

Online Sustainability Reporting At Muhammadiyah University In South Sulawesi

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Purpose: This study aims to examine the current status of online sustainability reporting in the Muhammadiyah University sector in South Sulawesi from various perspectives. **Design/methodology/approach:** Multiple case study is the research method for this study. Content analysis of university websites and documentation was adopted for data collection. An assessment framework for sustainability reporting was developed as an instrument for content analysis, based on G4 guidelines and previous literature. **Findings:** According to the research, all Muhammadiyah universities in South Sulawesi still face significant limitations in their sustainability reporting practices. The lack of dedicated pages for sustainability reporting on their official websites and technical issues that render their official websites completely inaccessible demonstrate this. The analysis of nine Muhammadiyah universities in South Sulawesi reveals that the average sustainability reporting standards need substantial improvement, with the economic aspect scoring 5.56, the social aspect scoring 5.89, and the environmental aspect only reaching 3.89. These low scores indicate that Muhammadiyah universities in this region have not yet achieved optimal communication of their activities and achievements to their stakeholders and the surrounding community in their operational environment. This situation requires special attention to enhance both transparency and the quality of sustainability reporting in the future. **Social implications:** This study highlights that higher education institutions have a fundamental responsibility to implement sustainable practices internally and then communicate these efforts using modern information technology to meet stakeholder responsibilities and the expectations of the surrounding community. **Originality/value:** This study uses a multiple case study approach to explore online sustainability reporting practices in higher education settings, focusing on the context of Universiti Muhammadiyah in South Sulawesi. This study contributes to the limited research in this area, particularly related to sustainable digital transparency in higher education institutions.

1. Introduction

Sustainability and sustainable development have been big concerns in society with the increasing social and environmental problem worldwide. To prepare future leaders, higher education institutions must make the concept of sustainability an integral part of their curriculum, research, and community service programs [1]. Enhancing transparency

through effective online reporting is crucial, particularly by leveraging university websites as a medium to communicate sustainability practices clearly and accessibly [2]. It is often argued that the participation of higher education would promote the fundamental ethical and culture change toward a sustainable society [3]. Nowadays, many universities around the world are making great efforts and progress in supporting a sustainable environment, for example by making their campuses greener, purchasing environmentally friendly goods, providing courses on environmental sustainability, and directing research towards environmental topics [4].

Muhammadiyah University, as one of the largest Islamic higher education networks in Indonesia, plays a strategic role in implementing and reporting on sustainable development practices. Particularly in South Sulawesi, where Muhammadiyah University has several campuses, the study of sustainable development reporting practices is important to assess the extent to which these institutions are fulfilling their responsibilities in terms of transparency and accountability. Although the importance of sustainability reporting has been widely recognized, there has been limited research on sustainability reporting practices in the field of higher education, especially in Indonesia. This study aims to fill this gap by analyzing the current status of online sustainability reporting in Muhammadiyah University of South Sulawesi. The analysis covers three main dimensions: economic, social, and environmental, using an assessment framework based on the G4 guidelines and related literature [3].

An in-depth understanding of sustainability reporting practices not only provides a snapshot of the current state of affairs, but also lays the groundwork for future improvements [5]. This is important considering the strategic role of universities in creating a generation that understands and is committed to sustainable development [6]. In addition, this study contributes to the development of sustainability reporting literature in the field of higher education, especially in the context of Indonesia.

This study conducted a comprehensive evaluation of the sustainability reporting mechanisms of nine Muhammadiyah universities in South Sulawesi using a multiple case study approach. This research strategy provides a holistic perspective to understand the challenges and opportunities of sustainability reporting in academic institutions.

list of university names and websites

University	Website
University Islam Ahmad Dahlan	https://uiad.ac.id/
University Muhammadiyah Barru	https://unmuhbarru.ac.id/
University Muhammadiyah Bone	https://unimbone.ac.id/
University Muhammadiyah Bulukumba	https://umbulukumba.ac.id/
University Muhammadiyah Enekang	https://unimen.ac.id/
University Muhammadiyah Palopo	https://umpalopo.ac.id/

University Muhammadiyah Pare-Pare

<https://umpar.ac.id/>

University Muhammadiyah Sinjai

<https://umsi.ac.id/>

University Muhammadiyah Makassar

<https://unismuh.ac.id/>

1.1 Background

In the digital age, sustainability reporting has become an important part of improving the transparency and accountability of higher education institutions [7]. While the importance of such reporting is widely recognized, the practice of sustainability reporting in higher education, particularly in Indonesia, remains relatively limited. Initial observations indicate that many universities, including Muhammadiyah University of South Sulawesi, have not yet established a comprehensive online sustainability reporting system. This is mainly reflected in the lack of standardization of report formats and content, as well as the lack of integration between the sustainability report and the official university website.

This creates a huge information gap and makes it difficult for students, communities and other stakeholders to access information about the university's contribution to sustainable development [8]. In addition, investors and potential partners are unable to fully assess a university's commitment to sustainability, while governments and accreditation bodies have difficulty assessing the institution's sustainability performance [9]. If left unaddressed, this situation could lead to a decline in public trust in the university's commitment to sustainability and a loss of collaboration and funding opportunities related to sustainability initiatives. This study aims to address the identified gaps by examining the current status of online sustainability reporting at the University of Muhammadiyah, South Sulawesi. It centers on three main dimensions: economic, social, and environmental, using an evaluation framework based on the G4 guidelines and relevant literature. The core research question is: "What is the current status of online sustainability reporting at the University of Muhammadiyah, South Sulawesi, and what factors influence its effectiveness?" This study aims to shed light on sustainability reporting practices and lay the foundation for future improvements.

1.2 Problem Statement

Sustainability reporting has become an essential component of transparency and accountability for higher education institutions in the digital age [10]. However, Muhammadiyah University of South Sulawesi still faces significant challenges and gaps in implementing online sustainability reporting. Based on initial observations and preliminary research, most Muhammadiyah Universities in South Sulawesi have not yet established a comprehensive online sustainability reporting system, although they have digital platforms. This is evidenced by the lack of standardization of the format and content of sustainability reports across institutions, as well as the lack of integration between sustainability reports and official university websites.

The problem is compounded by the lack of transparency, which prevents stakeholders from

easily accessing information on the sustainable development practices of universities. The lack of regular updates on sustainable development initiatives and achievements, as well as the lack of feedback mechanisms and interaction with stakeholders through online platforms, are serious obstacles to the implementation of effective sustainable development reporting [11]. In addition, the limited understanding and capacity of staff to manage online sustainability reporting, the lack of technical guidance on the implementation of a digital sustainability reporting system and the minimal use of information technology in the collection and verification of sustainability data add to the complexity of the problem.

The impact of this issue is significant, and students and the public have difficulty accessing information about the university's contribution to sustainable development [12]. Potential investors and partners are unable to fully assess the University's sustainability commitments [13]. Instead, governments and accreditors have difficulty assessing the sustainability performance of universities [14]. If left unaddressed, this situation could lead to a decline in public trust in the university's commitment to sustainable development, lagging behind other institutions in adopting modern governance practices, losing opportunities for collaboration and funding related to sustainable development initiatives, and hindering the achievement of the sustainable development goals at the regional level.

Therefore, this study aims to analyze the current status of online sustainability report implementation, identify the factors affecting the effectiveness of the report, make recommendations for an online sustainability report framework that is suitable for the local context, and develop a capacity building strategy for managing digital sustainability reports. Through this study, it is expected to contribute significantly to improving the quality and accessibility of sustainability reporting at Muhammadiyah University of South Sulawesi and serve as a reference model for other higher education institutions in Indonesia.

1.3 Objectives and Scope

This study has several main objectives and aims to provide a comprehensive understanding of online sustainability reporting practices in Muhammadiyah University of South Sulawesi. Specifically, this study aims to analyze the current state of implementation of online sustainability reporting by assessing existing practices, measuring the level of implementation based on economic, social, and environmental aspects, as well as identifying gaps between current practices and the G4 guidelines. In addition, this study aims to identify barriers and challenges in implementation by assessing technological constraints, analyzing factors affecting the quality of reporting, and evaluating institutional capacity to manage reporting systems. The ultimate goal of the study is to make recommendations through the development of a locally adapted framework for sustainable development reporting, the development of strategies to improve the quality of reporting and the provision of suggestions for improvements to optimize the digital platform.

The scope of this study covers several important aspects that have been systematically

identified. Geographically, the study focuses on the nine Muhammadiyah universities in the province of South Sulawesi. The analysis will be conducted in three main areas: economic, social and environmental, as well as information technology infrastructure and online reporting systems. The study period is 2024 and analyzes historical data from the last three years. The methodology used is a multiple case study approach, with content analysis available online and using an assessment framework based on the G4 guidelines.

There are several limitations that need to be considered in the implementation of this study. From a technical point of view, the analysis was carried out only on the official website of the university and did not include social media platforms or internal systems that are not publicly accessible. This study does not delve into financial details, conduct on-site audits, or assess the accuracy of reported data. Despite these limitations, it is expected that this study will make a meaningful contribution to the literature on online sustainability reporting in higher education institutions, particularly focusing on the context of Universiti Muhammadiyah, South Sulawesi. The findings of this study are expected to be a valuable resource for advancing sustainability reporting practices and provide practical insights for higher education institutions that aim to improve the quality of their sustainability reporting.

2. Literature Review

2.1 Related Work

Sustainability reporting has undergone significant evolution over the past two decades, particularly with the emergence of the triple bottom line (TBL) concept developed by Elkington (1997). This concept highlights the importance of balancing economic, social and environmental aspects in organizational reporting [15]. In higher education, online sustainability reporting has become a growing trend [16]. [17] The survey shows that digital platforms offer greater flexibility and accessibility in communicating sustainable development initiatives to stakeholders. The study by [18] shows that university websites have become the main medium for communicating sustainability messages to the public. However, a study by [19] found that Islamic Universities have unique characteristics in terms of sustainability reporting with special emphasis on social and ethical aspects.

2.2 Research Gap

While there is a wide range of research on sustainability reporting in higher education, there are still significant gaps, particularly in the implementation of regional faith-based universities [20]. This study aims to fill this gap by developing an assessment framework that integrates the Global Reporting Initiative (GRI) G4 standards with the local context of the University of Muhammadiyah. In addition, this study comprehensively analyzes the current status of online sustainability reporting at the University of Muhammadiyah, South Sulawesi, and identifies the factors that influence its effectiveness. The literature review

suggests that despite the progress made in the practice of sustainability reporting, more research is needed to understand its implementation in Muhammadiyah University, South Sulawesi, especially in terms of integrating Islamic values with the International Sustainability Reporting Standards (ISRS) as well as optimizing the use of digital platforms to communicate with stakeholders.

3. Methodology

3.1 Data Collection

This study used a multiple case study approach to explore the current status of online sustainability reporting in Muhammadiyah University in South Sulawesi. Data was collected through content analysis of university websites and related documents. To assess the quality of sustainability reporting, the researchers designed a tailored evaluation framework based on the G4 guidelines and previous studies. This approach aimed to identify deficiencies and improvement opportunities in online sustainability reporting practices in Muhammadiyah universities in the region.

3.2 Analysis Techniques

The analytical methodology used in this study was a content analysis of the university's website and existing documents. The researcher developed an assessment framework for sustainability reporting based on the G4 guidelines and previous research [21]. The assessment framework was used as a tool to analyze the content of the sustainability report on the website of the University of Muhammadiyah, South Sulawesi. In addition, the data obtained was processed and analyzed using SPSS software, which was used to assist the researchers in the statistical analysis of the data collected, such as the assessment of the economic, social, and environmental aspects of the sustainability report. By combining content analysis and statistical analysis using SPSS, the researcher was able to comprehensively assess the current status of the online sustainability report of the University of Muhammadiyah, South Sulawesi. The analysis will reveal areas for improvement in sustainability reporting practices in the higher education sector.

3.3 Validation

This study utilizes the multiple case study method. The multi-case study method allows the researcher to analyze multiple cases in depth and compare them comprehensively [22]. In this case, the online sustainability reporting practices of several Muhammadiyah universities in South Sulawesi. This increased the validity and reliability of the data collected. The researcher used a method of content analysis of university websites and documents. The systematic and structured content analysis helped to ensure the validity and reliability of the data collected [23]. The researchers developed an assessment framework for sustainability reporting based on the G4 guidelines and previous literature. The use of a validated

assessment framework improves the consistency and objectivity of the analytical process. [24] By combining multiple case study methodologies, content analysis and the use of a validated assessment framework, the study seeks to ensure the validity and reliability of the data collected and the results of the analysis. This integrated approach contributes to the quality and reliability of the research findings.

4. Results and Discussion

4.1 Key Findings

Descriptive statistical analysis of the mean provides a general idea of the central tendency of the three variables under study. This mean is an important indicator of the overall picture of each variable and can be used as a basis for assessment and decision-making with a view to making future improvements, particularly in relation to environments that require more attention.

1. Distribution of Economic Variables

**Table 1 Economy
Descriptive Statistics for Variables**

ECONOMY					
Frequency		Percent	Valid Percent	Cumulative Percent	
Valid	0	2	22,2	22,2	22,2
	2	2	22,2	22,2	44,4
	8	1	11,1	11,1	55,6
	9	2	22,2	22,2	77,8
	10	2	22,2	22,2	100,0
	Total	9	100,0	100,0	

Detailed Explanation

a. Distribution Frequency

- ECONOMY scores are spread across five categories: 0, 2, 8, 9, and 10.
- A total of 2 people (22.2%) gave scores of 0 and 2.
- 1 person (11.1%) gave a score of 8.
- 2 people (22.2%) gave scores of 9 and 10.

b. Mean

The mean is obtained from the average score on the Economy variable.

$$\text{Mean} = \frac{\text{Total Score}}{\text{Total Number of Cases}}$$

Number of Respondents

Total score is calculated

$$\text{Total Score} = (2 \times 0) + (2 \times 2) + (1 \times 8) + (2 \times 9) + (2 \times 10) = 50$$

So:

$$\begin{aligned} \text{Mean} &= \frac{50}{9} = 5,56 \end{aligned}$$

c. Valid Percent and cumulative percent

- **Valid Percent** menunjukkan persentase masing-masing nilai terhadap total data valid (9 observasi).
- **Cumulative Percent** adalah akumulasi persentase dari setiap nilai hingga mencapai total 100%.

The results of the score distribution of economic aspects show that the data distribution is quite wide, ranging from the lowest value of 0 to the highest value of 10, with an average score of about 5.56. Interestingly, most respondents tend to give extreme scores, namely 0, 9 or 10, accounting for 22.2% each. In contrast, only 11.1% of respondents chose a middle score, such as 8. This pattern shows that there is a clear division in the views of respondents on the economy, with most people holding very positive or very negative views, while only a few give neutral or medium evaluations.

2. Frequency Distribution of Social Variables

**Table 2 Social
Descriptive Statistics for Variables**

SOCIAL					
Frequency			Percent	Valid Percent	Cumulative Percent
Valid	0	2	22,2	22,2	22,2
	1	1	11,1	11,1	33,3
	2	1	11,1	11,1	44,4
	8	1	11,1	11,1	55,6
	9	1	11,1	11,1	66,7
	10	1	11,1	11,1	77,8
	11	1	11,1	11,1	88,9
	12	1	11,1	11,1	100,0
	Total	9	100,0	100,0	

Detailed Explanation

a. Distribution Frequency

- The SOCIAL variable values are spread over a wider range than ECONOMY, namely from 0 to 12.
- As many as 2 people (22.2%) gave a score of 0, which is the value with the highest frequency.
- The remaining scores from 1 to 12 were only chosen by 1 person (11.1%) per category.

b. Mean

This average calculation is obtained using the formula

$$\text{Mean} = \frac{\text{Total Score}}{\text{Number of Respondents}}$$

Total score is calculated

$$\text{Total Score} = (2 \times 0) + (1 \times 1) + (1 \times 2) + (1 \times 8) + (1 \times 9) + (1 \times 10) + (1 \times 11) + (1 \times 12) \\ = 53$$

So=

$$\text{Mean} = \frac{53}{9} = 5,89$$

c. Valid Percent and Cumulative Percent

- Valid Percent shows the percentage of each score to the total valid data (9 observations). Since each score (other than 0) only appears once, each has a Valid Percent of 11.1%.
- Cumulative Percent is the accumulation of Valid Percent for all scores up to 100%

The distribution of scores for the social variable was very wide, ranging from a low of 0 to a high of 12, reflecting significant differences in the respondents' assessments. As many as 22.2% of the respondents gave the lowest value (0), while the other values were evenly distributed, accounting for 11.1% each. The average score was 5.89, and most assessments were around the middle level, although there were some extreme scores, both low (0) and high (10, 11, 12). This shows that some respondents had very positive views on social aspects, while others had very negative views.

3. Frequency Distribution of Environmental Variables

**Table 3 Enviromental
Descriptive Statistics for Variables**

ENVIROMENT					
Frequency			Percent	Valid Percent	Cumulative Percent
Valid	0	3	33,3	33,3	33,3
	2	1	11,1	11,1	44,4
	3	1	11,1	11,1	55,6
	6	1	11,1	11,1	66,7
	7	1	11,1	11,1	77,8
	8	1	11,1	11,1	88,9
	9	1	11,1	11,1	100,0
	Total	9	100,0	100,0	

Detailed Explanation

a. Frequency Distribution

- The ENVIRONMENT variable value is spread in the range of 0 to 9, with a smaller number of categories compared to the SOCIAL variable.
- As many as 3 people (33.3%) gave a score of 0, which is the value with the highest frequency.
- The rest are evenly distributed (1 person or 11.1% each) at scores 2, 3, 6, 7, 8, and 9.

b. Mean

This average calculation can be done as follows:

$$\text{Mean} = \frac{\text{Total Score}}{\text{Number of Respondents}}$$

Total score is calculated

$$\text{Total Score} = (3 \times 0) + (1 \times 2) + (1 \times 3) + (1 \times 6) + (1 \times 7) + (1 \times 8) + (1 \times 9) = 35$$

So=

$$\text{Mean} = \frac{35}{9} = 3,89$$

c. Valid Percent and Cumulative Percent

- Valid Percent shows the percentage of each category to the total valid data (9 observations).
- Cumulative Percent is the accumulation of Valid Percent, which shows the total percentage accumulated up to that category.

The distribution of scores for the environmental variable shows that most respondents gave a low rating, with 33.3% of respondents giving a score of 0, reflecting a very negative view of the measured environmental conditions. The other scores were sparsely distributed, with each value from 2 to 9 being chosen by only one respondent (11.1%). The average score of 3.89 indicates that the perception of environmental issues is generally low, especially when compared to other variables such as economy (5.56) and society (5.89). The scores are highly concentrated on the lowest value (0), which reinforces the serious concerns about environmental issues, although there are also some respondents who gave higher scores (6 to 9). However, their number is not enough to offset the dominance of negative views. These results emphasize that more attention needs to be paid to environmental issues in order to improve public perception in the future.

**Table 4 Economy, Social, Enviromental
Descriptive Statistics for Variables**

		Statistics		
		ECONOMY	SOCIAL	ENVIROMENT
N	Valid	9	9	9
	Missin g	0	0	0
Mean		5,56	5,89	3,89

The calculation of the mean values shows that the social variable has the highest mean value of 5.89 followed by the economic variable with 5.56. The difference between these two variables is relatively small indicating that the study has struck a balance between the social and economic aspects. Meanwhile, the environmental variable had the lowest mean value of 3.89. The large difference between the value of the environmental variable and the other two variables indicates that the environmental aspect still needs more attention and improvement.

These findings provide an overall picture of the situation of the three variables studied, with the social and economic aspects performing relatively well, while the environmental aspect still requires more optimization and improvement efforts. The results of this study could serve as a basis for consideration in the formulation of policies to improve performance,

especially in the environmental dimension, which still has values below the average of the other variables.

5. Discussion

5.1 Comparison with Prior Research

This study shows some similarities and differences with previous studies. The researcher's findings are different from [1] which have dedicated web pages for sustainability reports that provide comprehensive information related to general, specific, and stakeholder engagement aspects. At the same time, the [25] study on universities in the era of Industry 4.0 emphasized the importance of various basic requirements, such as effective financial planning, skilled employees, more industry partnerships, and advanced infrastructure, which have not been optimally implemented at the University of Muhammadiyah in South Sulawesi. There are similarities between our findings and those of the [26] study conducted by the University of Saudi Arabia, which revealed the limitations of sustainable development practices in various areas, including academic, research, social, and environmental areas. Although the social aspect scored the highest in our study (5.89), it is still relatively low and needs significant improvement, especially in developing a clear strategic vision of sustainable development and its reporting system.

5.2 Limitations

There are several limitations of this study that need to be considered during implementation. First, this study focused only on analyzing the content of official university websites and did not address social media platforms or internal systems that are not publicly available. Second, this study did not conduct field verification of the data reported on the university's website, so the accuracy of the information is entirely dependent on the data published online. Third, this study was limited to nine Muhammadiyah universities in South Sulawesi province, so the results may not be generalizable to all Muhammadiyah universities in Indonesia.

5.3 Future Research

Based on the findings and limitations of this study, some recommendations for future research include: expanding the scope of the analysis to include social media platforms and internal university reporting systems; conducting field verification and in-depth interviews with stakeholders; and comparing sustainability reporting practices among Muhammadiyah universities in Indonesia. There is also a need for a longitudinal study to analyze trends in sustainability reporting and the development of reporting models that integrate Islamic values with international standards [27]. These recommendations are expected to provide a fuller understanding of the sustainability reporting practices of the University of Mahamadia.

6. Conclusion

This study explores the online sustainability reporting practices of Muhammadiyah University (MU) in South Sulawesi, focusing on the challenges faced in accessing and disseminating information related to the university's contribution to sustainable development. The main problem identified was the difficulty for students, communities and stakeholders to assess the university's commitment to sustainable development, which may lead to a decrease in public trust and lost opportunities for collaboration. The methodology used in this study was a content analysis of the university's official website and existing documents, and the development of an assessment framework based on the G4 guidelines. The study also used the multiple case study method to conduct a comprehensive analysis of nine Muhammadiyah universities in South Sulawesi Province. The data obtained were analyzed using SPSS software to assess the economic, social and environmental aspects of the sustainability report.

The results show that while the social and economic aspects performed relatively well, the environmental aspects still need more attention, with lower average scores. This result suggests that universities are not doing a good job in communicating sustainability activities and achievements to stakeholders. This study has important implications for the field of sustainability reporting, especially in the field of higher education in Indonesia. By identifying gaps in reporting practices and making recommendations for the development of a locally appropriate reporting framework, this study is expected to improve the quality and accessibility of sustainability reporting at Muhammadiyah University and serve as a reference model for other higher education institutions. In addition, the results of this study can serve as a basis for the development of policies to improve sustainable development performance, especially in environments that still score below average.

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