information in digital manufacturing is usually displayed on a screen or monitor rather than on a real bulletin board. Text, photos, videos and other multimedia components may be included. Digital wall magazines are available in various places, including schools, offices, and public locations [4]. The availability of a digital magazine system will facilitate information assistance and the ability to provide information directly through the digital magazine website. Meanwhile, administrators can control incoming information, choose which information to release, and update information once a week or as needed to ensure consumers get the most up-to-date information [5].

According to a recent study by Mazhud (2023), Fostering Creativity Through Digital Magazine Making Training for MA, Wihdatul Ulum students explained that every educational institution has mading publications of various sizes and quantities. However, not all schools are able to optimize the function and role of madding in developing students' reading skills at school. Students' literacy skills will improve if wall magazines can be brought to life [6].

Another research, namely Black Box Testing using the Equivalence Partitions Technique on Android M-Magazine, was conducted by Voutama and Novalia (2022). Describes the development of the school madding application and its testing on software. Software is a procedure decided by a group of testers or software developers that includes software items, some related software parts or all software packages that are fully evaluated [7].

Another research, Digital Magazine Application as a Promotional Media Product for Micro, Small and Medium Enterprises, was conducted by Jumardi (2021). Stating that with the availability of digital magazine-based media, it is hoped that the products of MSME players can be maintained and developed through one channel. Promotion can be in the form of simple information and ordering goods, thus attracting consumers to look for MSME products, and increasing the income of the MSMEs themselves. In addition, it increases activity and contribution to the Indonesian economy [8].

Furthermore, according to research (Ferdiansyah, 2023) entitled Design and Development of a Web-Based Digital Mading Information System at SMK Banii Saalim Bandar Lampung, revealed that one of the school facilities to be developed is a digital wall magazine, which is a transition or transition from using physical wall magazine facilities (magazine board) to digital wall magazines [5].

Another study reported by Safitri (2022) entitled The Principal's Strategy in Raising Awareness and Digital Literacy Skills of Learners, defines digital literacy as the capacity to find, assess, produce, and convey information on digital platforms such as computers and mobile devices. Digital literacy does not replace conventional literacy principles, but rather expands them to include more information about digital devices, computers, social media and the internet [9].

Based on the explanation above, it can be stated that the purpose of this project procurement is so that the use of the Digital Mading Information & Communication System (DMICS) can be used in several agencies, organizations, or companies to facilitate access to information and prevent stagnation of digital literacy skills. This is in accordance with Research conducted by Murray (2022) indicates that in the current era, lack of digital literacy skills will make it difficult for a person. Therefore, it is important to improve digital literacy, especially for the younger generation, through the provision of facilities and training that enable them to effectively filter information. In addition, it is important to instill awareness of the importance of digital literacy both within institutions and at the individual level [10].

2. Methods

2.1 Research Stages

2.1.1 System Development Method

The development method used in this DMICS design is the agile method. According to Sommerville (2011), the Agile Method is an incremental development strategy that focuses on rapidly creating new software releases in stages, reducing processing costs, producing high-quality code, and directly involving consumers in the development process [11].
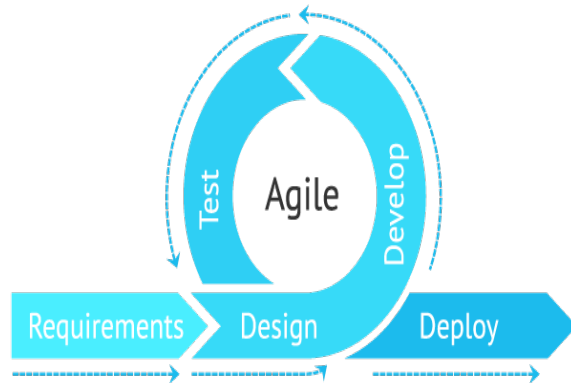
Figure 2.1.1 Stages of the Agile Method

The following is an explanation of the stages of the agile method, as depicted in Figure 2.1.1 above.

1. At the requirements stage, the author conducted an analysis to understand the basic needs of the digital mading information system. The author identifies user needs, system objectives, and key features needed to ensure a clear understanding of what the system should achieve.
2. In the design stage, after the basic needs were defined, the author continued by designing the appearance of the digital mading information system and identifying the main components, as well as planning the layout of the user interface.
3. In the develop stage, the author starts designing and developing the application using relevant programming languages. The author starts by writing the program codes needed to implement the features that have been planned previously.
4. In the test stage, the author tests the digital mading information system created, running it to ensure that the functionality is running well and as expected.
5. At the deploy stage, the author performs the implementation to the appropriate environment, such as the specified server or platform. However, this implementation is done with a limited scope of use, perhaps only in a specific development or test environment.

2.1.2 Data Collection Technique
1) Questionnaire

Questionnaire is a data collection method that involves delivering a series of questions or written statements to respondents with the aim of getting answers or responses from them [12]. The questionnaire was given to users of the digital mading information system as a data collection technique in this study which was distributed via the Google Form platform. The questionnaire consists of a TAM instrument and a series of structured questions intended to generate user responses to the system. The purpose of the Technology Acceptance Model (TAM) is to explain and account for the acceptance of information systems by users [13]. The research method used is quantitative method. The population in this study were all students and lecturers in Makassar as many as 48 people. The questionnaire was measured using 5 constructs from variables X and Y which were measured on a Likert scale.

Table 2.1.2 Likert Scale

Description	Value
Strongly Disagree	1
Disagree	2
Agree	3
Strongly Agree	4

After the data was assessed, the average value was determined using arithmetic calculations using the mean. After calculating the data, researchers analyzed the questionnaire categories through interval scores as follows:

Table 2.1.2 Scale Category

Description	Value
Not very good	1,00 – 1,75
Not good	1,76 – 2,50
Good	2,51 – 3,25
Very good	3.26 – 4,00

2) Literature Study

In addition, a literature study was also conducted on relevant scientific works from various publications and previous research topics, which became the basis for building a web-based digital mading information system [14].

3) Research Variables

This research was conducted using the following variables.

*   The dependent variable used consists of 5 variables, namely Behavioral intention to use (X1), Perceived enjoyment (X2), Information quality (X3), Perceived usefulness (X4), System quality (X5).
*   The independent (free) variable used in this study is the actual use behavior (Y).

2.2 System Analysis
2.2.1 Use Case

Use Case is a diagram that describes typical interactions between system users and a separate system through a story of how a system is used [14]. The following is a use case created for the Digital Mading Information & Communication System (DMICS).
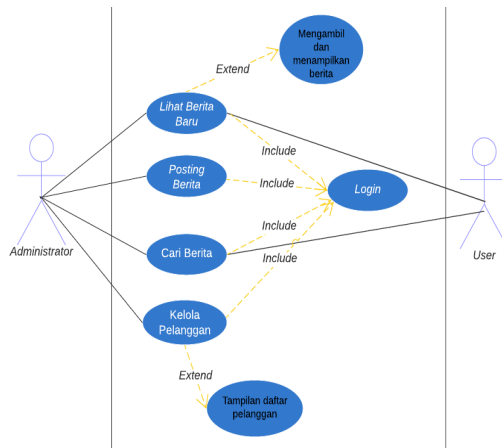

Figure 2.2.1 System Use Case

1) Admin Login: This use case allows the admin to login to the DMICS system using a valid username and password.
2) Create News: This use case allows the admin to create new news by filling in the news title, news content, and selecting the appropriate news category. After that, the admin can post the news to the digital mading page.
3) View News: This use case allows users to view the list of news on the digital mading page. Users can read the news title, posting date, and news category from the news list.
4) Search News: This use case allows users to search for news based on certain keywords.
5) Edit News: This use case allows admins to edit news that has been posted on the digital madding page. Admin can change the news title, news content, or news category.
6) Delete News: This use case allows the admin to delete news that has been posted on the digital mading page.
7) View Category: This use case allows users to view a list of news categories available on the digital mading page.

8) Create Category: This use case allows the admin to create a new category for news. Admins can enter a new category name and specify a color for the category.
9) Edit Category: This use case allows admins to edit existing news categories on the digital madding page. Admin can change the category name or category color.
10) Delete Category: This use case allows the admin to delete an existing news category on the digital mading page. Admins must ensure that there are no news related to the category before deleting the category.

2.2.2 Sequence Diagram

Sequence diagram is a type of diagram that describes the sequence or process flow of each use case that has been created [15].
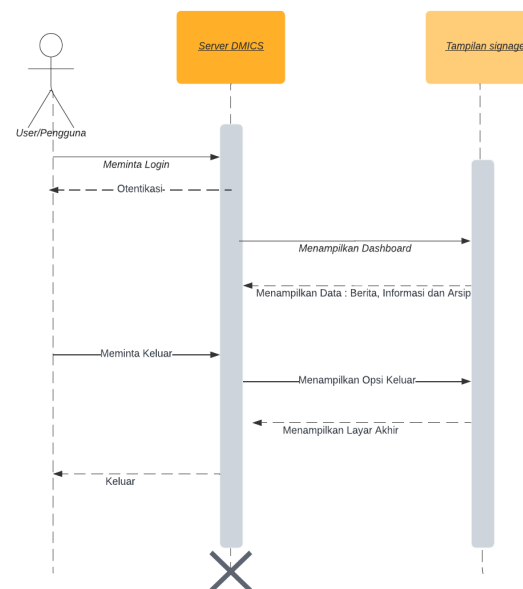

Figure 2.2.2 Sequence Diagram

2.2.3 Activity Diagram

Activity diagrams in software describe the workflow or activities of a system [14]. The following is an image of the Digital Mading Information & Communication System (DMIC) activity diagram.
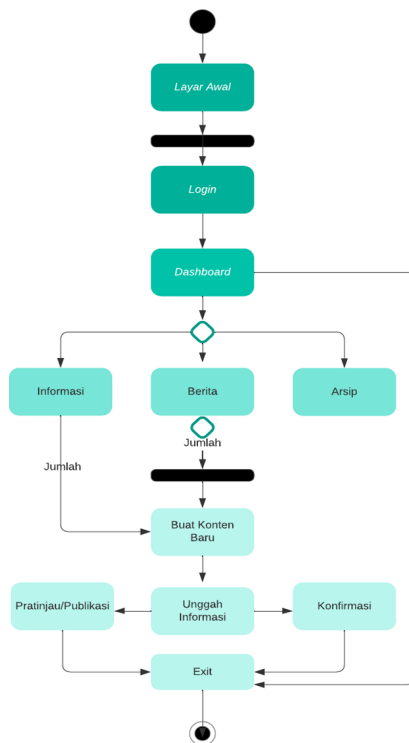
Figure 2.2.3 Activity Diagram

2.2.4 Class Diagram

Class Diagram describes the structure of the system in terms of determining the classes that will be created to develop the system [14]. The following is an image of the Digital Mading Information & Communication System (DMICS) class diagram.
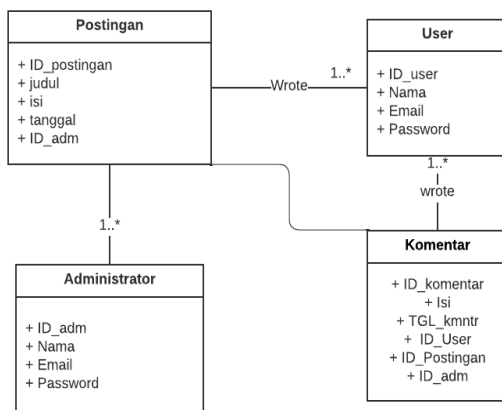

Figure 2.2.4 Class Diagram

3. Result and Discussion
3.1 Display Interface

The following are some examples of the interface design of a web application that has been developed, and I will show some images that are sufficient to illustrate the features in the application.

3.1.1 Home Page

The Digital Mading Information & Communication System (DMICS) main page serves as a starting point for users when accessing and using the platform. The purpose of this main page design is to provide an overview of the digital mading information system and make it easier for users to explore the available features.

Figure 3.1.1 Visitor Home Page

The Digital Mading Information & Communication System (DMICS) homepage is designed to provide an intuitive user experience and provide information clearly. The design should be attractive, easy to navigate, and provide a clear overview of the features available in the platform without the need to login.

3.1.2 Login Page

The Digital Mading Information & Communication System (DMICS) login page is designed as the first step for users to access the system. Its purpose is to ensure that only authorized users can log into the platform and access the available features. The Digital Mading Information & Communication System (DMICS) login page should be designed with high security to protect user data and prevent unauthorized access. The design should be simple, clear, and make it easy for users to enter their login information quickly and accurately.
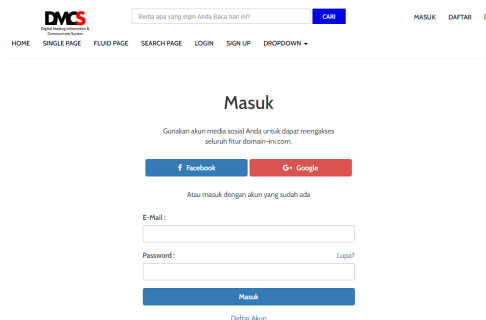
Figure 3.1.2 Login Page

3.1.2 Register Page

The Digital Mading Information & Communication System (DMICS) registration page has been designed to give new users the opportunity to create an account in the system. Its function is to collect the required information from new users and give them access to explore the features available in the system.
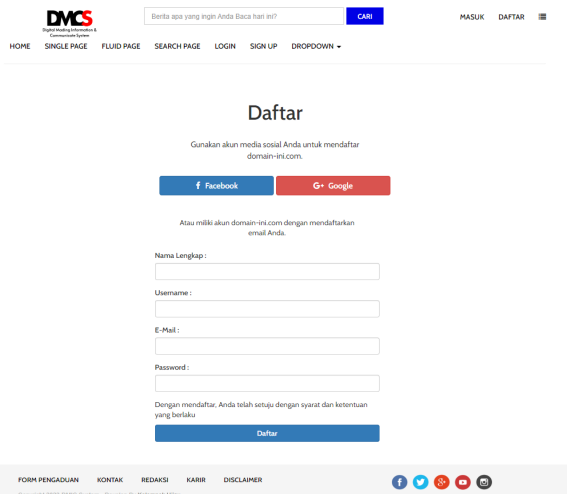

Figure 3.1.2 Register Page

The design of the Digital Mading Information & Communication System (DMICS) registration page should emphasize a high level of security to protect the personal data uploaded by new users. In addition, the design should also be simple, clear, and make it easy for new users to enter their registration information easily and accurately.

3.1.3 Single Page Display

The single page in the Digital Mading Information & Communication System (DMICS) is designed as a single page that combines all relevant content and features in one view. The focus is on providing a seamless user experience without the need to refresh the page or switch between separate pages.

Figure 3.1.3 Single Page

The Digital Mading Information & Communication System (DMICS) single page brings all the crucial information and features in one view, so that users can access and interact with the digital madding information system without the need to switch between separate pages. The design should be intuitive, attractive, and provide a seamless user experience.

3.1.4 Fluid Page

The fluid Digital Mading Information & Communication System (DMICS) page will display cyber media reporting guidelines, such as scope, data verification and balance, copyright, and so on. This information is usually presented in an easy-to-read format and can be updated in real-time.
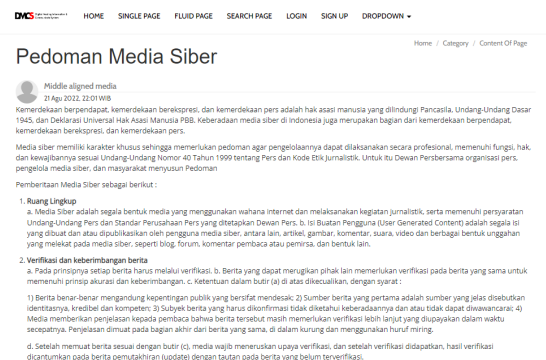

Figure. 3.1.4 Fluid Page

3.1.5 Search Page Display

The search page in the Digital Mading Information & Communication System (DMICS) is designed to allow users to search and find specific content or information in the system. The goal is to provide an efficient user experience in finding relevant content by using the search feature.
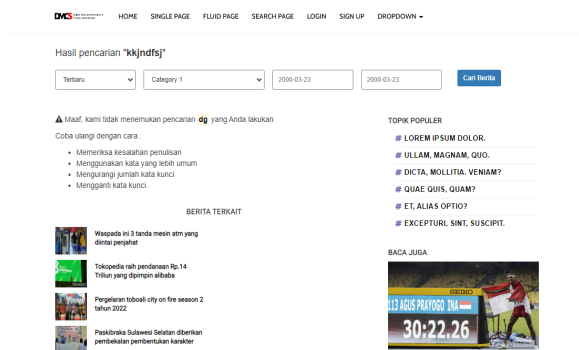
Figure 3.1.5 Search Page

3.2 Black Box Testing

The testing method that the author applies to test this application is black-box testing, which aims to check whether the system requirements have been met, especially in terms of functional specifications [16].

Table 3.2 Blackbox Testing

Tested System	Expected Outputs	Testing Results	
Register	If the input data, full name, username, email, and password are Successfully registered, it will be directed to the homepage.	✓ Valid	Invalid
Login	If the email and password authentication is successful, the user will enter the homepage.	✓ Valid	Invalid
Admins who are egistered using an email address try to perform the login process.	After login, the system will redirect admins who have a registered ID to the dashboard page, where they can access and use all the features available in it.	✓ Valid	Invalid
Admin tries to insert a new post	After the admin posts a new article, users can read the post.	✓ Valid	Invalid
Admin tries to make a post into a headline	be the headline, the preview of the post is successfully displayed larger than the preview of other posts.	✓ Valid	Invalid
Admin manage and delete user comments	After managing and deleting user comments, comments become limited and deleted.	✓ Valid	Invalid
User tries to comment on the article page	After writing a comment and pressing the submit button, anyone can read the comment.	✓ Valid	Invalid
User tries to click the Home menu navigation	After clicking the Home navigation, the page view successfully switches to the homepage.	✓ Valid	Invalid
User tries to click the Single Page menu navigation	After clicking on the Single Page navigation, the page view successfully switches to single page.	✓ Valid	Invalid
User tries to click on the Fluid Page menu navigation	After clicking the Fluid Page menu, the page view successfully switches to the fluid page.	✓ Valid	Invalid
User tries to click the Search Page menu navigation	After clicking the Search Page menu, the page view successfully switches to the search page.	✓ Valid	Invalid
User tries to enter the keyword of the	After entering keywords, the display successfully	✓ Valid	Invalid

desired article post on the Search Page.	finds article posts that match the keywords entered. If it does not find articles that match the keywords, it will appear "Sorry, we did not find your 'keywords' search".

3.2 Analysis of Technology Acceptance Model (TAM) Test Results

In connection with the acceptance of the Digital Mading Information & Communication System (DMICS), the author wants to know whether this digital imaging system can be a trusted and useful information platform for users. The following are the results of testing and discussion that has been done:

3.2.1 Respondent Demographics
Table 3.2.1 Respondent Demographics

Description	Category	Total
	18 Years	3
	19 Years	15
	20 Years	18
Age	21 Years	8
	22 Years	1
	24 Years	2
	46 Years	1
Gender	Female	30
	Male	18
Jobs	Student	47
	Lecturer	1

The total respondents were 48 people, consisting of 30 women and 18 men, with an age range between 18-46 years. In terms of occupation, most respondents were students because the questionnaire was distributed within the scope of Makassar State University students and other universities, considering that this digital mading information system is still in a very limited stage of development.

3.2.2 Data Analysis

The questionnaire instrument contains variables of behavioral intention to use, perceived enjoyment, information quality, perceived usefulness, and system quality. The research questionnaire was prepared by adapting existing statement items and then adjusting them to specific research objectives. The research object used in this customization is the Digital Mading Information & Communication System (DMICS). The questionnaire consists of 14 statements which are divided into 5 constructs relevant to the study. Each construct consists of:

1) Construct (Behavioral intention to use (BI)
Table 3.2.2 BI Construct

No	Statement
1	I intend to utilize the contents and functions of the Digital Mading Information & Communication System (DMICS) to assist my academic/work activities.
2	I will give my recommendation to others to use the Digital Mading Information & Communication System (DMICS).
3	I will utilize the Digital Mading Information & Communication System (DMICS) regularly in the future.

2) Perceived Enjoyment (PE) constructs
Table 3.2.2 PE Construct

No	Statement
1	I think utilizing the Digital Mading Information & Communication System (DMICS) is fun.
2	Using the Digital Mading Information & Communication System (DMICS) aroused my curiosity.
3	The Digital Mading Information & Communication System (DMICS) environment is pleasant.

3) Information Quality (IQ) Construct
Table 3.2.2 IQ Construct

No	Statement
1	Information, which is relevant to my needs, is obtained through the Digital Mading Information & Communication System (DMICS).
2	The information generated through the Digital Mading Information & Communication System (DMICS) is up-to-date enough for my needs.
3	The reliability of the output information from the Digital Mading Information & Communication System (DMICS) is high.
4	The output information of the Digital Mading Information & Communication System (DMICS) is clear.

4) Perceived Usefulness (PU) constructs

Table 3.2.2 PU Construct

No	Statement
1	The Digital Mading Information & Communication System (DMICS) improved my performance.
2	My productivity has increased through the utilization of Digital Mading Information & Communication System (DMICS) in my daily activities.

5) System Quality (SQ) Construct

Table 3.2.2 SQ Construct

No	Statement
1	I consider the functions of the Digital Mading Information & Communication System (DMICS) satisfactory.
2	I am satisfied with the content in the Digital Mading Information & Communication System (DMICS).

Therefore, using the mean value of each construct statement that has been distributed to 48 respondents, the following analysis results are obtained.

Table 3.2.2 Data Analysis Results

Construct	Min	Max	Mean	Category
Behavioral Intention to Use (BI)	2	4	3,248	Good
Perceived Enjoyment (PE)	2	4	3,255	Good
Information Quality (IQ)		4	3,170	Good
Perceived Usefulness (PU)	2	4	3,181	Good
System Quality (SQ)	2	4	3,223	Good

Based on the table above, it can be seen that each construct has an average value of a good category where each construct Behavioral Intention to Use (BI), Perceived Enjoyment (PE), Information Quality (IQ), Perceived Usefulness (PU), and System Quality (SQ) obtained a value range of 3.17-3.25. This shows the relationship or influence of the dependent variable, namely, Behavioral intention to use (X1), Perceived enjoyment (X2), Information quality (X3), Perceived usefulness (X4), and System quality (X5) on the independent variable (free) construct of actual use behavior (Y). Thus, the design of a digital mading information system or Digital Mading Information & Communication System (DMICS) has proven to be good for prospective users as a forum for increasing digital literacy. This is in accordance with the opinion of Silalahi et al. (2022) who explained that with the emergence of the internet and digital platforms, a person has the opportunity to search, explore and obtain information from various sources online. This allows individuals to hone their ability to find relevant and critical information. [17].

4. Conclusion

A digital mading system designed with the aim of providing and managing information reliably through a website. DMICS utilizes website technology as the main platform to collect, manage, and present information to users. DMICS offers features and functions that assist users in finding and accessing the information they need, including information grouping by category, advanced search, information upload and sharing capabilities, and verification and validation mechanisms of the content presented.

The implementation of DMICS is expected to increase the accessibility of trusted information, facilitate information exchange between users, and build trust in the information sources provided through the platform. In conclusion, it emphasizes the importance of designing DMICS as a web-based trusted information provider and management service. By providing accessibility to trusted and verified information, DMICS can be a useful tool to fulfill users' information needs in a digital environment.

5. Acknowledgements

Bibliography

[1] D. Komalasari and I. Solikin, "Penerapan Aplikasi Mading Digital Berbasis Web Pada MA. Miftahul Huda Kabupaten OKI," *Jurnal Sistem Informasi*, vol. 4, 2018.

[2] J. Junaidi, W. Satria, and D. Wahyuni, "Penggunaan Internet Sebagai Media Komunikasi Dalam Proses Pelaksanaan Aktivitas Belajar Mahasiswa Di Universitas Dharmawangsa," *j.Educ.hum.soc.sciences*, vol. 4, no. 1, pp. 131–139, Jun. 2021, doi: 10.34007/jehss.v4i1.511.

[3] M. Ngafifi, "KEMAJUAN TEKNOLOGI DAN POLA HIDUP MANUSIA DALAM PERSPEKTIF SOSIAL BUDAYA," *jppfa*, vol. 2, no. 1, Jun. 2014, doi: 10.21831/jppfa.v2i1.2616.

[4] A. P. Fauzy, M. Munaris, Universitas Lampung, R. Prayogi, and Universitas Lampung, "PENGEMBANGAN MAJALAH DINDING DIGITAL (MADIDI) DI *WEBSITE* SEKOLAH SEBAGAI SARANA PUBLIKASI PRODUK PEMBELAJARAN BAHASA INDONESIA," *Jurnal Kata: Bahasa, Sastra, dan Pembelajarannya*, vol. 9, no. 2, 2021, doi: 10.23960/Kata.v9.i2.202103.

[5] M. Ferdiansyah and S. Andriasari, "RANCANG BANGUN SISTEM INFORMASI MADING DIGITAL BERBASIS WEB PADA SMK BANII SAALIM BANDAR LAMPUNG," *jimik*, vol. 4, no. 1, pp. 173–181, Jan. 2023, doi: 10.35870/jimik.v4i1.152.

[6] N. Mazhud, I. Akidah, and S. Rahmawati, "Menumbuhkan Kreativitas melalui Pelatihan Membuat Mading Digital Siswa MA Wihdatul Ulum," vol. 4, no. 1, 2023.

[7] E. Novalia and A. Voutama, "Black Box Testing dengan Teknik Equivalence Partitions Pada Aplikasi Android M-Magazine Mading Sekolah," *Syntax J. Inf.*, vol. 11, no. 01, pp. 23–35, Jun. 2022, doi: 10.35706/syji.v11i01.6413.

[8] R. Jumardi and A. Nugroho, "Aplikasi Mading Digital Sebagai Media Promosi Produk Pelaku Usaha Mikro, Kecil Dan Menengah," *JNKTI*, vol. 4, no. 6, pp. 501–508, Dec. 2021, doi: 10.32672/jnkti.v4i6.3685.

[9] M. D. Safitri, "STRATEGI KEPALA SEKOLAH DALAM MENINGKATKAN KESADARAN DAN KEMAMPUAN LITERASI DIGITAL PESERTA DIDIK," vol. 10.

[10] M. Coffin Murray, J. Pérez, and J. Fluker, "Digital Literacy in the Core: The Emerging Higher Education Landscape," *IISIT*, vol. 19, pp. 001–013, 2022, doi: 10.28945/4957.

[11] I. Sommerville, *Software engineering*, 9th ed. Boston: Pearson, 2011.

[12] H. Ahyar, D. Sukmana, and H. Andriani, *Buku Metode Penelitian Kualitatif & Kuantitatif*. Yogyakarta: CV. Pustaka Ilmu, 2020.

[13] C. Wardhana, "ANALISIS PENGGUNAAN E-LEARNING EDMODO DENGAN MENGGUNAKAN PENDEKATAN TECHNOLOGY ACCEPTANCE MODEL (TAM) PADA MATA PELAJARAN SIMULASI DIGITAL KELAS X RPL DI SMK MUHAMMADIYAH 1 BANTUL".

[14] K. O. Simatupang and A. F. Pakpahan, "Metode Agile Dalam Perancangan Sistem Informasi Reservasi Fasilitas Universitas Advent Indonesia," *josh*, vol. 3, no. 4, pp. 608–617, Jul. 2022, doi: 10.47065/josh.v3i4.1816.

[15] A. N. Rachman, "SISTEM INFORMASI WISATA DI AMPERA WATERPARK," 2018.

[16] D. Ariesandika, S. A. Wicaksono, and F. Pradana, "Pengembangan Sistem Informasi Monitoring Pekerjaan Kantor Konsultan Pajak Berbasis Web pada Kantor Konsultan Pajak I Gede Arianta," 2018.

[17] D. E. Silalahi, E. A. Handayani, B. Munthe, M. M. Simanjuntak, S. Wahyuni, and R. Mahmud, LITERASI DIGITAL BERBASIS PENDIDIKAN: TEORI, PRAKTEK DAN PENERAPANNYA. Padang: PT. GLOBAL EKSEKUTIF TEKNOLOGI, 2022.