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Digitalization of Technical Service Minutes as an Implementation of Paperless Office at PLN ULP Kisaran

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A R T I C L E I N F O

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A B S T R A C T

As a company engaged in the energy sector, PLN is aware of its contribution and important role in the issue of climate change and its application of sustainability in order to create harmony in economic growth and community social activities.This is all done in a way that ensures the fulfillment of the resources needed in the long term.The use of paper in routine operational activities in the PLN ULP unit reaches 28 reams per month and the use of paper in the engineering section is 33% or the second largest user of paper in the unit.The next fact is that only less than 50% of field officers who attach paper Minutes (BA) in disturbance service activities have an impact on the total use of paper material in units that contribute to emissions of 0.3 tons of CO2eq at the PLN ULP Kisaran. One such way is the implementation of Paperless Office. This concept is to minimize the use of paper in operational activities to reduce the impact of emissions directly or indirectly.On the other hand, company activities must be in line with other aspects such as corporate governance.Then a comprehensive understanding is needed in formulating policies that will be implemented. The paperless office implementation that we innovate is rooted in the inevitability of using technology in line with management demands to achieve the given challenges. The design of the digital Minutes aims to be aligned with fulfilling management's mission in the aspects of zero emissions, work effectiveness, accounting efficiency and good corporate governance.The result of this innovation is being able to reduce paper emissions by 0.18 per unit, as well as an efficiency of 11% -33% from the operational costs of using BA paper.

INTRODUCTION

Global warming has become one of the problems arising from the industrial revolution. On the other hand, the need for paper in the world is increasing every year[16]. The International Energy Agency notes and estimates that promised energy efficiency improvements alone will require an investment of $13.5 trillion worldwide between 2015 and 2030. In order to achieve this prestigious commitment, alternatives are urgently needed when formulating concrete policies and actions, which are not only limited to increasing energy efficiency, but also resource efficiency more broadly.

As a company engaged in the electricity energy sector, PLN is aware of its contribution and important role in the issue of climate change.This is in line with the Government's mandate regarding the reduction of Greenhouse Gas emissions in the Energy Sector in 2030 by 314 MTonCO2e (with own efforts) or 398 MTonCO2e (with international assistance).

For PLN, the essence of implementing sustainability is creating harmony to maintain economic growth and community social activities, which are carried out in ways that ensure the fulfillment of the resources needed in the long term and are guided by the principles set by all management, employees and partners. business at the PLN Group. For example, the use of paper, for example, began to be abolished and replaced with application concepts. However, most of the realization of this utilization is still minimal, because the applications that are made tend to make it difficult for users in the field; so the officers returned to using the manual format.

This observation was then studied using qualitative method analysis techniques with content analysis and scoping review approaches. Content analysis is a qualitative research technique emphasizing in-depth discussion of the contents of information, reading symbols and the meaning of interactions that occur. Scoping review is a research technique that identifies in-depth and comprehensive literature obtained through various sources with various research methods and has a relationship with the research topic.

In the analysis process, the RCPS technique is used which is often used by PLN as a way to identify the problem. The results of the above observations and analysis, formulate a survey to find out the root of the problem which then continues with the formulation of solutions along with the implementation of product prototypes and examines the effectiveness of the *paperless office concept.*

This study also aims to: (1) develop innovations in the use of digital BA forms for effective documentation of Minutes, as well(2) produce products that can assist PLN's management policies in suppressing performance effectiveness, operational cost efficiency and emission reduction targets.The limitation of the scope of the research is that the limited implementation is carried out at the PLN ULP Kisaran unit with the subject of technical service partner employees with data taken for the period October 2022 to March 2023. The applied research is also expected to be a concrete step to support management policies on various basic aspects of PLN's management commitment.The applied research is also expected to be a concrete step to support management policies on various basic aspects of PLN's management commitment.

LITERATURE REVIEW

a. Emmision Calculation

Calculation of paper emissions involves several factors such as paper production, transportation and use [9].The calculation of emissions is based on a formula agreed upon by*The World Resource Institute and the World Business Council for Sustainable Development* namely with the initial calculation of the total use of paper as follows:

Paper Emissions (kg CO_2/kg) = Paper Emissions factor (kg CO_2/ton paper) / 1000

Emissions CO_2 per kg/paper can calculation with formula:

Emissions CO_2 per kgpaper = Emissionsfrom Pulp & Paper Production + Emissions from Transportation + Emissions from water disposal/1000

The current calculation method can use emission calculation tools available online, one of which is the calculation using the websitehttps://bgkghgcalculator.com/id. In this way, the amount of CO2 emissions resulting from the use of paper can be known, so that appropriate actions can be taken to reduce these emissions, such as by implementing a paperless office solution or using paper that is more environmentally friendly.

b. Paperless Office

*Paperless office*is a concept where paper will be replaced by using digital resources as a means of information.A study shows that more and more parties are interested in going to a paperless office, by relying on internet technology as cloud storage. Besides being convenient, a paperless office is a very effective strategy for managing large amounts of information. This concept also reduces the company's environmental impact and operational costs.

The paperless office applications that have been implemented in PLN are as follows:

Table 1. Application List *Paperless Office* at PLN [28]

No	Application Name	Release Year	Connect Support	Function
1	ESS-SAP	2005	Intranet	*Self-service application that can be used by employees to find out personal data, attendance recaps, pay slips, SPPD submissions, leave and so on. Online CV replacement application.*
2	Revas/E-AIL	2012	Intranet	*Customer Data Archive Application/ AIL Digital*
3	FSO	2016	Internet	*Field Service Order (FSOis part of the mobile-based AP2T application for the New Connection, Power Change and Party features(BA DocumentationNew Install / Chage Power)*
4	Engineering Center	2020	Intranet	*Application of Engineering Document Archives from the stages of the planning/engineering, procurement, construction and operation processes*
5	Inspekta	2020	Internet	*Web-based application for reporting K3 (Occupational Health & Safety), Environmental and Technical Aspect Non-compliance*
6	E-Biddoc	2020	Intranet	*Application for preparing digital-based tender documents for transmission/GI generators*

c. Digital Forms Service

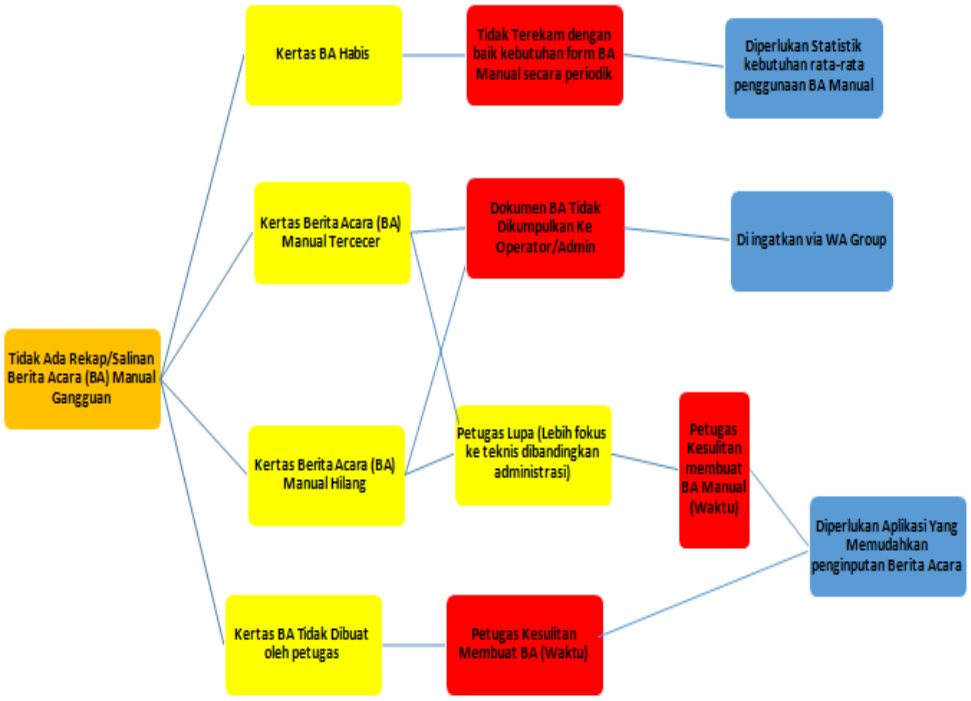
This service allows users to create, submit, and submit forms online without the need to use paper.A further advantage is that digital form services are capable of storing thousands of documents in a digital storage system.

METHODOLOGY

A. Data dan Sample

The sample used was 25 officers from a total of 70 technical officers. The first survey was conducted in March 2022. While the second survey was conducted in January 2023.

B. Scheme RCPS



Gambar 1. Example Of RCPS

The results of the RCPS analysis are expected to find the causes of the high use of paper at unit of PLN[19].

RESEARCH RESULT AND DISCUSSION

A. Result

The implementation results show that there is an increase in the efficiency of paper use. The average monthly use of paper in engineering before implementation was 9-10 reams or around 4500-5000 sheets of paper as shown in the table.

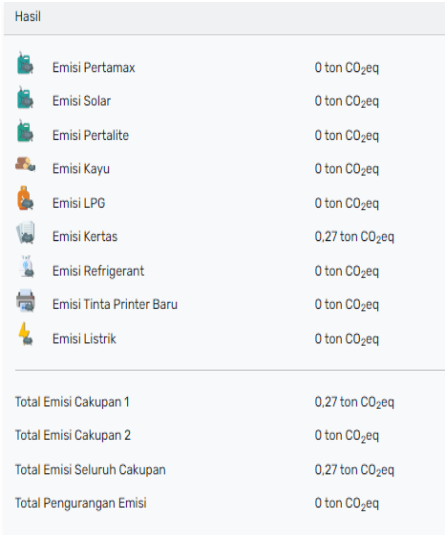
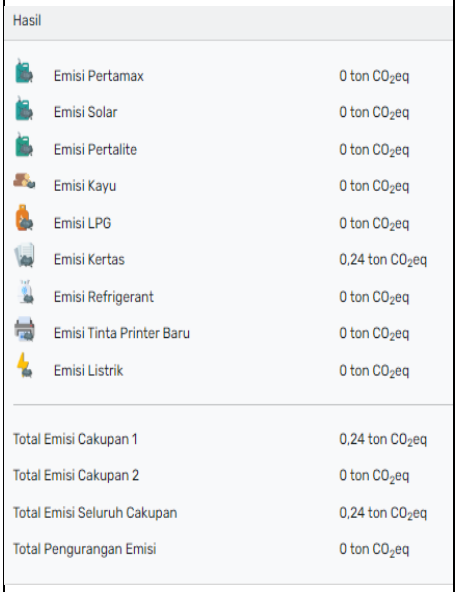
Table 2. Comparison of Paper Use Before and After Implementation

	Bulan	Tahun	Penggunaan
Sebelum	Maret	2022	10 rim
	April	2022	9 rim
	Mei	2022	10 rim
	Juni	2022	10 rim
	Juli	2022	9 Rim
	Agustus	2022	9 Rim
Sesudah	Septembe	2022	9 Rim
	Oktober	2022	8 Rim
	Novembe	2022	8 Rim
	Desembe	2022	7 Rim
	Januari	2023	7 Rim
	Februari	2023	7 Rim
	Maret	2023	6 Rim

B. Analysis

Based on the results of calculations through www.bgkghgcalculator.com/id , it was found that paper emission data before implementation was in the range of 0.27-0.3 ton CO2eq as attached in the table.

Table 3. Comparison emission of Paper Use Before and After Implementation

Before Implementating	After Implementating
	

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

Broadly speaking, research shows that digitization can increase the efficiency and effectiveness of using paper. The conclusions are stated as follows:

1) Reducing paper also has an impact on reducing emissions from a value range of 0.27-0.3 CO2eq to 0.18-0.21 CO2eq or around 30% of the initial emission

2) Inventory data from Minutes needed by units, for company needs in planning and evaluating work.

B. Recommendations

Judging from these conclusions, there are also other impacts such as operational financial impacts and risk impacts that have not been examined in detail from this research. However, there are also other impacts that can be explored such as the ease of officers in doing work and officers' perceptions of the flow of customer complaint services. We hope that future research will explore other impacts of emissions on the above-mentioned issues.

ADVANCED RESEARCH

In writing this article the researcher realizes that there are still many shortcomings in terms of language, writing, and form of presentation considering the limited knowledge and abilities of the researchers themselves. Therefore, for the perfection of the article, the researcher expects constructive criticism and suggestions from various parties.

REFERENCES

Anwar, M. (2013**). Green Computing and Energy Consumption Issues in the Modern Age**. IOSR Journal of Computer Engineering, 12(6), 91–98.

Bungin, Burhan. (2017). Metode Penelitian Kualitatif. Depok : PT Raja Grafindo

Dua reja, Imelda. A.L Suban. (2016). ***Analisis Penerapan dan Optimalisasi Sistem Informasi Sekolah Terpadu (SisTer) Sebagai perwujudan Paperless Administration Menuju Sekolah Berbasis E-Document***. Prosiding Seminar Nasional Pendidikan Teknik Informatika Undhiksa. PP 188-194

Hardiani, H., & Sugesty, S. (2012). Inventori Emisi Gas Rumah Kaca di Industri Pulp dan Kertas sebagai Bahan Perumusan Kebijakan Perubahan Iklim Nasional. *Journal of Industrial Research (Jurnal Riset Industri)*, *6*(3), 211-222.

Herjuno,Bayu Pratomo. (2023). Ketahui ***Ini Perbedaan Sustainability dan ESG Bagi Perusahaan***, 17 Maret 2023, https://www.fortuneidn.com/business/bayu/perbedaan-sustainability-dan-esg-bagi-perusahaan?page=all, diakses pada 23 Maret 2023

Hilary Arksey & Lisa O'Malley.(2005) Scoping studies: towards a methodological framework, International Journal of Social Research Methodology, 8:1, 19-32, DOI: 10.1080/1364557032000119616

https://ghgprotocol.org/calculation-tools-and-guidance diakses pada 13 April 2023

https://www.getapp.com/website-ecommerce-software/a/jotform/compare/zoho-forms-vs-google-forms-vs-typeform/ diakses pada 13 April 2023

https://www.wikipln.co.id diakses pada 13 April 2023

Iswanto, A. C., & Wahjono, W. (2019). Pengaruh Revolusi Industri 4.0 Terhadap Ilmu Akuntansi-Esai. Jurnal Ilmiah Infokam, 15(1).

Katadata Insight Center. (2022).***Indonesia Carbon Trading Handbook.*** Diunduh dari https://kic.katadata.co.id/insights/40/indonesia-carbon-trading-handbook pada tanggal 23 Maret 2023

KLHK. (2018). *Status Hutan dan Kehutanan Indonesia*. Annual Year Report

L.J Wantania, A N Hidayanto, Y Ruldeviyani.(2021). ***Analysis of User Satisfaction Factors of E-Kinerja Application as Utilization of the Paperless Office System: A Case Study in Regional Civil Service Agency, North Sulawesi Province.*** IOP Conf. Ser.: Earth Environ. Sci. 700. Orlando. 10-14 Oktober 2021.

Michael D. Briscoe. (2022) .***The paperless office twenty years later: Still a myth?***, Sustainability: Science, Practice and Policy, 18:1, PP 837-845, DOI: 10.1080/15487733.2022.2146370.

Murthy, N. (2013). ***Paperless organization***. Asia Pacific Journal of Marketing & Management Review, 2(9), 87–97.

PLN. (2019). *Memaknai Tantangan, Membersamai Keberlanjutan*. Annual Year Report. Report

Prastyo, Sumi, Kusumawardani.(2020). ***A Systematic Literature Review of Application Development to Realize Paperless Application in Indonesia: Sectors, Platforms, Impacts, and Challenges***. Indonesian Journal of Information Systems (IJIS)Vol. 2, No. 2, February 2020. PP 111-129.

Renstchler, Flacheneker, Martin Kornejew. (2020). ***Assessing carbon emission savings from corporate resource efficiency investments: an estimation indicator in theory and practice***. Environment, Development and Sustainability (2020) 22:1. PP 835-861, DOI: https://doi.org/10.1007/s10668-018-0222-z

Rumpa, L. D., Lembang, S. T., Vonny, S., Salu, B., & Allo, M. D. G. (2017). ***Towards Paperless Education : A Preliminary Research Applying E-Learning on Engineering Education***. The 1st International Conference on EFL Teaching and Research.

S.E. Prasetyo;G.M. Damaraji, and S.S. Kusumawardani.(2020)**.** ***A Review of The Challenges of Paperless Concept in the Society 5.0*** . International Journal of Industrial Engineering and Engineering Management (IJIEEM), Vol. 2, No.1, July 2020. PP 15-23.

Setyaningsih, S. (2021). Rancang Bangun Aplikasi Pelacakan Dokumen Tata Kelola (Studi Kasus: Universitas Internasional Semen Indonesia) (Doctoral dissertation, Universitas Internasional Semen Indonesia).

Sinaga, F., Setyawati, S. M., & Laksana, R. D. (2020). Root Cause Problem Solving (RCPS) Analysis As An Optimization Of General Category Electricity Bill Arrears Control Strategy At PT PLN (PERSERO) Unit Layanan Pelanggan Banyumas. *IJESS International Journal of Education and Social Science*, *1*(1), 28-36.

Standard Chartered.(2010). ***Reducing & Eliminating Paper Consumption, A Best Practice Guide for Corporates Office***. Edition 1- May 2010. E-Booklet

Stephens, G. L., Kahn, B. H., & Richardson, M. (2016). ***The Super Greenhouse Effect in a Changing Climate.*** Journal of Climate, 29(15), 5469–5482

Susanty, W., Thamrin, T., Erlangga, E., & Cucus, A. (2012,). Document management system based on paperless. In International Conference on Engineering and Technology Development (ICETD).

Thimbleby, Harold. (2018). ***Three Laws for Paperlessness***. Digital Health Vol. 5, No. 2, August 2018. PP: 1-16

Yeasmin, S., Rahman, M. M., & Murthy, C. R. K. (2019). Open School Learners' Access to Paperless Initiatives at the Bangladesh Open University: challenges and barriers.

Zhou, B., Chao, Q., & Huang, L. (2015). The core conclusions and interpretation of working group I contribution to the fifth assessment report of the intergovernmental panel on climate change. Chinese Journal of Urban and Environmental Studies, 3(01), 1550003.