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Iterative UI/UX Design in Environmental Social Governance Website Development: A Case Study of Financial Park Labuan SDN. BHD.

Bagaskara Rahadi Putra [1]*, Nanang Hoesen Hidroes Abbrori [2]

Department of Digital Business, Faculty of Economics, Universitas Negeri Surabaya
Jalan Ketintang, Surabaya 60231, Indonesia
bagaskararahadi.21010@unesa.ac.id

Abstract

This study aims to develop an interactive and responsive Environmental, Social, and Governance (ESG) website grounded in User Interface and User Experience (UI/UX) design principles to improve transparency, reporting efficiency, and stakeholder engagement at Financial Park Labuan Sdn. Bhd. The company is currently facing challenges in maintaining its competitiveness due to increasing demands for effective ESG implementation and communication. To address these issues, the development process adopted the Prototyping-based System Development Life Cycle (SDLC), allowing iterative testing and refinement based on user feedback. A quantitative approach was employed using surveys based on SUS metric to evaluate user satisfaction and website usability. The findings from the survey revealed that the newly developed ESG website significantly enhances the accessibility of ESG-related information, strengthens stakeholder trust, and fosters active community engagement in sustainability initiatives. These outcomes suggest that incorporating user-centered digital solutions can support corporate efforts in meeting ESG standards while also improving public perception and organizational performance.

***Keywords**: ESG, UI/UX, Transparency, SDLC Prototyping, Sustainability.*

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*Corresponding author
Email: bagaskararahadi.21010@unesa.ac.id

Abstrak

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Penelitian ini bertujuan untuk mengembangkan situs web Environmental, Social, and Governance (ESG) yang interaktif dan responsif, berdasarkan prinsip desain Antarmuka Pengguna (UI) dan Pengalaman Pengguna (UX), guna meningkatkan transparansi, efisiensi pelaporan, dan keterlibatan pemangku kepentingan di Financial Park Labuan Sdn. Bhd. Perusahaan ini tengah menghadapi tantangan dalam mempertahankan daya saing akibat meningkatnya tuntutan implementasi dan komunikasi ESG yang efektif. Untuk menjawab tantangan tersebut, proses pengembangan menggunakan metode Prototyping berbasis System Development Life Cycle (SDLC), yang memungkinkan pengujian dan penyempurnaan secara berulang berdasarkan masukan pengguna. Pendekatan kuantitatif diterapkan melalui survei untuk mengevaluasi kepuasan pengguna dan kemudahan penggunaan situs web. Hasil survei menunjukkan bahwa situs web ESG yang dikembangkan secara signifikan meningkatkan aksesibilitas informasi ESG, memperkuat kepercayaan pemangku kepentingan, serta mendorong keterlibatan komunitas dalam inisiatif keberlanjutan. Temuan ini menunjukkan bahwa penerapan solusi digital yang berpusat pada pengguna dapat mendukung upaya perusahaan dalam memenuhi standar ESG sekaligus meningkatkan persepsi publik dan kinerja organisasi.
***Kata kunci**: ESG, UI/UX, Transparansi, SDLC Prototyping, Keberlanjutan.*

INTRODUCTION

Financial Park Labuan Sdn. Bhd. is the largest commercial complex in the Federal Territory of Labuan, Malaysia, covering an area of 12 hectares. The complex consists of office towers, serviced apartments, retail spaces, and a convention and meeting center, making it a strategic hub for economic and business activities in the region. As global pressure for sustainability and responsible corporate governance increases, organizations like Financial Park Labuan are required to implement sustainability principles more systematically. One approach that has become a global standard is the application of Environmental, Social, and Governance (ESG) principles. ESG has evolved into a key indicator in investor decision-making and corporate risk assessment, as well as serving as a foundation for sustainability reporting and corporate social responsibility (Eccles et al., 2019; Khan et al., 2016).

Although Financial Park Labuan has implemented various sustainability initiatives, such as the installation of solar panels, reduction of plastic consumption, execution of social donation programs and CSR, as well as the implementation of anti-corruption policies through the ABAC (Anti-Bribery and Anti-Corruption) framework, all these activities are still documented manually and have not been integrated into a structured digital system. This lack of integration poses several challenges, such as inefficiencies in reporting, delays in information distribution to stakeholders, and low public participation due to limited access to information (KPMG, 2020; Deloitte, 2021). On the other hand, current global trends indicate that

companies adopting digital ESG reporting systems can enhance transparency, strengthen corporate image, and facilitate the auditing and monitoring of sustainability efforts (Eccles et al., 2019; KPMG, 2020).

A web-based digital approach to sustainability reporting has also proven to increase engagement and inclusivity in other contexts, such as education and public services, demonstrating that the use of adaptive technology contributes to the success of digital transformation (Husin et al., 2023). Therefore, there is an urgent need for a web-based ESG information system for Financial Park Labuan that captures, manages, and presents ESG data in real time. Such a system will serve as the official platform to communicate sustainability efforts to investors, business partners, regulators, and the public.

Solutions for Developing a Web-Based Digital System

The proposed system will be developed using the System Development Life Cycle (SDLC) with a Prototyping model, allowing for iterative improvements based on continuous user feedback (Deloitte, 2021; KPMG, 2020). The system will also undergo testing up to Technology Readiness Level (TRL) 6, ensuring it is suitable for real operational environments (KPMG, 2020; Eccles et al., 2019).

Based on the background description, this research highlights the main issue regarding the need for an information system that can facilitate the documentation and publication of Environmental, Social, and Governance (ESG) programs for Financial Park Labuan in a structured and integrated manner. Currently, there is no digital system available that can comprehensively accommodate all ESG data and is easily accessible to the public and stakeholders (Khan et al., 2016; KPMG, 2020). Therefore, the research problem is focused on:

1. How can the design and development of the UI/UX be optimized to support interactivity, accessibility, and responsiveness for the ESG Financial Park website?
2. How can an iterative approach be utilized to optimize the design and development process so that the website meets user needs and business processes?

The primary objective of this research is to design and build the ESG Financial Park website with an interactive and responsive user interface (UI/UX), thereby providing an optimal experience for users in accessing sustainability information. A good UI/UX design is crucial to ensure that ESG information is presented clearly, is easy to understand, and can be

effectively accessed across various devices, both desktop and mobile (Khan et al., 2016; Deloitte, 2021). Furthermore, this research adopts an iterative approach in the website development process that is user-centered, allowing for continuous improvements based on user feedback and periodic testing. This iterative approach aligns with the principles of the System Development Life Cycle (SDLC) Prototyping model, which enables the development of a system that is adaptive and responsive to changing needs and business contexts (Eccles et al., 2019; KPMG, 2020). Thus, the developed ESG website will not only serve as a medium for the transparent and accountable publication of sustainability data but will also enhance stakeholder engagement through features that facilitate effective interaction and information navigation (Deloitte, 2021; Khan et al., 2016). The website prototype will be tested and evaluated using Technology Readiness Level (TRL) standards to ensure adequate technological readiness for real-world implementation in the operational environment of Financial Park Labuan (KPMG, 2020; Eccles et al., 2019).

This research is expected to provide several significant benefits. Practically, the research results can offer concrete solutions for Financial Park Labuan in digitizing ESG reporting, thereby improving efficiency, accuracy, and transparency of company information to the public and investors (Eccles et al., 2019; KPMG, 2020). From an academic perspective, this research contributes to the development of literature in the field of information systems, particularly regarding the implementation of ESG websites in the property and public facility management sectors (Khan et al., 2016; Deloitte, 2021). Socially, the developed system is expected to enhance public participation and awareness of the sustainability initiatives undertaken by the company through the presentation of informative and widely accessible information (KPMG, 2020; Eccles et al., 2019). Meanwhile, the technological benefits of this research lie in the application of the Prototyping-based System Development Life Cycle (SDLC) model and the TRL approach as a framework that ensures the system's feasibility for adoption at an operational scale (Deloitte, 2021; Khan et al., 2016).

In the long term, this research also identifies pathways for future system enhancements, such as the integration of AI-based data analytics, real-time dashboards, and blockchain-based ESG verification, to strengthen data credibility and decision-making transparency.

METHODS

System Development Life Cycle (SDLC) Prototyping

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This research employs a quantitative approach. Data collection was carried out through the distribution of online questionnaires using Google Forms. In system development, this study adopts the System Development Life Cycle (SDLC) with a Prototyping model approach, which emphasizes the creation of an initial prototype that can be tested by users, allowing for iterative improvements based on direct feedback (Pressman, 2014; Sommerville, 2011). This process includes the stages of requirements gathering, prototype design, user evaluation, and iterative system refinement until a final version that meets user needs is achieved. This model is particularly suitable for projects that require active user involvement and testing focused on user experience and satisfaction with the system. To ensure a comprehensive evaluation, diverse stakeholders were included through purposive sampling. Respondents were drawn from Financial Park Labuan's IT, Finance, Marketing, Compliance, Facilities Management, and Public Relations divisions. Additionally, external participants such as partner companies and students from Universitas Negeri Surabaya's Digital Business Program were involved to incorporate both practitioner and external user perspectives. This diversity enhances the reliability of usability insights.

Figure 1. System Development Life Cycle Flow

Data Collection & SUS Testing

The sampling technique used is non-probability sampling with a purposive sampling method, selected based on specific considerations

related to the relevance of respondents to the developed ESG website system (Sugiyono, 2017; Creswell, 2014). The respondent criteria are determined based on direct involvement in the use of the ESG website system, involving employees from the Information Technology, Finance, Marketing, and Compliance divisions at Financial Park Labuan, as well as students from the Digital Business Study Program at the State University of Surabaya who possess knowledge of digital systems and sustainability. This selection is based on the consideration that employees have practical experience with ESG programs, while students have a theoretical and critical background in digital systems (Hair et al., 2010; Saunders et al., 2019). This approach also adopts a narrative methodology previously applied in digital industry research, such as in fashion and blockchain sectors, to ensure relevant and targeted participation (Safitri et al., 2023).

The data used in this study are primary data obtained through questionnaires distributed online. The collected quantitative data were then analyzed using the System Usability Scale (SUS) method, which is a standard method for evaluating system usability based on user perceptions (Brooke, 1996; Bangor et al., 2008). The SUS score is obtained by summing the scores from each questionnaire item and converting them to a scale of 0–100 according to the applicable guidelines. The interpretation of the results is based on usability categories, where scores below 50 are considered poor, scores between 50 and 70 are considered fair, and scores above 70 are regarded as good to excellent. The purpose of using the SUS method is to determine how easy the system is to use and whether the available features meet user expectations (Tullis & Stetson, 2004; Sauro, 2011).

After respondents completed the questionnaire, their answers on the 1–5 Likert scale were processed using the SUS calculation formula to determine the usability score of the developed website. The calculation begins by adjusting the scores for each statement based on whether it is an odd- or even-numbered item. For odd-numbered statements (1, 3, 5, 7, 9), the respondent's score is reduced by 1. For example, if a respondent selects a score of 4 on an odd-numbered statement, the adjusted score becomes 3. Conversely, for even-numbered statements (2, 4, 6, 8, 10), the given score is subtracted from 5. For instance, if the answer is 4 on an even-numbered statement, the adjusted score is 1 (Brooke, 1996; Bangor et al., 2008).

After all scores from the 10 statements are adjusted, the results are summed to obtain the total score. This total score is then multiplied by 2.5 to produce the final SUS score, which ranges from 0 to 100. This scoring

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method provides an objective way to measure and compare the usability levels of different systems or system versions (Brooke, 1996; Sauro, 2011).

The final SUS score can be interpreted to reflect the usability quality of the evaluated website. A score above 80.3 indicates excellent usability, suggesting that users find the website very easy and enjoyable to use. Scores between 68 and 80.3 indicate good usability, meaning the system adequately meets user expectations. Meanwhile, scores below 68 indicate usability deficiencies that require improvements or redesign of certain features to better align with user needs and expectations (Bangor et al., 2008; Tullis & Stetson, 2004).

Black Box Testing

Additionally, this research also employs the Black Box Testing method to technically test the system's functionality aspects. This method evaluates output based on specific input without considering the internal code structure, thus focusing more on the system's behavior from the user's perspective (Beizer, 1995; Pressman, 2014). Testing is conducted by simulating user interactions with key features such as page navigation, feedback submission, ESG photo gallery, and responsive display across various devices. The results of the testing indicate that all key features function according to specifications and support smooth user interaction. The application of this method is essential to ensure the system's reliability before it is widely used (Myers et al., 2011; Ammann & Offutt, 2016). This technology readiness-based system testing approach aligns with the Technology Readiness Level (TRL) development methodology in digital learning transformation, emphasizing the system's readiness for implementation in real user environments (Husin et al., 2023).

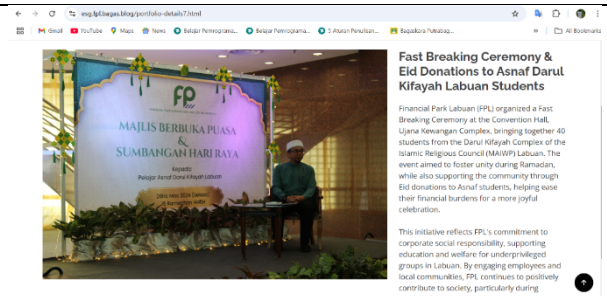
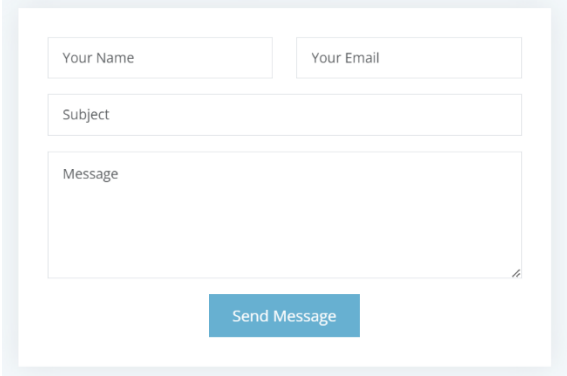
RESULT AND DISCUSSION

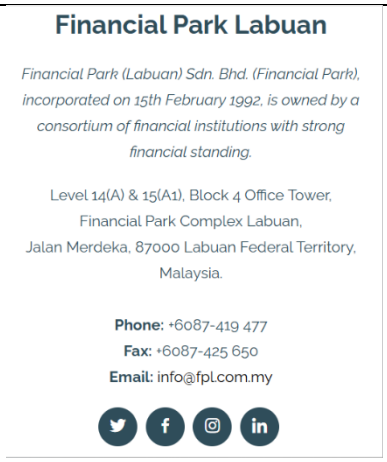
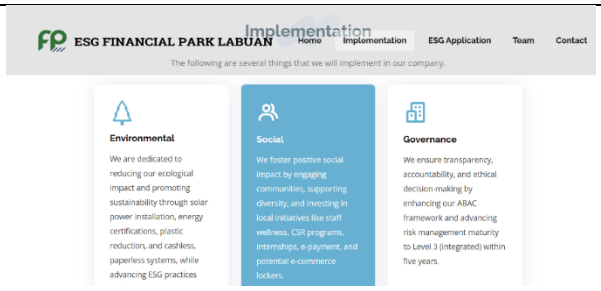
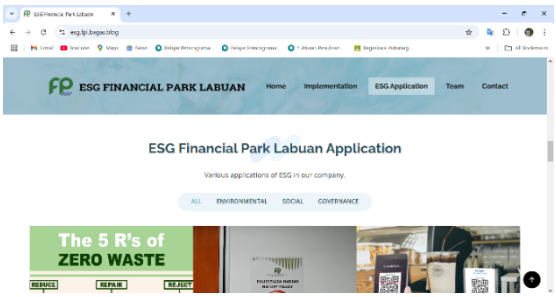
Functional Testing Using

Testing of the ESG Financial Park Labuan website system was conducted using two main approaches: functional testing using the Black Box Testing method and user satisfaction testing through the System Usability Scale (SUS). The test results indicate that all key features of the website function well and meet the predetermined functional objectives. Through the Black Box Testing method, each feature was tested from the perspective of input and output without directly examining the program code (Beizer, 1995; Ammann & Offutt, 2016). Features such as page navigation, the ESG feedback form, the activity photo gallery, and the responsive display for mobile devices demonstrated stable performance without any

errors. This indicates that, from a technical standpoint, the system meets the basic standards of functionality and has undergone responsiveness and interactivity testing for quality on desktop, tablet, and smartphone devices (Pressman, 2014; Myers, Sandler, & Badgett, 2011).

Table 1. Interactive Website Display

Program photos available on the ESG Application page	
Interactive tool on the Contact page (Company Location Map)	
Contact form available on the Contact page	

Various company social media buttons available in the Footer	
Use of hover effects and scrolling animations	
Responsive website accessed via desktop web browser	
Responsive website accessed via tablet web browser	

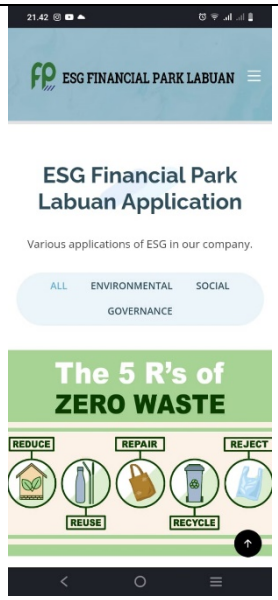
Responsive website accessed via smartphone web browser	

Table 2. Responsive Website Display

In addition to technical testing, a usability evaluation was conducted to measure how comfortable and easy the system is for users to operate. Prior to this, the system underwent functional testing using the Black Box Testing method. This testing focused on observing the input and output of each system feature without considering the internal structure of the code. All main features such as page navigation, ESG feedback form submission, activity gallery display, and responsiveness on mobile devices were tested. The results showed that all features functioned as expected. No functional errors were found, indicating that from a functional perspective, the system meets basic operational standards and is ready for user deployment.

Usability Testing Evaluation

To complement the functional testing of the ESG web-based information system, a Usability Testing evaluation was conducted to assess the system's overall user experience. This evaluation focused on how easily and efficiently users could navigate and interact with the system in a real-world context. The testing was carried out by employees from Financial Park Labuan, specifically those from the Marketing, Compliance, and IT divisions departments that are directly involved in the implementation and management of the company's ESG programs.

The goal of this usability assessment was to determine whether the system's interface and features met the expectations and needs of actual users, especially in terms of clarity, accessibility, and ease of use. The evaluation involved performing key tasks such as accessing ESG content, submitting feedback, and browsing the activity gallery across multiple

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device types. Based on the results, users reported a positive experience with the system, indicating that it is both user-friendly and well-suited for operational deployment. The detailed results of the Usability Testing evaluation are presented in the following table.

Table 3. Homepage, ESG Page, and Contact Page Usability Testing

1. Home Page

No	Test	Steps	Expected Results	Status
1	Implementation	Check whether ESG information is clearly visible	Users are directed to the Implementation page containing complete information about the company's ESG practices	Successful
2	ESG Application	Click the "ESG Application" button	Users are directed to a page containing reports and photos of activities carried out as evidence	Successful
3	Team	Ensure there are no errors in the team names	Displays the company team responsible for the ESG program	Successful
4	Contact	Information about the company's contact	Users are directed to the Contact page that displays contact details, company location, and a feedback form for further inquiries about the company's ESG program	Successful
5	Footer	Click each link in the Footer section (e.g., company's social media)	Links are functional and direct users to the corresponding platforms	Successful

2. ESG Application Page

No	Test Class	Test Steps	Expected Results	Test Result
1	ESG Program Reporting	Click the photo on the ESG Application page	Users are directed to the ESG Program Reporting page, displaying photographic evidence and explanations of the ESG programs carried out by the company	Successful

3. Contact Page

No	Test Class	Test Steps	Expected Results	Test Result
1	Contact	Company information is available	Users fill out the feedback form and submit it by clicking the "Send Message" button	

User Satisfaction Results Based on the System Usability Scale (SUS)

After ensuring that the system functions properly from a technical perspective, the next evaluation was conducted to assess the comfort and ease with which users access and interact with the system. This evaluation employed the System Usability Scale (SUS) method and involved 22 respondents. The participants consisted of internal company staff involved in the implementation of the ESG program, as well as students from the Digital Business Study Program at Universitas Negeri Surabaya. The selection of these two groups aimed to capture perspectives from both practitioners and the digital generation representing today's end users. This approach provides a more comprehensive understanding of user perceptions toward the system.

The usability testing was conducted with users of the ESG Financial Park Labuan website by distributing a Google Form link that contained both the website link and a questionnaire consisting of 10 survey questions. These questions were answered subjectively using a 1–5 Likert scale. The following table presents the results of the user experience satisfaction survey calculated using the System Usability Scale (SUS) after the website was launched:

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Table 4. SUS Calculation Results

No	Respondent	Score										Amount	Value x 2.5
		Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10		
1	Respondent 1	3	1	3	1	3	1	3	1	3	1	20	50
2	Respondent 2	3	2	2	2	3	1	1	1	1	2	18	45
3	Respondent 3	3	1	3	1	3	1	3	1	3	1	20	50
4	Respondent 4	3	1	4	1	4	1	4	1	3	0	22	55
5	Respondent 5	3	1	3	1	3	1	3	1	3	1	20	50
6	Respondent 6	3	0	4	1	3	0	3	0	3	0	17	42.5
7	Respondent 7	3	1	3	1	3	1	3	1	3	1	20	50
8	Respondent 8	3	1	4	1	3	1	3	1	3	1	21	52.5
9	Respondent 9	4	0	4	0	4	0	4	0	4	0	20	50
10	Respondent 10	4	1	3	1	3	1	3	1	3	1	21	52.5
11	Respondent 11	4	0	4	0	4	0	4	0	4	0	20	50
12	Respondent 12	3	1	3	1	2	2	3	1	2	2	20	50
13	Respondent 13	4	1	4	0	4	0	4	0	4	0	20	50
14	Respondent 14	3	0	3	1	4	0	3	1	4	0	19	47.5
15	Respondent 15	3	1	4	0	4	0	4	0	4	0	20	50
16	Respondent 16	4	0	4	0	3	1	4	0	4	0	20	50
17	Respondent 17	3	1	3	0	3	1	4	1	4	2	22	55
18	Respondent 18	3	0	3	2	3	1	2	2	2	1	18	45
19	Respondent 19	4	0	4	0	4	0	4	0	4	0	20	50
20	Respondent 20	3	1	3	1	3	1	3	1	3	1	20	50
21	Respondent 21	4	0	4	0	4	0	4	0	4	0	20	50
22	Respondent 22	4	0	4	0	4	0	4	0	4	0	20	50
Average score													49.77

Based on the calculation results above, the data was then visualized

using the adjective rating scale. The following is a visual representation of the System Usability Scale (SUS) test that was conducted.

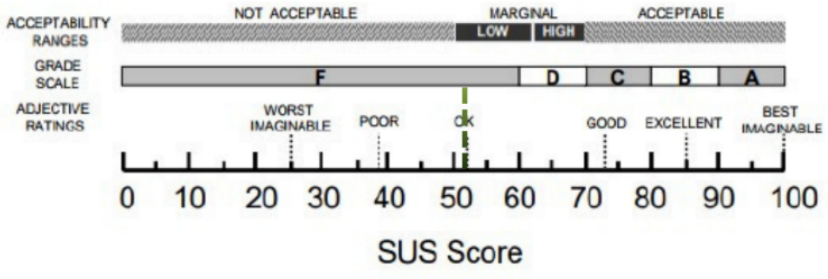

Figure 2. SUS Score

Based on the calculated score above, the result is 49.77, which can be rounded up to 50 (categorized as OK). This score is still below the usability threshold (cut-off score) of 68. These results indicate that the usability level of the website remains in a category that requires improvement.

Based on the System Usability Scale (SUS) testing, the system received a score of 50 with an "OK" rating. This conclusion indicates that:

1. Users feel that the system's usability can still be improved.
2. Some elements within the system may not be entirely intuitive or efficient.
3. Improvements are needed in user interface design, navigation, function integration, and overall user experience to achieve optimal performance.

Additionally, aspects of website interactivity and responsiveness were also tested to ensure a better user experience. Testing on the interactive and responsive variables of the website prototype was conducted using the Black Box Testing method, and the results showed that the tested features functioned as expected. The website successfully provides ease of interaction with available elements and delivers an optimal appearance and functionality across various devices, including desktops, tablets, and smartphones.

The success of this test indicates that the implemented design already supports a more comfortable and efficient user experience. However, further optimization is still needed to make the system more adaptive and user-friendly, thereby improving the overall usability of the website.

Future Development Recommendations

Based on user feedback and global ESG digitalization trends, the following enhancements are recommended:

1. AI - Based Data Analytics: Integration of AI tools to analyze ESG performance, generate real-time insights, and support predictive decision-making.
2. Real - Time Dashboards: Development of interactive dashboards for dynamic ESG data visualization accessible to stakeholders.
3. Blockchain - Based ESG Verification: Adoption of blockchain technology for secure, transparent, and tamper-proof ESG data verification to enhance credibility and stakeholder trust.

CONCLUSION

This study aims to design and develop a web-based ESG information system capable of integrating all sustainability-related activities at Financial Park Labuan into a unified digital platform. The system is designed to present accurate, up-to-date, and easily accessible information to a wide range of stakeholders. By emphasizing transparency, accessibility, and user experience, the system is expected to support the company's efforts in strengthening its image as an entity committed to sustainability and digital innovation (Eccles & Krzus, 2018; KPMG, 2020).

System testing using the System Usability Scale (SUS) method revealed an average score of 50, which falls into the "OK" category. However, this score remains below the standard usability cut-off score of 68, indicating that the system's usability still needs improvement. These findings suggest that while the system is accessible and functional, some interface elements, navigation structures, and interactive features are not yet fully intuitive or efficient (Pressman, 2014; Grewal et al., 2020). Therefore, improvements in UI/UX design, navigation structure, accessibility, and overall system functionality are essential for the next stage of development (Giese et al., 2019; Khan et al., 2016).

Furthermore, interactivity and responsiveness testing through Black Box Testing confirmed that all developed features functioned as expected. The website performs well across multiple devices—including desktops, tablets, and smartphones—and provides a reasonably comfortable user experience (Zhao et al., 2019; Fatemi et al., 2018). This shows that the applied interactive and responsive design supports usage flexibility and enhances accessibility to ESG information (Clark et al., 2015; Eccles & Serafeim, 2013). Nonetheless, further optimization is needed to make the website more adaptive, efficient, inclusive, and user-friendly.

The broadened participation of diverse stakeholders, including internal employees, external partners, and students, enriched the evaluation process by providing more comprehensive and diverse insights

for system refinement. In addition, the system's design was assessed based on accessibility standards, ensuring that it accommodates a wider range of users, including individuals with disabilities, thereby contributing to public inclusivity and corporate social responsibility (W3C, 2018).

In terms of contributions, this research provides theoretical value in the development of digital ESG reporting systems, particularly regarding user interface design, accessibility, and user experience (Friede et al., 2015; Eccles et al., 2019). It also reinforces the notion that the success of digital systems in a sustainability context depends not only on information availability but also on the ease, fairness, and inclusivity with which users can access this information (Eccles & Klimenko, 2019; Deloitte, 2021). Practically, the system is beneficial for companies in building stakeholder trust and encouraging public engagement in ESG programs (Garrido & Poon, 2021; Khan et al., 2016).

Previous studies have shown that user engagement in digital systems strongly depends on fair interactive design and perceptions of fairness in digital interfaces (Husin et al., 2023). Therefore, the developed system must continue to consider principles of fairness-based design, emotional user engagement, and inclusivity for all user groups. Moreover, to further enhance system effectiveness, this research recommends integrating advanced features such as AI-driven ESG data analytics, real-time interactive dashboards, and blockchain-based verification mechanisms. These future enhancements are expected to improve system adaptability, data integrity, decision-making transparency, and stakeholder confidence.

In conclusion, this research successfully designed and developed a web-based ESG information system for Financial Park Labuan, enhancing accessibility, transparency, and the structured management of sustainability information. While the system demonstrates functional and technical feasibility, continuous improvements in usability, inclusivity, and system design are crucial to achieving optimal effectiveness. Ultimately, this research contributes practically by providing a concrete digital solution for ESG reporting, academically by enriching the literature on ESG system development in public facilities, and socially by fostering transparency, inclusivity, and public engagement in sustainability communication.

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