

LAPORAN PERJALANAN DINAS

International Conference on Multidiplinary Researc and Technology

Hotel Grand Sahid Jakarta Indonesia

3 AGUSTUS 2023



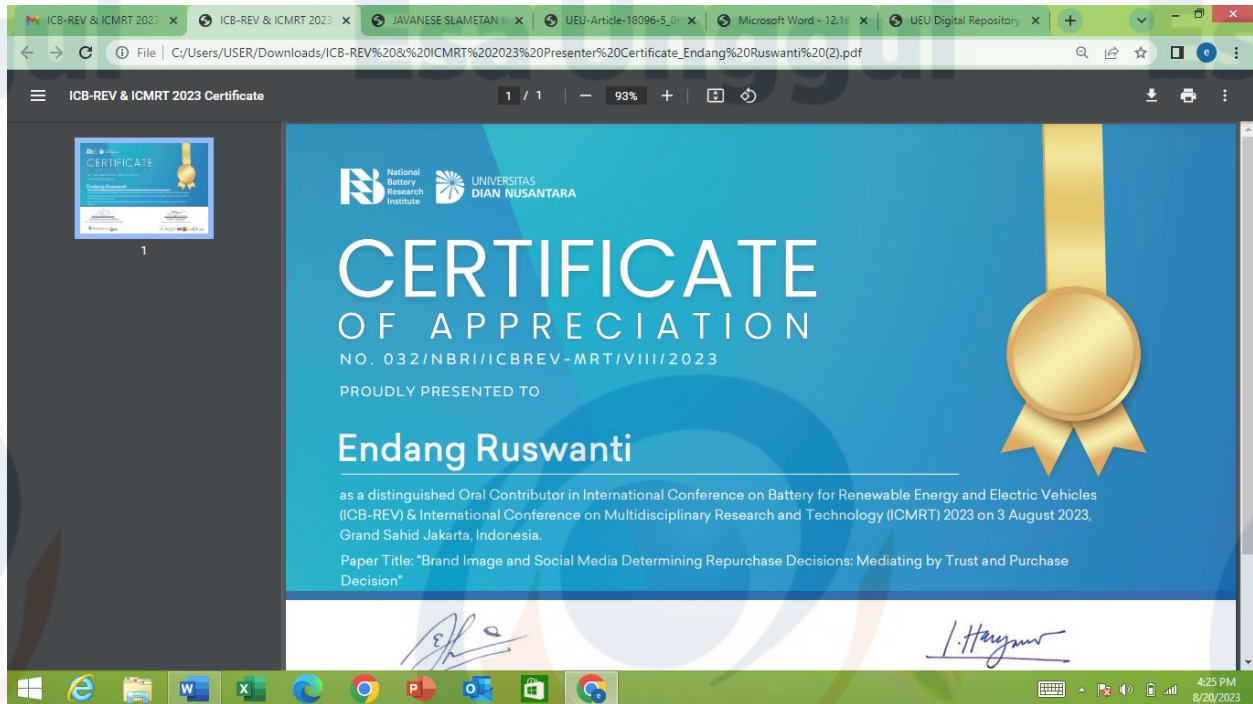
Oleh

Prof Dr. Endang Ruswanti, SE, MM

FAKULTAS ILMU-ILMU SOSIAL  
PROGRAM STUDI ILMU EKONOMI  
UNIVERSITAS ESA UNGGUL

2023

Sertificate International Conference on Multidisciplinary Research and Technology tanggal 3 Agustus di Grand Sahid Jakarta Indonesia



Adapun susunan acara sebagaimana terlampir:



**WELCOME FROM CHAIRS**

Dears All Participants,

Welcome to International Conference on Battery for Renewable Energy and Electric Vehicles (ICB-REV) and International Conference on Multidisciplinary Research and Technology (ICMRT) 2023. The ICB-REV & ICMRT 2023 becomes one of NBRI's prestigious annual conference event. Previously, we have successfully conducted four triumphant international conference: ICB-REV 2021, ICAMT 2021, ICB-REV 2022 and ICAMT 2022. Following this momentum, the ICB-REV & ICMRT 2023 will be conducted to gather all the experts on battery, renewable energy, and electric vehicles from all over the world to present their recent works and share their knowledge to all participants. This should be accomplished by the presence of invited world-class speakers, industrial expert, association, government, and policy makers that bring the impact of battery technology to the world.

The conference is organized by the National Battery Research Institute (NBRI) in collaboration with the University of Dian Nusantara (UNDIRA), Queen Mary University of London (QMUL), Material Research Society Indonesia (MRS-INA) and International Union of Material Research Societies (IUMRS).

The main interest of ICB-REV & ICMRT 2023 is focused on advanced battery technology, energy storage, electric vehicles, carbon emission, digital communication, international relations, business & management and other related topics. It is expected that ICB-REV & ICMRT 2023 can deliver the output and outcome that will be beneficial for all parties. Therefore, the world target on sustainable development goals will be successfully achieved. We sincerely hope that you will enjoy the ICAMT 2022 and have a pleasant experience.



**Prof. Dr. rer. nat. Evvy Kartini**  
Chair and Founder of National Battery  
Research Institute (NBRI)



**Prof. Suharyadi**  
Vice Chair and Rector of University of Dian  
Nusantara (UNDIRA)

## GENERAL INFORMATION

The latest report from the International Governmental Panel on Climate Change (IPCC) captures the full scale of the threat to human life in a heating world. The surge of carbon emissions in the last decade lead mother earth to the climate crisis. Various initiatives have taken to curb the climate catastrophe. From global treaty policy (Paris Agreement 2015 to Glasgow Climate Pact 2021) to technology intervention (renewable energy to battery electric vehicles innovation). Even, Indonesia G20 presidency makes the energy transition as one of priority agenda. Because energy transition follows the Paris Agreement, which targets net-zero emissions by 2060.

Based on the current situation, the National Battery Research Institute (NBRI) will conduct the International Conference on Battery for Renewable Energy and Electric Vehicles (ICB-REV) and International Conference on Multidisciplinary Research and Technology (ICMRT) 2023 in collaboration with University of Dian Nusantara (UNDIRA), Queen Mary University of London (QMUL) United Kingdom, International Union of Material Research Societies (IUMRS) and Material Research Society Indonesia (MRS-INA). This Conference will bring together scientist, academicians, industry partners, the government and all stakeholders that focus on battery technology for electric vehicles and renewable energy as well as the multidisciplinary research & technology topics. The ICB-REV & ICMRT 2023 will be the insightful space for all stakeholders to disseminate their innovations, exchange the idea & perspectives and also open international networking for bolstering the global energy transition agenda.

The National Battery Research Institute (NBRI) is a platform that brings together scientists, academicians, industry partners, the government, and all stakeholders that focus on battery technology and renewable energy. NBRI was legally established on 07th December 2020 as The Center of Excellence Innovation of Battery and Renewable Energy Foundation, with Prof. Dr. rer. nat. Evvy Kartini and Prof. Dr. Alan J. Drew, became the Founder and Co-founder of NBRI, respectively. Since January 2020, NBRI has performed more than 280 activities national and internationally covering 35 countries. Those activities include Focus Group Discussion, Lectures, Schools, Workshops, Webinars, Training of Trainers, Annual International Conferences, and Summit.

Universitas Dian Nusantara (UNDIRA) was founded by Dian Asra Foundation which was established in 2019, with Prof. Dr. Suharyadi, MS as a first rector. UNDIRA has a vision to become a trusted and professional University with a Global Perspective and to meet the needs of the industrial world and Science and technology-based Entrepreneurship in 2030. Universitas Dian Nusantara has the following values, Visionary - Innovative and able to read opportunities has the right strategies and is able to provide motivation. Integrity - honest responsible and consistent in all actions in achieving goals. Professional - working in accordance with competencies of ethical rules that applies in their field. Those values are then instilled in the academic community of the University.

The main concern of ICB-REV & ICMRT 2023 is focused on advanced battery technology from raw materials to cell fabrication, energy storage for renewable energy, and electric vehicles battery and charging station that support energy transition. Besides, it also covered the multidisciplinary research and technology. This should be accomplished by the presence of invited world-class speakers, international participants, global industry players and international battery associations. The selected articles will be published in AIP international proceedings and other reputable journal Scopus indexed.

In conjunction with ICB-REV & ICMRT 2023, the serial prestigious events will be organized as complementary to broaden audiences such as

- International Battery Summit 2023 on 1-2 August 2023
- Youth Ideas Competition Final Presentation on 3 August 2023

## **TIME AND VENUE**

Time: 03 August 2023

Venue: Hybrid (Grand Sahid Jaya, Jakarta)

## **THEME**

The theme for the International Conference on Battery for Renewable Energy and Electric Vehicles (ICB-REV) and International Conference on Multidisciplinary Research and Technology (ICMRT) 2023 is ***“Accelerating Clean Energy Transition Towards Net Zero Emission.”***

## **SCOPES**

1. Advanced Battery Technology from Upstream (Raw Materials Extraction), Midstream (Cell Fabrication), and Downstream (Applications and Recycling).
2. Energy Storage (Energy Storage Technology for Renewable Energy (Solar, Wind, Biomass, Geothermal, etc))
3. Electric Vehicles Ecosystem (battery system, charging station, electric motor, etc)
4. Carbon Emission Reduction (Tax, Market, Offset) and ESG Goals
5. Digital Communication
6. International Relations
7. Business and Management (Business, Management, and Feasibility Study)
8. Other Related Topics and multidisciplinary research and technology (policy, regulation, standardization, industry concern, etc)

## **COMMITTEES**

### **Steering Committees**

Prof. Evvy Kartini

Prof. Alan J Drew

*Founder of National Battery Research Institute and President of MRS-INA, Indonesia*

*Co-Founder of National battery Research Institute and Director of the Materials Research Institute of QMUL, United Kingdom*

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Prof. Suharyadi	<i>Rector of Dian Nusantara University</i>
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Coordinator of Journal Publication	Muhammad Fakhrudin, ST. Dr. Nofrijon Sofyan
Coordinator of Youth Ideas Competition (YIC) 2023	Yosef Christian Riki Teluma Delvin Fadhlurrahman
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## SECRETARIAT

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## ORGANIZED BY



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## TENTATIVE AGENDA ICB-REV & ICMRT 2023

Sessions	Time	Speaker's Session	
Morning Session (UTC+7)	08.30-09.00	Open Gate & Registration	
	09.00-09.05	<b>Opening Remark</b> <b>Prof. Dr. rer. nat. Evvy Kartini</b> <i>Founder of National Battery Research Institute</i>	
	09.05-09.20	<b>Opening Remark</b> <b>Prof. Suharyadi</b> <i>Rector of Universitas Dian Nusantara</i>	
	09.20-10.00	<b>Prof. Neeraj Sharma</b> <i>(Director of Australian Battery Society and Associate Professor of University of New South Wales, Australia)</i>	
	10.00-10.30	<b>Ir. Yudo Dwinanda Priadi, M.Si.</b> <i>(General Director of New Energy, Renewable and Conservation Energy (EBTKE), Ministry of Energy and Mineral Resources, Republic of Indonesia)</i>	
	10.30-10.40	Coffee Break & Room Transition	
	10.40-11.05	YIC Final Presentation	<b>Keynote Session</b> <b>Prof. Alexey Glushenkov</b> <i>(Associate Professor of Australia National University, Australia)</i>
	11.05-12.30		Oral Presenter
12.30-13.30	Break & Lunch		
Afternoon Session (UTC+7)	13.30-14.05	<b>Dr. Ir. Muhammad Hanafi, MBA, IPU</b> <i>Chairman of the Secretariat of the Industrial Engineering Vocational Board - Indonesian Engineers Association</i>	
	14.05-14.40	<b>Prof. Rodrigo Martins</b> <i>(President of International Union of Material Research Societies (IUMRS) and Professor of New University of Lisbon, Portugal)</i>	
	14.40-14.50	Coffee Break & Room Transition	
		Keynote Session	
	14.50-15.15	<b>Prof. Arief S Budiman</b> <i>Director of Oregon Renewable Energy Center, The United States of America</i>	Oral Presenter
	15.15-17.00	Oral Presenter	
17.00-17.15	Closing Remarks and YIC Award Ceremony		





## Details Rundown

Session	Time	Code	Estimation	Speaker	Topic	Affiliation	
<b>Morning Session (UTC+7)</b>	08.30-09.00	<b>Open Gate &amp; Registration</b>					
	09.00-09.05	OP	5'	Prof. Dr. rer. nat. Evvy Kartini		Founder of National Battery Research Institute, Indonesia	
	09.05-09.20	OP	15'	Prof. Suharyadi		Rector of Universitas Dian Nusantara, Indonesia	
	09.20-10.00	PL	40'	Prof. Neeraj Sharma	Understanding Battery Materials	Director of Australian Battery Society (ABS) and Professor of University of New South Wales (UNSW), Australia	
	10.00-10.30	PL	30'	Ir. Yudo Dwinanda Priadi, M.Si.	The Role of Government for Accelerating Clean Energy Transition	General Director of New Energy, Renewable and Conservation Energy (EBTKE), Ministry of Energy and Mineral Resources, Republic of Indonesia	
	10.30-10.40	<b>Coffee Break &amp; Room Transition</b>					
	10.50-12.30	<b>Youth Ideas Competition Final Presentation</b>					
		SC	10'	Fajar Sukamto Putra, Hanifa Insani Arifriandi	Innovation of Ti3C2Tx (MXene) Multilayer Nanosheet Quantum Dots for PM 2.5 Pollution Reduction Based on Dye-Synthesized Solar Cells and Silver-Zinc Batteries	University of Airlangga	
		SC	10'	Erlangga Hari Prasetyo, Taufik Zakly	The Effect of pH on the Structural Properties of LiNi0.6Mn0.2Co0.2O2 as Cathode Active Material for Lithium-ion Batteries	Kalimantan Institute of Technology	
		SC	10'	Adani Julian Perdana, Rudolph Rainer Tjioediningrat, Slamet Rizkiawan	Green Politics and the Policy Cycle in Indonesia's Electrification Journey: A Comparative Analysis of Priorities for Electric Cars and Public Transport	Padjajaran University	
		SC	10'	Azeeza Agrippina Lesmana, Almira Raisa Izzatina, Daffana Hadiel Hadrian	SparkLynk: A Smart Integrated IoT-based Application for Locating Available Nearby EV Charging Stations	Institute Technology of Sepuluh Nopember	
SC		10'	Ardika Dhafka Alhaqie, Dzahwan Mayvi Damay, Muhammad Tsaqif Haidar	Advanced Recycling and Recovery of Spent Lithium-Ion Batteries with Bioleaching Processes Using A. ferrooxidans to Achieve Cleaner Battery Production	Universitas Gadjah Mada		
SC		10'	Naufal Dhawy Prakoso, Pabalga Dennis Ian Pardede, Rally Amanda Maharani	From Waste to Energy: Transforming Spent Batteries into Graphene Solar Cells	Universitas Sultan Ageng Tirtayasa		
SC		10'	Adnan Hasyim Wibowo, Stella Eulia Andoko, Annesa Hanabila	Spatial Mapping and Potential Analysis of Solar Farm Prospective Through GIS Utilization as Energy Sovereignty Technical Consideration for the New National Capital City (IKN) Area Development	University of Indonesia		
<b>Keynote Session</b>							

		KN	25'	Prof. Alexey Glushenkov	Power Characteristic of Lithium-ion Capacitors	Associate Professor of Australia National University, Australia
		OR	10'	Sri Rahayu, Aghni Ulma Saudi; Riesma Tasomara; Muhammad Dikdik Gumelar; Wahyu Tri Utami; Ade Utami Hapsari; Jarot Raharjo; Abdulloh Rifai; Deni Shidqi Khaerudini; Saddam Husin; Dita Adi Saputra; Hanif Yuliani; Yurian Ariandi Andrameda; Galih Taqwatomo; Oka Pradipta Arjasa; Damisih; Andri Hardiansyah; Retna Deca Pravitasari; Agustanhakri; Abdul Hamid Budiman	The Effect of Calcination Temperature on LiNi <sub>1/3</sub> Mn <sub>1/3</sub> Co <sub>1/3</sub> O <sub>2</sub> Cathode Material for Lithium-Ion Batteries	National Research and Innovation Agency (BRIN), Indonesia
		OR	10'	Ari Purwanti and Sri Anjarwati	The Role of Sustainability Accounting to Accelerate Net Zero Emission by Battery Technology	Universitas Dian Nusantara, Indonesia
		OR	10'	Dita Adi Saputra; Sri Rahayu; Muhammad Dikdik Gumelar; Oka Pradipta Arjasa; Saddam Husin; Galih Taqwatomo; Hanif Yuliani; Aghni Ulma Saudi; Yurian Ariandi Andrameda; Agustanhakri; Dewi Kusuma Arti; Surat Indrijarso; Aan Syaifulloh; Iwan Setiawan; Agus Budi Prasetyo; Sudaryanto; Dyah Probowati	Synthesis of NMC111 Cathode from Spent Lithium-Ion Batteries (LIBs) using Acetic Acid as a Leaching Agent and Flame Assisted Spray Pyrolysis	National Research and Innovation Agency (BRIN), Indonesia
		OR	10'	Ken Martina Kasikoen, Ardelia Shelomita Teena, Dayu Ariesta Kirana Sari, Mega Novetrishka Putri	Public Transportation Development Policy Based on Populations Mode of Transportation Choice – Case Study Palangkaraya City – Central Kalimantan Province	Universitas Esa Unggul, Indonesia
		OR	10'	Ari Apriani and Luthfi Alhazami	Consumer Preference Study on Electric Vehicle as an Alternative for Carbon Emission-Free Transportation in Indonesia	Universitas Dian Nusantara, Indonesia
		OR	10'	Heydar Ghazy Arkan, Islamiyah Kamil	Dynamics of the Religious System, Financial Ability and Social Impact on the Pangandaran Community Viewed from the Tradition of the Hajat Laut People	Universitas Dian Nusantara, Indonesia
		OR	10'	Ghefra Rizkan Gaffara and Ogi Dani Sakarov	Smart Development for Earthquake High Risk Hazard (Case Study: Palu)	Universitas Esa Unggul, Indonesia
		OR	10'	Henri Septanto, Yohanes Galih Adhiyoga, Uus Rusmawan, Boy Yuliadi, Tri Nur Arifin	Design of Multimedia-Based Educational Game "Cat Food War" for Kindergarten Children as an Effort to Support the Digital Transformation of	Universitas Dian Nusantara, Indonesia

					Learning Media	
Afternoon Session (UTC +7)	12.30-13.30	<b>Break Session</b>				
	13.30-14.05	PL	35'	Dr. Ir. Muhammad Hanafi, MBA, IPU	Sustainable Mining for Harnessing Clean Energy Transition	Chairman of the Secretariat of the Industrial Engineering Vocational Board- Indonesian Engineers Association, Indonesia
	14.05-14.40	PL	35'	Prof. Rodrigo Martins	Sustainable Digitalization with Endless Power	President of International Union of Material Research Societies (IUMRS) and Professor of New University of Lisbon, Portugal
	14.40-14.50	<b>Room Transition</b>				
	14.50-17.00	<b>Keynote Session ICB-REV</b>				
		KN	25'	Prof. Arief S Budiman	Battery Materials Breakthrough	Director of Oregon Renewable Energy Center, USA
		INV	20'	Andika Widya Pramono, Arif Nurhakim	Exploring the Scientific Endeavors in Developing High-to-Room-Temperature Superconductors using Artificial Intelligence: A Bibliometric Analysis	National Research and Innovation Agency (BRIN), Indonesia
		OR	10'	Sari Andarwati Kunharyanto, Robby Marlon Brando, Romadhani Ardi, Ratna Mayasari	Analysis of Household Consumers Behavior in Storing WEEE (Waste Electrical and Electronic Equipment): Case Study of Java	National Research and Innovation Agency (BRIN), Indonesia
		OR	10'	Muhamad Al Faruq Abdullah, Didin Hikmah Perkasa	Understanding Indonesia's Public Photovoltaic Solar Power System Adoption	Universitas Dian Nusantara, Indonesia
		OR	10'	Desi Ramayanti, Hengky Darmawan, Bias Yulisa Geni, Giri Purnama, Sri Dianing Asri,	Exploring the Use of Coconut Shell Charcoal as a Renewable Energy Source in the Potential Export Market to China	Universitas Dian Nusantara, Indonesia
		OR	10'	Wenny Desty Febrian, Didin Hikmah Perkasa, Muhamad AlFaruq Abdullah	Interesting in Electric Vehicle as Green Transportation to be Green Innovation	Universitas Dian Nusantara, Indonesia
		OR	10'	Muhammad Fakhrudin and Evvy Kartini	Lithium-Metal-Oxide (LixMyOz) Cathode Precursor Synthesis by Carbonate Co-precipitation: A Mini Review	National Battery Research Institute, Indonesia
		OR	10'	Delvin Fadhlurrahman, Muhammad Fakhrudin, Raychan Abyqa Fahriza, Evvy Kartini	Direct Recycling and Re-Functionalization of Active Electrode Material from Spent Li-Ion Battery	National Battery Research Institute, Indonesia
		14.50-17.00	<b>Keynote Session ICMRT</b>			
	INV		20'	Leli Deswindi, Aryani Dwi Septiani, Maya Syafriana Effendi, Ahmad Maulidizen, Danang Indrajaya	Analysis of Frozen Fish Quality Control using Fault Tree Analysis (FTA) and Failure Mode and Effects Analysis (FMEA) Methods	Universitas Dian Nusantara, Indonesia
	OR		10'	Endang Ruswanti, Lusiana Agustin, Nia Puspita Hapsari, Moehammad Unggul Januarko	Brand Image and Social Media Determining Repurchase Decisions: Mediating by Trust and Purchase Decision	Universitas Esa Unggul, Indonesia
	OR		10'	Kornelia Johana Dacosta and	Google Adsense as a Digital Marketing Strategy	Universitas Dian Nusantara, Indonesia

			Mufti Akmal Arifin	at PKBM Tanda Genap
	OR	10'	Fina Zaimah	Green Transportation Promotion Economics Model for Electric Vehicle
	OR	10'	Chendy Puspita	Indonesia's Foreign Policy in the Amidst US-China Rivalry in Global Investments
	OR	10'	Yelita Anggiane Iskandar, Kenzie Dwianugerah Delu; Yelita Anggiane Iskandar; Mirna Lusiani; Nur Layli Rachmawati; Adji Candra Kurniawan; Rahmad Inca Liperda; Dian Kurniawati	Dea-Scor Decision-Making Model Suppliers of Plastic Flakes Recycling Plant in Indonesia
	OR	10'	Yosef Christian Riki Teluma and Evvy Kartini	Performance of Lithium-Ion Battery 7.8Ah Using NMC 18650
	OR	10'	Moh. Wahyu Syafi'ul Mubarak and Evvy Kartini	Nickel Diplomacy; Strengthening Role in Global Battery Supply
	17.00-17.15	Closing Remarks & YIC Award Ceremony		



*Prof. Neeraj Sharma*

Professor Neeraj Sharma is a Director of Australian Battery Society (ABS), Australia. He also Associate Professor of University of New South Wales (UNSW), Australia. Neeraj completed his Ph.D. at the University of Sydney then moved to the Bragg Institute at Australian Nuclear Science and Technology Organisation (ANSTO) for a postdoc. He started at the School of Chemistry, UNSW on a Australian Institute of Nuclear Science and Engineering (AINSE) Research Fellowship followed by an Australian Research Council (ARC) Discovery Early Career Research Award (DECRA). He is currently an

Associate Professor and ARC Future Fellow. Neeraj has been the Royal Australian Chemical Institute (RACI) Nyholm Youth Lecturer (2013/2014) and has won the NSW Premier's Prize for Science and Engineering (Early Career Researcher in Physical Sciences, 2019), Australian Synchrotron Research Award (2018), RACI Rennie Memorial Medal for Chemical Science (2018), UNSW Postgraduate Supervisor Award (2017) and a NSW Young Tall Poppy Award (2014). Neeraj has over 165 publications and has been invited to present his work at over 30 conferences. Neeraj's research interests are based on solid state chemistry, designing new materials and investigating their structure-property relationships. He loves to undertake in situ or operando experiments of materials inside full devices, especially batteries, in order to elucidate the structural subtleties that lead to superior performance parameters. Neeraj's projects are typically highly collaborative working with colleagues from all over the world with a range of skill sets.

## Abstract

### Understanding battery materials

*Neeraj Sharma*

*School of Chemistry, UNSW Australia, Sydney NSW 2052, Australia*

[neeraj.sharma@unsw.edu.au](mailto:neeraj.sharma@unsw.edu.au)

A large fraction of world-wide research focuses on making better battery materials, hence better batteries to meet the demands of current and emerging applications. This talk will focus on two critical aspects of work. The first part will focus on understanding the impact of a materials' atomic scale structure and its evolution on battery performance. The second part

will focus on our more recent work on developing sustainable battery materials and developments in battery and battery materials recycling/re-use.

A large proportion of the function of batteries arises from the electrodes, and these are in turn mediated by the atomic-scale perturbations during an electrochemical process (e.g., battery use). Typically, a combination of techniques are used to understand how atomic scale evolution impacts performance. In particular, the *operando* work results in an atomic level “video” of device function which can be directly correlated to performance parameters such as energy density, lifetime (or degradation), rate capability and safety. Examples using *operando* neutron and synchrotron powder diffraction to probe lithium- and sodium-ion battery materials will be discussed.

The notion of sustainability in battery materials and processes will also be explored in this talk – how green can we make the batteries of the future? Can we design battery materials to be completely sustainable? Can we avoid using toxic chemicals in the production of electrodes? Can we be clever about recycling? Various examples will be given in this space which will hopefully encourage further ideas and research in this space.

Overall, this presentation will provide a flavor of the work being undertaken and provide opportunities for further discussion and engagement.



*Ir. Yudo Dwinanda Priadi, M.Si.*

Ir. Yudo Dwinanda Priadi, M.Si. is a General Director of New Energy, Renewable and Conservation Energy (EBTKE), Ministry of Energy and Mineral Resources, Republic of Indonesia



**Dr. Ir. Muhammad Hanafi, MBA, IPU**

21 years growing professional experience in national and multinational mining private company of copper, gold, and nickel commodities. Expertise in metallurgy project development and plant operation, coal integrated railway logistic, including performance management, Human Resources, and external relation management. Certified as Professional Engineer-IPM (PII), Master BSC, and Six Sigma Black Belt. Achieved Mineral Processing Diploma (Milling College) from University of British Columbia, Canada. Lecturer in School of Business & Management ITB. Actively in mining and metallurgical professional networking as General Secretary, and chairman of The

Institution of Indonesia Metallurgical Engineer (PII BKT MET) to advise policy formulation of the industries and competencies, including organizing mining and metallurgical conferences, workshops, and its economic feasibility study. Involved in freeport's Copper Smelter benchmarking study in Spain, and Chile. Strong research study and experience in smelter industries with papers Published in international journal indexed in Scopus. Achieved Doctorate Degree in Decision Making and Policy Analysis from SBM ITB. Certified as National Strategic Leader on 6-month College Program from LEMHANNAS RI, PPSA- XXI, class of 2017. Recently is assigned as the professional expert of Lemhannas RI (TAPROF) for conducting nation strategic study and lecturing of energy & natural resources resilience, and economy.





*Prof. Rodrigo Martins*

Prof. Rodrigo Martins is full professor in Materials Science Department of Faculty of Science and Technology of New University of Lisbon, a fellow of the Portuguese Engineering Academy since 2009 and a member of the European Academy of Science since 2016. He was decorated with the gold medal of merit and distinction by the Almada Municipality for his R&D achievements. Prof. Rodrigo has been involved in the pioneer European research on Amorphous silicon semiconductors and pioneer with his group worldwide activity related to passive and active oxides, the so-called transparent electronics and it is one of the inventors of the so-called paper electronics,

where paper is exploited not only as a substrate but also as a functional component in active devices. He published over 700 papers and during the last 10 years got more than 14 international and national prizes and distinctions for his work (e.g., Lisbon Energy Live Expo, Innovation Prize, 2012 Solar Tiles, European Patent Office Innovation nomination 2016, etc).



## KEYNOTE SPEAKERS



*Prof. Arief S Budiman*

Professor Arief S Budiman is a Director of Oregon Renewable Energy Center, United States of America. He finished his doctoral at Stanford University in 2008, taking material science and engineering as his field. He received several research awards and contributed to several high-impact journal publications, such as the prestigious Los Alamos National Laboratory (LANL) Director's Research Fellow Award in 2009 and received a Science Highlight from the famed Berkeley Lab for the technological breakthrough that has attracted wide industrial reception.

solution — we called it the “AgroPV Dome” — represents a form of the dual-use farming concept which could be a promising solution to the combined increase in demand for solar energy with the agricultural use of the land. We build the AgroPV Dome prototype that would demonstrate the efficacy of the concept and the promise for scaling it into large-scale standard photovoltaics structures that meet the demand for flexibility, modularity, scalability, minimum land occupation, mechanical performance, and that can be deployed in farms without hindering crops growth and farmer activities. This concept is an opportunity for developing new PV configurations that use off-the-shelf materials to optimize solar energy generation in agricultural settings without compromising or competing with agricultural production.

*Prof. Alexey Glushenkov*



Alexey M. Glushenkov is an Associate Professor in the Research School of Chemistry and a Research Lead in Battery Materials in ANU Battery Storage and Grid Integration Program, a joint initiative with the School of Engineering. He received his Master of Physics degree from Novosibirsk State University in 2003 and his PhD degree (physics, electronic materials engineering) from the Australian National University in 2009. A/Prof Glushenkov had research appointments at Borekov Institute of Catalysis (Russia), Australian National University, Deakin University, Melbourne Centre of Nanofabrication, the University of Melbourne (all - Australia) as well as Drexel University (the US).

His research interests are centred on electrochemical energy storage in metal-ion batteries, electrochemical supercapacitors and hybrid metal-ion capacitors as well as materials that enable these energy storage cells. A/Prof Glushenkov was a winner of 2014 Vice-chancellor's Award for Research Excellence at Deakin University (early career researcher) and was a 2017 Emerging Investigator of Journal of Materials Chemistry A.

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## Exploring The Scientific Entlearors in Derelopiug High-to-Room-Temperature Supercontluctors using Artificial Intelligence: A Biblio netric Analysis

Andika Widya Pramono<sup>1</sup> and Arif Nurhakim<sup>2</sup>

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**Abstract.** This paper presented a comprehensive bibliometric analysis of Lhe research field of high-to-room-temperature superconductors using artificial intelligence. The study examined various aspects, including annual scientific production, average citations per year, sources of publications, co-occurrence network, and ihemaic map, to uncover key trends, dynamics, and thematic structure within this interdisciplinary domain. The analysis revealed a consistent growth in the number of articles published over rime, indicating a strong research interest in the field. The identification of the most relevant sources highlighted prestigious journals such as *Physical Revien B*, *Superconductor Science and Technology*, and *IEEE Transactions on Applied Supertonductivi5* as preferred outlets for publishing research on high-to-room-temperature superconductors using artificial intelligence. The co-occurrence network analysis uncovered important thematic nodes such as machine learning, temperature, critical temperatures, deep learning, and forecasting, indicating their significance in connecting different research themes. The thematic map further revealed the relevance and development of these themes and other fundamental themes like room- temperature superconductors, hydrides, superconducting materials, and crystal structure. Overall, this comprehensive analysis provided valuable insights into the research field, enabling researchers, practitioners, and stakeholders to understand the trends, identify relevant sources, and explore the thematic structure of high-to-room-temperature superconductors using artificial intelligence.

**Krjorordc:** *Biblionielric ArialAxis, High-to-room-temperature Superconductors. Artificial Intelligence, interdisciplinary Research, Research Irendc*



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Google AdSense as a Digital Marketing Strategy at PKBM Tenda Genap East Jakarta

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**Abstract.** Advances in information technology encourage many new innovations to help humans utilize technology. The development of technology including the internet is one of the strategic doors in the process of rapid industrial change today. The benefits of the internet provide freedom in terms of location and time and ease of communication will help small companies to achieve efficiency. The use of online advertising is useful for changing the information received through the media used. The purpose of this research is to identify the digital communication strategy of PKBM Tenda Genap in an effort to promote the Equivalency Education School through the use of Google AdSense. This research uses a case study method with a qualitative descriptive approach to explore an individual, a group, an organization, and an activity program to obtain a complete and in-depth description by generating data. Using Google AdSense will allow PKBM Tenda Genap to create a list of top searches and words that are widely searched for information about equality education. The results of this report will help business owners to determine the right campaign targets for digital advertising. This proves the effectiveness of using Google AdSense as an online promotional media at PKBM Tenda Genap, especially through advertisements displayed on searches on the Google site.

**Keywords:** Google AdSense, Digital Communication Strategy, Communication



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## Smart Development for Earthquake High Risk Hazard (Case Study: Palu)

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Abstract. During that time, the community in Palu City and half of Sulawesi Island experienced a devastating earthquake measuring 7.4 on the Richter scale, followed by a tsunami. This earthquake was associated with activity in the Palu Kom fault zone, the most active fault in Sulawesi, with an average movement of about 7 cm. The epicenter was located near Donggala, with tremors felt in various regions, including North and East Kalimantan. The earthquake had an energy release of approximately  $2.5 \cdot 10^{20}$  Nm, equivalent to 200 times the power of the Hiroshima bombing. This presents an interesting subject for studying how to develop a good and accessible disaster mitigation system by utilizing the available information technology today, where disaster information can be easily accessed and synchronized with existing disaster management systems to reduce the impact of earthquake disasters. This research aims to analyze earthquake disaster risks and develop a mitigation model through a spatial analysis approach using Geographic Information System (GIS). The methods employed include analyzing disaster risks by utilizing Digital Elevation Model (DEM) data, map data, and overlaying images with earthquake damage distribution. Additionally, qualitative analysis in the form of disaster management and mitigation analysis is conducted. The data obtained is used to design evacuation routes and determine post-earthquake shelter locations. The results of this research provide a better understanding of disaster vulnerability in the studied areas. Through the developed mitigation model, this research contributes to identifying effective mitigation strategies. The designed evacuation routes and post-earthquake shelter locations provide crucial information for emergency response planning. Furthermore, the analysis results are presented in the form of a WebGIS accessible through a website, enabling easy access to information by the general public.

Keywords: Disaster, Earthquake, High Risk, Smart Development

Analysis of Household Consumers Behavior in Storing WEEE (Waste Electrical and Electronic Equipment): Case Study of Java

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**Abstract**— Rapid technological developments make the level of consumption of electronic equipment increase. Unfortunately, large consumption of these electronic products leaves the consequences of waste from electronics that are no longer used. Consumers often store electronic equipments that are not used at home. Consumer behavior to store WEEE at home such as a time bomb, sooner or later must be immediately removed because it will be dangerous. Analyzing consumer behavior towards electronic storage that is no longer used is an important step towards developing a successful WEEE management system. This study aims to conduct an analysis of consumer behavior in storing and disposing of WEEE and describing the relationship between the factors that are the reason for shaping consumer behavior. The research conducted was based on the Theory of Planning Behavior (TPB) and data processing was carried out by statistical analysis and the Partial Least Square (PLS) method. The study was conducted using online and manual surveys. Respondents in the study were 413 in 13 provinces of Java. The results of the study revealed several statistical data and the relationship model of the predictor factors forming the storing and disposing behavior.

**Keywords**— WEEE, Theory of Planned Behavior (TPB), Partial Least Square (PLS)





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## The Effect of Calcination Temperature on LiNi<sub>0.8</sub>Mn<sub>0.15</sub>Co<sub>0.05</sub>O<sub>2</sub> Cathode Material for Lithium-Ion Batteries

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Gumelar<sup>d</sup>, Wahyu Tri Utami<sup>e</sup>, Ade Utami Hapsari<sup>f</sup>, Jamt Rahaijo<sup>g</sup>,  
Abdulloh Rifai<sup>h</sup>, Deni Shidqi Khaerudini<sup>i</sup>, Saddam Husin<sup>j</sup>, Dita Adi  
Saputra<sup>k</sup>, Hanif Yuliani<sup>l</sup>, Yurian Ariandi Andrameda<sup>m</sup>, Galih Taqwatomo<sup>n</sup>,  
Oka Pradipta Arjasa<sup>o</sup>, Damisih<sup>p</sup>, Andri Hardiansyah<sup>q</sup>, Retna Deca  
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**Abstract.** The lithium-ion battery has gained popularity among other secondary batteries for portable electronic devices and electric vehicle applications, especially the  $\text{LiNi}_{0.3}\text{Co}_{0.3}\text{Mn}_{0.4}\text{O}_2$  or NMC 111, considering its well-balanced configuration resulting in stable and safe electrochemical performance. NMC 111 has been successfully prepared using a coprecipitation process at calcination temperatures from 500 to 950°C. The physical characteristics were investigated using X-Ray Diffraction (XRD), Scanning Electron Microscopy-Energy Dispersive Spectroscopy (SEM-EDS), and Particle Size Analysis (PSA). The XRD patterns showed the rhombohedral single phase for all calcination temperatures. Meanwhile, higher calcination temperatures offer higher degree of crystallinity, lower intensity ratio and more undesirable cation mixing. The particles with a uniform rectangle or pyramid shape are observed at the calcination temperature range from 500 to 900°C. However, bigger submicron particles with a rectangle or pyramid shape are detected at a higher temperature (950°C). The SEM-EDS mapping shows the homogeneity composition for all variation calcination temperatures. PSA analysis showed that calcination temperature at 800 and 550°C gives the particle less than 400 nm suggesting a potential material for a cathode of lithium-ion batteries.

**Key words:** lithium-ion batteries, cathode material, NMC 111, coprecipitation



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# Consumer Preference Study on Electric Vehicle as an Alternative for Carbon Emission-Free Transportation in Indonesia

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**Abstract** The use of electric vehicles in Indonesia is still relatively small compared to several other countries, Indonesia recorded 2,300 electric vehicle users in 2020 and this number still has the potential to be increased This can be seen in 2023 with the increasing number of electric vehicle sales in Indonesia. As Indonesia strives to reduce its carbon footprint and combat climate change, the transition to electric vehicles holds significant promise. This study aims to explore consumer preferences regarding electric vehicles (EVs) as a sustainable alternative for carbon emission-free transportation in Indonesia. The research utilized a quantitative approach, conducting a survey among a diverse sample of consumers in different regions of Indonesia. The survey included questions on consumers' awareness of environmental issues, knowledge of electric vehicles, preferences in transportation options, and factors that influence their decision to consider the adoption of electric vehicles. The findings reveal that the majority of respondents are aware of environmental issues and show great interest in adopting sustainable transportation solutions. Electric vehicles are gaining considerable attention as a potentially carbon emission-free mode of transportation. However, despite this growing awareness, the adoption rate of electric vehicles is still relatively low in Indonesia. Consumer preference for electric vehicles is influenced by various factors, including affordability, availability of charging infrastructure, mileage, maintenance costs, and overall performance. In addition, public perceptions of electric vehicles also play an important role in shaping consumer preferences to use this environmentally friendly transportation option. Therefore, this study contributes to Indonesia's efforts to achieve carbon emission reduction targets by encouraging the use of electric vehicles as a sustainable and environmentally responsible transportation option.

**Keywords:** Preference, Transportation, Electric Vehicles, Carbon, Emission-Free



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Indonesia



## The Role of Sustainability Accounting to Accelerate Net Zero Emission by Battery Technology

Research



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**Abstract.** The increasing urgency to combat climate change has led to a growing interest in adopting sustainable practices to achieve net zero emissions. One critical aspect of this endeavor is the utilization of battery technology as a means to reduce carbon emissions across various industries. This study aims to explore the pivotal role of sustainability accounting in facilitating the transition towards net zero emissions through the sustainable use of batteries. The study adopts the literature review method concerned with the way in which accounting contributes to the achievement of net zero emissions. These methods involve an in-depth literature review of sustainability accounting practices, carbon accounting, and the life cycle assessment (LCA) of batteries. By properly recording, tracking, and reporting battery usage, accounting can act as a tool to monitor and manage a company's efforts to reduce carbon emissions and achieve net zero emission goals efficiently. Additionally, the review will analyze the existing regulatory landscape and standards related to sustainability accounting and reporting, emphasizing the significance of compliance in tracking carbon emissions. The findings of this study are expected to demonstrate the crucial role of sustainability accounting in assessing, monitoring, and reporting the impact of battery usage on carbon emissions. The integration of sustainability accounting principles will help organizations identify carbon-intensive areas within the battery life cycle, facilitating informed decision-making to reduce emissions. Additionally, the research will shed light on the potential financial gains associated with sustainable practices, encouraging organizations to invest in eco-friendly technologies. In conclusion, this study underscores the necessity of sustainability accounting in aligning business operations with global sustainability goals. By illuminating the role of batteries in achieving net zero emissions and providing a framework for sustainable decision-making, this study contributes to the ongoing efforts in combating climate change and promoting a greener future.

## BRAND IMAGE AND SOCIAL MEDIA DETERMINING REPURCHASE DECISIONS: MEDIATING BY TRUST AND PURCHASE DECISION

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Abstract. This study will examine the effect of brand image, social media promotion to repurchase decision at a one of vertical hospital located in Tangerang. This study objectives also determine the trust and purchase decision as intervening variables. There are 224 respondents of this research that used health services in outpatient installation. This research method uses quantitative methods using a questionnaire measuring instrument. The sampling technique used is non probability sampling. To analyze the data using SEM (Structural Equation Modelling) analysis tools with Amos program. The results of this study conclude that brand image has positive effect but no significant direct to repurchase decision, but social media and purchase decision have positive significant effect on repurchase decision. Affection of hospital brand image and social media to repurchase decision increasing through patient trust and purchase decision as mediating variables.



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## Design of Multimedia-Based Educational Game

•Cat Food War• for Kindergarten Children as an Effort to Support **the Digital** Transformation of Learning Media.

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**Abstract.** This research aims to design a multimedia-based educational game titled "Cat Food War" intended for kindergarten children. This game is designed as part of an effort to support the digital transformation of learning media to enhance a fun and effective learning experience for young children. The game development methodology follows the Game Development Life Cycle approach, encompassing planning, design, development, and testing stages. During the planning phase, a needs analysis is conducted to determine the objectives. In the design phase, the game concept is defined, and the user interface is crafted, taking into consideration visually appealing elements for kindergarten children. "Cat Food War" is tailored to suit the developmental characteristics of young children, with adjusted difficulty levels and interactive gameplay features. The integration of multimedia elements, such as images, sounds, and animations, is incorporated to provide an enjoyable learning experience and support children's understanding of the cat's diet. The game development process involves testing with participation from kindergarten children as user samples. An evaluation is conducted to measure the game's effectiveness in enhancing children's knowledge of cat food and assessing their satisfaction and interest in using this game as a learning medium. The results of designing "Cat Food War" game contribute positively to supporting the digital transformation of learning media and enriching the learning experience of kindergarten children through an innovative and enjoyable approach.

**Keywords:** Educational Game, Multimedia, Kindergarten Children, Digital Transformation,



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## Synthesis of NMC111 Cathode from Spent Lithium-Ion Batteries (LIBs) using Acetic Acid as a Leaching Agent and Flame Assisted Spray Pyrolysis

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**Abstract.** This study aims to synthesize NMC111 cathode nanoparticles from spent Lithium-ion batteries (LIBs) cathode (NMC battery type) leachate with organic acids using the Flame Assisted Spray Pyrolysis (FASP) method. Beginning with the battery pre-treatment process, namely grading, discharge, dismantling, separation, comminution, sieving, and heat treatment. Recovery of Li, Ni, Mn, and Co metal ions utilizes extraction by hydrometallurgy method with acetic acid (CH<sub>3</sub>COOH) as a leaching agent with varying acid concentrations (0,25; 0,5; 0,75; 1; 1,25 M),

solid to liquid ratio (10; 15; 20; 25; 30 g/L) and temperature (40; 50; 60; 70; 80 °C) to get the optimal parameters. Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) as much as 4% v/v is used as an effective oxidizing agent to increase leaching efficiency. The results showed that the optimum leaching conditions using acetic acid were obtained at concentrations 1,25 M, solid to liquid ratio 30 gr/L, and temperature 70°C with % metal recovery of Li, Ni, Mn and Co respectively 87.1f%; 64.34%; 82.89%; and 99.24%.



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Flame Assisted Spray Pyrolysis (FASP) method is used for the synthesis and regeneration of NMC 111 cathodes from cathode of spent NMC battery with acetic acid leaching solution after molarity adjustment. XRD results showed that by calcination treatment at 800°C for 6 hours the cathode synthesized by the FASP method had a good level of crystallization. The morphology and particle size by SEM-EDX showed that the nanoparticles synthesized by the FASP method showed a spherical morphology with typical polycrystalline aggregates and had a particle size distribution in the range of 200-400 nm.

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## Public Transportation Development Policy Based on Population's Mode of Transportation Choice – Case Study Palangkaraya City – Central Kalimantan Province

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**Abstract.** Public transportation is an essential part of the city government in fulfilling the facilities of urban communities. Public transportation within the city can also reduce traffic jams and air pollution, as the impact of shifting to using public transportation to support their activities.

Palangkaraya City in Central Kalimantan Province has the largest area in Indonesia, with an area of 2553.12 Km<sup>2</sup>, making it necessary for the city government to determine policies for developing public transportation.

The vast area of the city of Palangkaraya requires consideration of determining the mode of public transportation based on the choice of mode of transport by the residents of Palangkaraya because, apart from variations in the characteristics of the population, the location of the population is also spread across the city area.

This study aims to provide policy recommendations for the development of public transportation based on the mode choices of the people in Palangkaraya City. The quantitative descriptive method used in this research is from a questionnaire survey and literature study, and the analysis technique used in the process is frequency distribution and cross-tabulation analysis with chi-square.

Based on the results of the analysis, the variables that influence the choice of modes of transportation in the city of Palangkaraya are gender, education, employment, income, expenses, private vehicle ownership, driver's license ownership, lifestyle, cost, safety, security, comfort, and population density. So, public transportation development policies are carried out based on these influential variables.



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## Analysis of Frozen Fish Quality Control Using Fault Tree Analysis (FTA) and Failure Mode and Effects Analysis (FMEA) Methods

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**Abstract.** The focus of this research is to maintain the quality of frozen fish in Cold Storage to reduce the level of product defects which will reduce the income of CV Sesame Seeds. This type of qualitative research conducted interviews with quality control managers and machine operators from September to November 2021. The analysis technique uses the Faults Tree Analysis (FTA) and Failure Mode and Effect Analysis (FMEA) method. Quantitative and qualitative data gathered based on the production free include the total product defects and the number of frozen fish declines, as well as the results of interviews with the owners and operational employees of the company. The results showed that the dominant type of defect was a yellow surface change with a defect percentage of 21.99% of the 7 types of defects that occurred in frozen fish according to the characteristic standards set by the Ministry of Maritime Affairs and Fisheries of the Republic of Indonesia. Referring to the results of the FTA analysis, the factors causing the fish surface to turn yellow in frozen fish products are the consistency of applying the FIFO system and the controlling room temperature. Improvements to the findings of yellowing surfaces is to measure the distance each time a new product is entered with a product that is already in Cold Storage which is carried out by the maintenance department, which aims to make it easier for employees to retrieve products that are difficult to reach so that a FIFO system can be realized, fish are not kept in Cold Storage for too long which causes the surface of the fish to turn yellow and unfit for consumption. The results of the research based on the FTA showed that after the proposal was implemented, in December there was an increase in fish quality of 2.97%. If this continues to be implemented, it will be able to increase sales volume and consumer satisfaction.

**Keywords:** Cold Storage, Frozen Fish Quality, Fault Tree Diagram (FTA), Failure Mode and Effect Analysis (FMEA)



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## DEA-SCOR Decision-Making Model to Evaluate Suppliers of Plastic Flakes Raw Material in A Recycling Plant in Indonesia

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Abstract. PT Tridi Oasis Group is a local recycling company in Indonesia. The main product of Tridi Oasis is plastic flakes that are chopped from Polyethylene Terephthalate (PET) bottles waste. Plastic sources as raw materials were received from suppliers in public disposal sites or collector stalls. However, not all suppliers have a good performance, which disrupts the production process and their reverse supply chain. Thus, supplier performance will be measured using the Supply Chain Operations Reference (SCOR) framework model through a series of questionnaires. The results were then processed and calculated using the Expert Choice software with the Analytical Hierarchy Problem (AHP) method. After the performance appraisal indicators or KPIs were validated, then efficient value calculations were conducted using the Data Envelopment Analysis (DEA) method. From the experiments, it was found that Supplier A with an efficiency value of 1.00 is ranked 1, Supplier C with an efficiency value of 0.53 is ranked 2, Supplier E with an efficiency value of 0.57 is ranked 3, and ranked 4 there is Supplier B with a value efficiency 0.38.

**Key words:** P/osrir blades, Supplier. Reverse Log/srirs, .SP'.OF, and DBA



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Electric Vehicles (ICB-REV) &  
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Smart Development for Earthquake High Risk Hazard (Case Study: Pam)

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Journal Name: Journal of Earthquake Engineering and Technology

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Abstract. During that time, the community in Palu City and half of Sulawesi Island experienced a devastating earthquake measuring 7.4 on the Richter scale, followed by a tsunami. This earthquake is associated with activity in the Palu-Koro tectonic zone, the most active fault in Sulawesi, with an annual movement of about 7 cm. The epicenter was located near Donggala, with tremors felt in various regions, including North and East Kalimantan. The earthquake had an energy release of approximately  $2.1 \times 10^{20}$  J, equivalent to 200 times the power of the Hiroshima bombing. This presents an interesting subject for studying how to develop a good and accessible disaster mitigation system by utilizing the available information technology today, where disaster information can be easily accessed and synchronized with existing disaster management systems to reduce the impact of earthquake disasters. This research aims to analyze earthquake disaster risks and develop a mitigation model through a spatial analysis approach using Geographic Information System (GIS). The methods employed include analyzing disaster risks by utilizing Digital Elevation Model (DEM) data, road data, and overlaying images with earthquake damage distribution. Additionally, qualitative analysis in the form of disaster management and mitigation analysis is conducted. The data obtained is used to design evacuation routes and determine post-earthquake shelter locations. The results of this research provide a better understanding of disaster vulnerability in the studied areas. Through the developed mitigation model, this research contributes to identifying effective mitigation strategies. The designed evacuation routes and post-earthquake shelter locations provide crucial information for emergency response planning. Furthermore, the analysis results are presented in the form of a website accessible through a website, enabling easy access to information by the general public.

# Green Transportation Promotion: Token Economics Model for Electric Vehicle Users

Fina Zaimah<sup>1</sup>

Concern about the negative impacts of pollution and climate change has driven global efforts to find sustainable solutions in the transportation sector. The drive to find sustainable solutions in the transportation sector has led to increased interest in electric vehicles (EVs) as a way to reduce carbon emissions. However, there are challenges in transitioning to a sustainable EV network, such as inadequate infrastructure and a lack of incentives for EV adoption. To address these challenges, a proposed solution combines blockchain technology and a token economy. Blockchain offers advantages in managing transaction data and ensuring security and transparency. The token economy would incentivize EV users to engage in emission-reducing activities, such as charging with renewable energy or ride-sharing. Users would receive tokens for these activities, which could be used to access additional services like faster charging or free maintenance. Implementing this blockchain-based token system would require cooperation between governments and other stakeholders. Overall, this approach has the potential to overcome current obstacles and promote the widespread adoption of EVs for a more sustainable transportation future.

*Keywords: Electric Vehicles, Token Economics, Blockchain, Liveness, Transportation*

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International Conference on Multidisciplinary  
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03 August 2023, Grand Sahid I hotel, Jakarta, Indonesia DEAN NUSANTARA

## Indonesia's Foreign Policy In The Nickel Industry Amidst US-China Rivalry In Clean Energy Investments

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**Abstract.** The growing concern about climate change has propelled clean energy investment to accommodate the energy transition. The shift manifests itself not only in emissions emitted but also in the transformation from fuel-intensive to material-intensive. One of the mineral resources needed in clean technology is nickel, which has crucial roles in EV batteries and renewable energy storage. This can serve as bargaining power for a country with the biggest nickel reserves and the largest nickel production, namely Indonesia. With its adherence to "free and active" foreign policy, Indonesia is labeled as one of the four global swing states along with Brazil, India, and Turkey, which possess

mixed political orientations in the superpower rivalry. This paper critically analyzes recent developments in Indonesia's foreign policy to advance its nickel industry by taking advantage of the US-China contestation, especially in the race to energy transition. In order to explore the opportunities and threats ahead, the paper uses qualitative methods of literature review and interview. The paper argues that the US attempts to decouple semiconductors from China and the implementation of the Inflation Reduction Act can be a wake-up call for Indonesia to diversify the nickel industry and develop strategies to bridge

US-China interests.

**Keywords:** Foreign policy; US-China Rivalry; Clean Energy; Nickel; EV



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Direct Recycling and Re-Functionalization of Active  
Electrode Material from Spent Li-Ion Battery

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**Abstract.** Lithium-ion Battery (LiB) is one of the most promising energy storage systems that can hold a large amount of energy at a time. Due to the relatively short lifespan of lithium-ion batteries, the high demand for batteries will be followed by the increasing number of batteries reaching the end of their useful life. Some of the commercially operated battery recycling plants use hydrometallurgical or pyrometallurgical processing routes, which generate liquid waste and use excessive energy, respectively. The goal of this study is to develop a battery recycling method via direct recycling, that is scalable and expected to recover cathode and anode active material separately. Water recycling of anode strip was done easily using water at room temperature, recovering a black mass. Recycling of cathode strip was not sufficient using water or NMP at room temperature, given the relatively low recovery of cathode active material. Further investigation will be done using Scanning Electron Microscope (SEM) and X-Ray diffraction (XRD) analysis to determine the microstructures and phases present in the recovered active material. The information presented in this study are able to be used as a basis for the development of environmentally friendly battery recycling method.

**Keywords** • Battery, Water Recycling, Cathode, XRD

# Understanding Indonesia's Public Photovoltaic Solar Power System Adoption

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**Abstract.** Water, sun, geothermal, wind, and bioenergy from biomass and biofuels are just a few of the plentiful renewable energy sources available in Indonesia. However, these resources are still not being used to their full potential, notably in the case of solar energy. In order to provide Indonesia with a renewable energy solution, this research aims to build and offer a theoretical framework for utilizing solar system technology, one such underutilized resource that holds great promise. The Technology Acceptance Model (TAM) is used in the study to examine the intention to adopt photovoltaic solar power technology. Perceived convenience and quality are used as independent factors, while perceived value is used as an intermediary variable. The target population consists of individuals residing in Indonesia, and respondents were selected through purposive sampling, focusing on those familiar with or already using Photovoltaic Solar Power Technology. The research methodology involves Partial Least Squares Structural Equation Modeling - Partial Least Squares analysis, supported by data processing through SmartPLS software. By investigating the factors influencing the adoption of solar power technology, this study seeks to shed light on the immense potential for sustainable energy development in Indonesia. The respondents were chosen using purposive sampling, with an emphasis on those who are familiar with or have used photovoltaic solar power technology, and the target demographic comprises of people living in Indonesia. The research technique uses SmartPLS software for data processing and Partial Least Squares Structural Equation modeling—Partial Least Squares analysis. This study aims to highlight the enormous potential for sustainable energy development in Indonesia by examining the factors influencing the adoption of solar power technology.

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# Inteiesting in Electi ic Vehicle as Gieen Ti nnsपोitation to be Gieen Innovation

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## Abstract.

At the present time, collaborahon and removing trade consbaints, thereby those amplIR the intensity and extensIR of activities in bansportation. For example, the fossil fuel dependent system in the industry brines far reaching environmental issues such as vehicle exhaust emissions and climate change. affecting ecological balance, liinng conditions. and human health. The air quality was improved through fuel-efficient technology substitution but challenges in climate change remain. Given 24% emissions of greenhouse eases come from bansport section. from which ground transport account for 72% and keep growing, the stakeholders need more engagemcut and efforts for green bansportation transition. We use metode are review' method. Green advancement is a significant figure reinforcing organizahons' green upper hand, as the outcomes recommend that associations can separate themselves from rrvaln' by creating and carrying out harmless to the ecosystem thoughts, processes, items, adminisbations, and developments. Tins works with cost-cutting, separation of items/administrations, administratr n e consistence, market entrance, advancement open doors, or potential development regions. The capaciR to remain informed about ecological patterns and address the issues of naturally cognizant customers gives organizahons an edge. it turns out that people's interest in using electric velucles is still influenced by regulations from the local government and the influence of their social environment. this also greatly influences green innovahon

Kejv'ords: Interesting. Green Innovation, Electric Vehicle

DYNAMICS OF THE RELIGIOUS SYSTEM, FINANCIAL ABILITY AND SOCIAL IMPACT ON THE  
PANGANDARAN COMMUNITY VIEWED FROM THE TRADITION OF THE BAJAT LAUT  
PEOPLE

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*This research explores the dynamics of the religious system, financial ability, and social impact on the people in Pangandaran related to the sea hajah folk tradition. This study uses a qualitative approach by combining primary data from field observations, in-depth interviews, and literature studies, as well as secondary data from reliable sources. The results of the study show that the tradition of sea rituals has a significant role in influencing the religious system of the Pangandaran people. This tradition plays a role in strengthening the community's religious identity, integrating local religious and cultural elements, and maintaining spiritual values in everyday life. In addition, this study also highlights the impact of the maritime tradition on the financial capacity community, especially in the fisheries and coastal tourism sectors. This*

*Pangandaran provides motivation and confidence for fishermen in finding fish and can increase fishery productivity. Furthermore, this research shows that the maritime tradition plays a role in overcoming several social problems in the Pangandaran community, such as strengthening social solidarity through joint participation in this tradition and increasing the integration of people from various social strata. Thus, this research provides insight into the importance of preserving the traditions of the people of the sea hajah as part of the cultural and social identity of the*

*religion, financial ability, and social impact on the local community. As well as people, Pangandaran*

**Keywords.** Dynamics of the Religious System, **Need** for the Sea, Financial Capability, Pangandaran



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## Exploring the Use of Coconut Shell Charcoal as a Renewable Energy Source in the Potential Export Market to China

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**Abstract.** This research aims to develop the potential export market for coconut shell charcoal as a renewable energy source, which can help reduce the use of fossil fuels, minimize negative environmental impacts, and support efforts towards sustainability and environmental friendliness. The research methodology involves analyzing data from Trade Map to compare the amount of coconut shell charcoal imports by China from various countries as potential markets. Furthermore, a study is conducted in Indonesia to gather data on the availability of coconut shell as raw material, considering the percentage of coconut shells utilized in comparison to other countries. The study also includes an analysis of the characteristics of coconut shell charcoal in Indonesia, including the identification of potential weaknesses of the product. Additionally, the research highlights the background development of coconut shell charcoal as a renewable energy source and includes the corresponding Harmonized System (HS) code. Based on the research findings, a plan for exporting coconut shell charcoal as a renewable energy source is devised. The processing of

alternative renewable energy source. These coconut shell charcoal products are envisioned to be available in various forms, such as HHQ or box versions, to cater to indoor and outdoor usage requirements. The study also discusses the advantages of coconut shell charcoal as a renewable energy source that is environmentally friendly, with low greenhouse gas emissions and no air pollution. Consequently, this product can be a sustainable choice in addressing energy sustainability and climate change issues. Furthermore, the research addresses marketing strategies for exporting coconut shell charcoal as a renewable energy



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source to the Chinese market. Emphasizing the benefits of renewable energy produced by coconut shell charcoal is prioritized in the marketing efforts. The expected outcome of this research is to provide essential information and recommendations to stakeholders in the coconut shell charcoal industry in Indonesia. These insights can aid in enhancing the export penetration into the Chinese market as a sustainable and potential renewable energy source, effectively addressing environmental and global energy concerns.

*Key words: Coconut Shell Charcoal, Renewable Energy Source, Export Market, China, Harmonized System (HS) Code*

# BRAND IMAGE AND SOCIAL MEDIA DETERMINING REPURCHASE DECISIONS: MEDIATING BY TRUST AND PURCHASE DECISION

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**Abstract.** This study will examine the effect of brand image, social media promotion to repurchase decision at a one of vertical hospital located in Tangerang. This study objectives also determine the trust and purchase decision as intervening variables. There are 224 respondents of this research that used health services in outpatient installation. This research method uses quantitative methods using a questionnaire measuring instrument. The sampling technique used is non probability sampling. To analyze the data using SEM (Structural Equation Modelling) analysis tools with Amos program. The results of this study conclude that brand image has positive effect but no significant direct to repurchase decision, but social media and purchase decision have positive significant effect on repurchase decision. Affection of hospital brand image and social media to repurchase decision increasing through patient trust and purchase decision as mediating variables.

**Keywords:** Brand Image, Social Media Promotion, Purchase Decision, Trust, Repurchase Decision

## INTRODUCTION

Revisit decision is consumers' desire to continually purchase the same service in future (Chung & Lee, 2003). Patient will select the same hospital based on their past experience as a reference to a good quality service. The performance of the hospital in the patients' last visit will be an important factor to motivate their revisit decision (Sehgal, 2014). The revisit decision of a patient can signify that the patients trust the service and they have perceived the service as having a good quality. When the patients can make repurchase or revisit decision easily, it means that patients have developed trust and confidence in the healthcare service (Colwell, Aung, Kanetkar, & Holden, 2008).

Effective marketing mix by displaying product advantages to be communicated to patients, will determine the reputation of the hospital in the minds of patients, thereby determining their decision to seek that healthcare again (Jayuli et al., 2022). This behavior can be traced from the moment a patient receives healthcare services until after they leave the hospital. Based on this experience, a patient will go through a decision-making process to determine whether they will visit again in the future (Awua-Ikhia and Ezema, 2018). One of the things that can affect repurchasing decisions is how the brand image is perceived by customers (Mitchell & Balabanis, 2021), because brand image is a brand reputation that is perceived by customers in their minds (Aaker, 2015), Brand image is a product differentiator from one another (Bougenvile & Ruswanti, 2017). Brand image is formed by information obtained or experience in consuming a product in the past, so that it becomes a determinant of attitudes to make purchases and repurchases (Chan et al. 2018), and several aspects that form the brand image in the minds of customers are experience, functional and symbolic (Buil et al., 2016).

A promotional effort is carried out by the company to introduce its products widely, so that they can be recognized by customers (Greenland et al., 2023), because promotion is a form of marketing communication carried out to inform the superiority of a product to customers (Kotler et al., 2019), some interesting content is combined so that customers are interested in the products promoted in various media (Rosin et al., 2023), and in today's modern digitalization era, social media plays an important role as a more effective promotional medium in promoting products and services (Jamil et al., 2022), as well as several aspects that must be considered in promoting products on social media, namely entertainment,

interaction, trendiness, customization and word of mouth (Oh et al., 2023).

One of important thing that determines customer interest in buying or rebuying a product is trust (Sousa-Duarte et al., 2020), because customer trust is a form of attitude that is expressed by the customer so that he wants to keep using the brand (Wirtz & Lovelock, 2016). Customer trust is born when customers feel the value and benefits of the products they consume can meet or even exceed their expectations (Daroch et al., 2021), by creating customer trust, whatever brand reputation and promotions packaged by marketers, will not prevent customers from continuing to make choices about one brand (Wang et al., 2022), and customer trust in a service is formed from the reliability, openness, competence and care of the service delivery person in addressing the customer (Barnea et al., 2022).

Purchasing decision is something that requires a precise strategy for profit-based organizations to influence their customers (Hanaysha, 2018). Some of the considerations that determine purchasing decisions are how they view the company's image, promotions carried out and the trust that customers have in the quality of a service (Chen et al., 2022), and the aspects that determine customer purchasing decisions are the choice of product, brand, dealer, purchase amount, purchase time and payment method (Syaekhoni et al., 2017).

Preliminary survey was conducted in January 2022. Survey was conducted of old patients who had visited the hospital more than once, to find out the quality of services delivered by health workers in outpatient department, 5 patients complained about services in the registration department, they stated that the services in the registration department seemed unfriendly in serving, regardless of smiles and greetings, and some stated that when services are carried out by doctors, doctors seem busy with their mobile phones, even though they are treating patients. reputation is the basis for patient evaluation to express his opinion about the image of a brand in forming trust (Shafiq et al., 2017), the experience of receiving a service will shape the patient's perception in determining the reputation of the hospital (Upadhyai et al., 2022), it is very important that a positive image is built in order to foster patient trust in the quality of a service (Dash et al., 2019), and the reputation of a quality service determines the attitude of patients to revisit a hospital (Han et al., 2021).

Some old patients appear some problems of trust, where patients experience disappointment with the services delivered by health workers, so they are most likely not to make a repeat visit to the hospital. Quality health services will form a positive perception in the minds of patients so that trust can be built and influence the patient's attitude to make a choice in a health service (Pokhilenko et al., 2021), and the patient's trust is the basis for determining his attitude in choosing dan revisiting a hospital to meet his expectations for professional health services (Cave, 2020).

Interview with some new patients found 7 patients argued that they did not know anything about the social media used by the hospital for promotion, they chose the hospital because it was closer to where they lived, and they believed they lacked confidence in promotions carried out by any company, so that it did not become the basis for determining their trust and decision to choose a hospital when they needed health services. Delivery of promotions via social media will positively intervene in the patient's trust and interest in making their choices, if they contain interesting content that contains previous user testimonials (Farsi, 2021), promotions carried out on social media will be more effective in stimulating patient trust and decisions to revisit if the material contains service excellence accompanied by previous user testimonials (Dwivedi et al., 2021).

Based on the problem of decreasing patient visits in outpatient installation in 2022 and some bad opinions expressed by patients, it is crucial for hospital management not to let these issues persist and escalate. Instead, they should conduct further evaluation and solution this existing problems before become more significant therefore can improve and increase the number of visits and revisits to the hospital. Besides, many previous studies that are relevant to this research, but none have completely combined brand image, the effectiveness of promotion on social media, patient trust and purchase decision determining their decision to seek treatment at one hospital again (revisit), so this research is a novelty that combines variables - these variables in one study.

## METHODOLOGY

The research was conducted at one of vertical hospital in Tangerang which is type C with service objects in outpatient installation, this unit was used as the object of research because there is a problem of decreasing patient visit in 2022 and got some bad opinions by patients. This research is a quantitative study with a cross-sectional study design, so that the population involved in this study were patients in the outpatient installation. The sampling technique uses non probability sampling by 225 respondents is determined with the sampling technique using accidental sampling, where patients found during the survey are used as respondents if they wish to fill out a questionnaire. Because this research used a statistical quantitative approach, a survey method was used by distributing self-developed research questionnaires based on the adopted measurement dimensions. Scoring using a Likert scale points 1 - 4. . Structural equation modeling (SEM) is used as an analysis tool with the help of the Amos program which consists of a classic assumption test using a data normality test and a multicollinearity test. Structural model fit test refers to Chi Square, probability, df, GFI, AGFI, TLI, CFI RMSEA and RMR. Test the hypothesis with an error rate of 5% so that the ttable value is set at 1.96, if the tcount > ttable then the hypothesis is accepted (Hair et al., 2016)

The study consisted of two independent variables, namely brand image and social media, one dependent variable, namely revisit decision, and two intervening variables, namely patient trust and purchase decision. The measurement was adopted from the aspects put forward by previous research as follows: brand image measurement

was adopted from Kim and Chao (2019), consists of experiential, functional and symbolic aspects. Aspects of social media promotion adopted from Kim and Ko (2012) with aspects of entertainment, interaction, trendiness, customization and word of mouth. Aspects of trust adopted from Alrubaiee and Alkaa'ida (2011) with the aspects of reliability, openness, competence and concern. The decision aspect of the patient is adopted from Kotler and Amstrong (2018) and revisit decision adopted from Ruswanti and Eff (2020).

## RESULTS AND DISCUSSION

Based on 225 patients who were used as the research sample, the respondents based on gender, the most respondents who took part in the survey were female (63.1%), the respondents based on marital status, the most respondents who took part in the survey were married (68.4%), the respondents based on age, the most who participated in the survey were the age range > 30-40 years (35.6%), the respondents based on recent education, the most respondents who participated in the survey were those with Bachelor's degree (34.2%), the respondents based on visit intensity, the most respondents who attended the survey were those who had visited the hospital 2 times (31.1%), respondents based on social media ownership, most respondents who took part in the survey owned social media (81.3%).

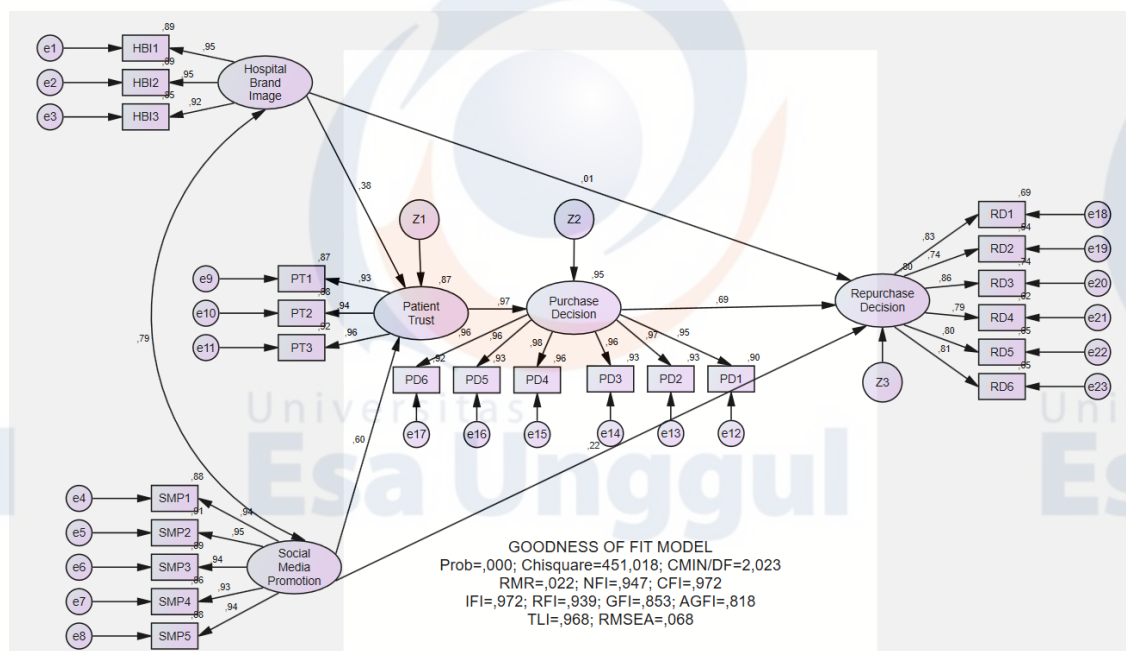


FIGURE 1. Structural Equation Model

Source: Amos output, 2023

Based on the picture above, it is known that the Chi Square, probability, df, GFI, AGFI, TLI, CFI RMSEA and RMR values correspond to the standard structural model fit, so that the research model can be said to be Good Fit to measure the relationship between latent variables and observed variables.

TABLE 2. Coefficient of Determination

	Estimate
PT	,875
PD	,947
RD	,804

Source: Processed primary data, 2023

Based on the table above, it can be concluded that brand image and social media contribute 87,5% in creating patient trust. Brand image, social media and patient trust contribute 94,7% in creating purchase decision. Brand image, social media, patient trust, and purchase decision contribute only 80,4% in creating revisit decision.

**TABLE 3.** Summary of Hypothesis Testing

Variable Relations	C.R.	Path Coefficient	P value	Conclusion
HBI → RD	0,119	0,009	0,905	Not significant
SMP → RD	2,431	0,218	0,015	Significant
PD → RD	6,656	0,691	***	Significant
PT → PD	28,921	0,973	***	Significant
HBI → PT	7,694	0,385	***	Significant
SMP → PT	11,765	0,600	***	Significant

Source: Processed by Researchers, 2023

On the effect of hospital brand image on revisit decision, it is known that the comparison of CR values is  $0.119 < 1.96$ , path coefficient is 0.009, and P value  $0.905 > 0.05$ , so it is concluded that brand image has no effect on revisit decision. Another hypothesis testing showed CR values  $> 1.96$  and P value  $< 0.05$ , so it is concluded there are all accepted have significant affects. This result line with the research conduct by Htun, Padung-yoscharoen, and San (2015) that found hospital image is less capable of significantly creating revisit intention.

Brand image perceived by the patient towards does not determine the patient's attitude to revisit this hospital as a means of providing health services in outpatient department customer (Mitchell & Balabanis, 2021). This is because patients consider that the functional outpatient installation in all hospitals are the same as providing treatment services for outpatients, so they do not determine the brand image in their minds, the experience of receiving a service should shape the patient's perception in determining the reputation of the hospital (Upadhyai et al., 2022), and this is not the basis for patients to determine their decision to seek treatment again at this hospital. It is very important that a positive image is built in order to foster patient trust in the quality of a service (Dash et al., 2019), and the reputation of a quality service determines the attitude of patients to revisit a hospital (Han et al., 2021).

Promotion carried out by the hospital is seen by patients as a determinant of their decision to revisit this hospital, this situation is in line with research which concludes that social media is the most effective suggestion for conducting marketing communications in the digitalization era in building patient trust, patient decisions, and revisit intention of hospital services (Chaudhri et al., 2021). From the results of the analysis obtained, word of mouth is the most dominant thing that patients pay attention to, thus showing that patients assess the content posted on social media to be interesting, especially about testimonials from patients who have experience receiving outpatient treatment services at the hospital, so they judge that the hospital is able to meet their expectations, and becomes the basis for their decision to choose the hospital when they need treatment services at outpatient department, and this is in line with research which concludes that the aspect that must be considered in promoting products on social media is word of mouth (Oh et al., 2023),



Trust is the basic determinant of patient decisions to take treatment at this hospital, and it is seen that trust dominates the determinants of patient decisions to seek treatment, this situation is in line with research which concludes that the most important thing that determines customer interest in buying a product is trust (Sousa-Duarte et al., 2020). The patient's decision to seek treatment at this hospital is dominated by their belief in the competence of health workers, where they feel that health workers are able to serve them and avoid all forms of unqualified service in order to avoid patient safety incidents, and this is in line with research which concludes competence is an aspect that determines purchasing decisions (Barnea et al., 2022).

## CONCLUSION

Based on the result of this study, it can conclude that brand image, social media, trust, and purchase decision determining the revisit decision for patients but not strong enough than only brand image, social media, and trust determining the patient decision to seek this hospital. Brand image alone perceived by the patient cannot determine revisit decision, and social media can determine revisit decision by patient. Patient trust and purchase decision as intervening variable can strengthen determination of brand image and social media to repurchase decision. The most important thing that must be done in building a patient trust is than brand image to provide a positive experience for patients from the hospital staffs, so that it becomes a source of positive to build decisions to choose a hospital and also revisit intention, as well as promotion on social media will be more effective in building patient trust and decisions to seek treatment, if it contains content that contains testimonials from previous patients, because it is a source of information for patients to assess the success of the hospital in providing health services, and the most important thing is to build patient trust through competence of health workers by presenting safe services to prevent patient safety incidents from occurring, so that patients feel confident in making their decision to choose outpatient treatment at the hospital and come back. This study has limitations in that no analysis of patient satisfaction was carried out, and for further research it is possible to include these variables so that the reputation of the quality of hospital services is clearly illustrated in determining patient revisit intention. Future study can use mixed-methods or qualitative research methods to gain additional depth of insight because quantitative approach allow for consistent data collection and analysis but limits the flexibility to adapt and modify the research response to emerging insights and idea.

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