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TEMA: SUSTAINABLE TECHNOLOGY AND INTEGRATING ARTIFICIAL
INTELLIGENCE (AI)**

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FINITE ELEMENT STUDY THE BEHAVIOR OF GREEN SELF-COMPACTING CONCRETE PROFILED STEEL SHEET SLAB WITH BUILT-IN SHEAR CONNECTOR UNDER FLEXURAL LOADING

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Abstract

The use of sustainable materials such as palm oil fuel ash (POFA) and eggshell powder (EP) in construction has gained popularity due to the global push for environmentally friendly and cost-effective building practices. However, there is still a lack of comprehensive research on green self-compacting concrete, especially in composite slabs with built-in shear connections. This study examined the behavior of green self-compacting concrete profiled steel sheet slabs with built-in shear connectors under flexural loading. To analyze this, the study used finite element analysis with ABAQUS/Explicit software. The results were validated by comparing them with the experimental findings of Kamaruddin. The study found that composite slabs with different shapes of built-in shear connectors did not perform as well as those with v-shaped connectors, which showed better structural behavior. Overall, using green self-compacting concrete composite slabs with V-shaped built-in shear connectors appears to be the most economical and efficient choice for construction. It is worth noting that the construction sector is moving towards more sustainable practices and the use of recycled materials such as POFA and eggshell powder can help reduce waste and improve the quality of buildings. By understanding how these materials behave in different structures, we can create more efficient and environmentally friendly buildings. The study's findings can be useful for construction companies and architects seeking to incorporate sustainable materials into their designs. From a technical perspective, the finite element analysis method used in this study allowed for a detailed examination of the structural behavior of the composite slabs. The validation process ensured that the results were accurate and reliable in this study. The parametric study provided valuable insights into the effects of the different shapes of built-in shear connectors on the performance of composite slabs. Overall, this study contributes to the growing body of research on sustainable construction materials and practices. As the world continues to urbanize and the demand for buildings and infrastructure grows, it is essential to develop more environmentally friendly and cost-effective construction methods. The use of green self-compacting concrete and recycled materials, such as

palm oil fuel ash and eggshell powder, can play a significant role in achieving this goal.

Keywords: Green Self-Compacting Concrete; Composite Slab; ABAQUS/Explicit; Built-In Shear Connector; Finite Element Analysis

PARTICIPATORY ERGONOMICS BASED SAFETY AND COMFORT ENHANCEMENT MODEL FOR SUSTAINABLE MUSI RIVERSIDE TOURISM IN PALEMBANG, SOUTH SUMATERA

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Abstract

This study was conducted in the Musi Riverside Tourism area, Palembang, South Sumatera, one of Indonesia's major waterfront tourism destinations characterized by cultural tourism, culinary attractions, traditional river transportation, and high visitor intensity. Preliminary observations identified several ergonomic and environmental problems affecting visitor safety and comfort, including slippery pedestrian pathways, inadequate lighting systems, unsafe boat boarding access, thermal discomfort due to excessive solar exposure, limited resting facilities, and congested pedestrian circulation during peak tourism periods. Therefore, this study aimed to develop a participatory ergonomics-based safety and comfort enhancement model integrated with sustainable waterfront tourism principles. The study involved 173 respondents consisting of tourists, traditional boat operators, street vendors, tourism officers, and local community representatives. Data collection was conducted through direct observation, questionnaires, environmental measurements, circulation mapping, participatory interviews, anthropometric assessment, and safety risk identification. Ergonomic interventions were developed through Focus Group Discussions (FGDs) involving ergonomists, tourism experts, local government, tourists, local communities, transportation operators, and vendors. The intervention included anti-slip pedestrian pathways, ergonomic seating, shaded resting areas, vegetation enhancement, improved lighting systems, handrails, boarding ramp redesign, and safety signage installation. The results showed that tourist comfort scores increased from 3.12 ± 0.54 to 4.01 ± 0.43 , safety perception improved from 2.98 ± 0.63 to 3.87 ± 0.46 , accessibility scores increased by 21.4%, and visitor satisfaction improved by 24.7% after intervention ($p < 0.05$). Major safety complaints, including slipping risk, boarding difficulty, poor nighttime visibility, and circulation congestion, also decreased substantially. In addition, thermal comfort conditions improved significantly, indicated by a reduction in surface temperature from 36.1°C to 31.8°C after vegetation and shading interventions were implemented. The findings confirm that participatory ergonomics can effectively support sustainable waterfront tourism development by creating safer, more accessible, comfortable, and human centered tourism environments in tropical riverside destinations.

Keywords: Musi river, participatory ergonomics, riverside tourism, safety, sustainable tourism, tourism comfort.

ANALISIS EKSPERIMENTAL KUAT TEKAN BETON MUTU K-225 DENGAN SUBSTITUSI SERBUK LIMBAH KACA SEBAGAI PENGGANTI PARSIAL SEMEN

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ABSTRAK

Penggunaan semen sebagai bahan pengikat utama dalam konstruksi beton memberikan dampak emisi karbon (CO_2) yang cukup signifikan terhadap lingkungan global. Penelitian ini bertujuan untuk menganalisis pengaruh penggunaan serbuk limbah kaca sebagai substitusi parsial semen terhadap kuat tekan beton mutu K-225 pada umur pengujian 28 hari. Serbuk limbah kaca diolah hingga lolos ayakan No. 200 agar memiliki sifat pozolanik melalui kandungan silika amorf (SiO_2). Metodologi eksperimental laboratorium diterapkan dengan variasi substitusi serbuk kaca sebesar 0% (Beton Normal), 5% (V1), 10% (V2), dan 15% (V3) terhadap berat semen baku. Benda uji berupa kubus berukuran $15 \text{ cm} \times 15 \text{ cm} \times 15 \text{ cm}$ dengan perawatan perendaman air selama 28 hari. Hasil penelitian laboratorium menunjukkan bahwa beton normal (BN) memiliki nilai kuat tekan rata-rata sebesar 225 kg/cm^2 (19,3 Mpa). Kuat tekan beton berturut-turut sebesar 225 kg/cm^2 , 228 kg/cm^2 , 234 kg/cm^2 , dan 229 kg/cm^2 . Kuat tekan tertinggi diperoleh pada substitusi 10% sebesar 234 kg/cm^2 atau meningkat sekitar 4,00% dibandingkan beton normal. Peningkatan kekuatan pada kadar 10% diinduksi oleh reaksi pozolanik antara silika reaktif dan kalsium hidroksida yang membentuk kalsium silikat hidrat (CSH) sekunder, sedangkan penurunan pada kadar tinggi disebabkan oleh berkurangnya volume semen aktif serta keterbatasan pengikatan matriks.

Kata Kunci : Beton Mutu K-225, Serbuk Limbah Kaca, Substitusi Semen, Kuat Tekan, Pozolan.

EVALUASI KINERJA MANAJEMEN PROYEK PADA PEMBANGUNAN INSTALASI PENGOLAHAN AIR (IPA) GANDUS KAPASITAS 500 LITER/DETIK DI KOTA PALEMBANG

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ABSTRAK

Pembangunan infrastruktur air bersih merupakan salah satu upaya strategis dalam meningkatkan kualitas pelayanan dasar masyarakat. Salah satu proyek yang dilaksanakan untuk mendukung penyediaan air bersih di Kota Palembang adalah pembangunan Instalasi Pengolahan Air (IPA) Gandus kapasitas 500 liter/detik. Proyek dengan tingkat kompleksitas pekerjaan yang tinggi memerlukan penerapan manajemen proyek yang efektif agar sasaran pelaksanaan dapat tercapai berdasarkan aspek waktu, biaya, dan mutu. Penelitian ini bertujuan untuk mengevaluasi kinerja manajemen proyek pada pembangunan IPA Gandus, menganalisis kinerja berdasarkan aspek waktu, biaya, dan mutu (*triple constraint*), serta mengidentifikasi faktor-faktor yang memengaruhi kinerja proyek. Penelitian menggunakan metode deskriptif dengan pendekatan kuantitatif. Data diperoleh melalui observasi lapangan, wawancara dengan pihak terkait, serta dokumentasi proyek yang meliputi jadwal pelaksanaan, laporan progres pekerjaan, data anggaran biaya, dan dokumen pengendalian mutu. Analisis dilakukan dengan membandingkan kondisi rencana dan realisasi pelaksanaan proyek serta mengidentifikasi faktor-faktor yang memengaruhi kinerja proyek. Hasil penelitian menunjukkan bahwa kinerja manajemen proyek secara umum telah berjalan cukup baik. Pada aspek waktu masih terdapat beberapa keterlambatan yang dipengaruhi oleh keterlambatan pengadaan material, kondisi cuaca, koordinasi pekerjaan, dan produktivitas tenaga kerja. Namun, keterlambatan dapat diminimalkan melalui upaya percepatan dan pengendalian proyek. Pada aspek biaya, pengendalian dilakukan secara berkala sehingga realisasi biaya masih berada dalam batas pengendalian yang dapat diterima. Pada aspek mutu, hasil pekerjaan secara umum telah memenuhi spesifikasi teknis dan standar mutu yang ditetapkan. Faktor-faktor yang memengaruhi kinerja proyek meliputi perencanaan proyek, ketersediaan material, kompetensi sumber daya manusia, pengendalian waktu dan biaya, sistem komunikasi dan koordinasi, serta kondisi cuaca dan lingkungan kerja. Penerapan manajemen proyek yang efektif dan pengendalian *triple constraint* secara terpadu diperlukan untuk meningkatkan keberhasilan pelaksanaan proyek infrastruktur air bersih.

Kata kunci: manajemen proyek, kinerja proyek, *triple constraint*, waktu, biaya, mutu, IPA.

ANALISIS PROSES *REVIEW DETAIL ENGINEERING DESIGN (DED)* PADA PROYEK INSTALASI PENGOLAHAN AIR (IPA) GANDUS

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ABSTRAK

Instalasi Pengolahan Air (IPA) merupakan infrastruktur penting dalam mendukung penyediaan air bersih bagi masyarakat. Keberhasilan pembangunan IPA sangat dipengaruhi oleh kualitas perencanaan yang dituangkan dalam dokumen *Detail Engineering Design (DED)*. Dalam praktiknya, dokumen DED perlu dilakukan review untuk memastikan kesesuaian desain terhadap standar teknis, kondisi eksisting lapangan, serta kebutuhan operasional proyek. Penelitian ini bertujuan untuk menganalisis tahapan dan mekanisme review DED, mengidentifikasi aspek teknis yang menjadi fokus peninjauan, serta mengevaluasi tingkat kesesuaian desain pada Proyek IPA Gandus. Penelitian menggunakan metode deskriptif kualitatif dengan pendekatan studi kasus. Data diperoleh melalui observasi lapangan, wawancara, studi dokumentasi terhadap dokumen DED dan hasil review, serta studi literatur. Analisis dilakukan terhadap aspek struktur, hidrolika, proses pengolahan air, operasional dan pemeliharaan, serta kesesuaian terhadap standar teknis dan kondisi eksisting. Hasil penelitian menunjukkan bahwa proses review DED dilaksanakan melalui pemeriksaan kelengkapan dokumen, evaluasi teknis, peninjauan kondisi lapangan, identifikasi permasalahan, dan penyusunan rekomendasi perbaikan desain. Evaluasi menunjukkan stabilitas struktur sebesar 90%, kekuatan struktur sebesar 88%, kapasitas aliran sebesar 90%, dan kesesuaian desain hidrolika sebesar 89%. Review DED memberikan kontribusi terhadap pencegahan perubahan desain sebesar 95%, kesesuaian terhadap standar teknis sebesar 92%, dan penyesuaian desain terhadap kondisi lapangan sebesar 90%. Dengan demikian, proses review DED secara sistematis dan komprehensif berperan penting dalam meningkatkan kualitas perencanaan, mengidentifikasi potensi permasalahan teknis sejak dini, serta meminimalkan risiko perubahan desain pada tahap konstruksi Proyek IPA Gandus.

Kata kunci: *Detail Engineering Design, Review DED, Instalasi Pengolahan Air, Struktur, Hidrolika, IPA Gandus.*

COMPRESSIVE STRENGTH OF K-200 CONCRETE

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Abstract

Concrete is one of the most widely used construction materials because it provides high compressive strength, good durability, and ease of forming in various construction applications. Nevertheless, concrete is brittle and has relatively low tensile resistance, making it susceptible to cracking. At the same time, waste packaging plastic continues to increase and creates environmental problems because it is difficult to decompose naturally. This study aims to analyze the effect of waste packaging plastic fibers on the compressive strength of K-200 concrete and to determine the optimum fiber percentage that remains technically feasible for concrete production. The study used a laboratory experimental method with K-200 concrete mixtures containing polypropylene (PP) waste packaging plastic fibers at 0%, 1%, 2%, and 3% by weight of cement. The basic concrete materials consisted of Portland cement, fine aggregate, coarse aggregate, and clean water. Material properties were examined before mixing, fresh concrete workability was evaluated using slump testing, and compressive strength was tested at 28 days using a compression testing machine. The slump decreased from 9.5 cm in normal concrete to 6.8 cm at 3% fiber content. The compressive strength also decreased from 202 kg/cm² in normal concrete to 199 kg/cm², 168 kg/cm², and 151 kg/cm² for 1%, 2%, and 3% fiber contents, respectively. The 1% fiber mixture was the optimum variation because it produced compressive strength closest to the K-200 target while still maintaining acceptable workability.

Keywords: concrete, compressive strength, K-200 concrete, polypropylene fiber, waste packaging plastic, sustainable construction

DESIGN OF A ROOFTOP SOLAR POWER GENERATION SYSTEM FOR OFFICE BUILDINGS

(A CASE STUDY OF TVRI SOUTH SUMATRA)

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ABSTRACT

This study aims to design a rooftop solar power generation (PLTS) system for office buildings as an effort to utilize renewable energy to meet electricity needs. The method used in this study is a quantitative descriptive method with a technical calculation analysis approach based on data on building electricity needs and solar energy potential. Based on the analysis, it was determined that the building's electricity needs reach approximately 1,521 kWh per day. The planned solar power system is intended to supply approximately 60% of this total electricity demand. Using an average solar radiation value of 4.8 kWh/m²/day, the solar power system capacity is 190 kWp. This system uses 346 solar modules with a capacity of 550 Wp and requires an installation area of approximately 865 m². The calculations indicate that the planned solar power system can generate approximately 912 kWh of electricity per day, or approximately 332,880 kWh per year. The system is an on-grid system configured with four 50 kW inverters, adjusted to meet the building's load requirements.

Based on the research results, it can be concluded that the proposed rooftop solar power system for office buildings is technically feasible and can contribute to reducing electricity use from the conventional grid.

Keywords: rooftop solar power plants, solar energy, office buildings, on-grid systems, renewable energy

ELECTRICAL PRE-COMMISSIONING AND COMMISSIONING IN OIL AND GAS PROJECTS: APPLICATION OF OPERCOM METHODOLOGY AND SYSTEM-SUBSYSTEM APPROACH

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Abstract

Electrical pre-commissioning and commissioning are critical stages in oil and gas projects to ensure installation, testing, and operational readiness in compliance with engineering design, international standards, and safety requirements (IEC, 2025; IEC, 2023; IEC, 2026; IEC, 2019; IEC, 2021; IEEE, 2010; IEEE, 2012; API, 2023; NFPA, 2024; Horsley, 1998; Bendiksen & Young, 2005; Samie, 2016). This study was conducted on an offshore oil and gas facility in Southeast Asia, applying the OPERCOM methodology with a System-Subsystem approach as defined in GS EP EXP 103 (TotalEnergies, 2018). Using an applied engineering case study, the research covered installation verification, pre-commissioning tests, commissioning tests, and punch list management until RFC and AOC/RFSU readiness. Results show that the System-Subsystem approach improved commissioning control, with 83% of punch items resolved before commissioning and energization. Punch list distribution revealed most findings originated from Construction (49%), followed by Pre-commissioning (36%) and Commissioning (15%). The systematic application of OPERCOM enhanced system reliability, reduced start-up risks, and ensured safe handover to the Company (Nascimento et al., 2021; Wanasinghe et al., 2020).

Keywords: *Commissioning, System-Subsystem, Testing, Energization, Reliability, OPERCOM*

ROAD STABILITY ANALYSIS USING THE IRI METHOD USING THE *ROADBUMP PRO* & *QGIS* APPLICATION ON THE ROAD OF TALANG PANGERAN – SUGIH WARAS VILLAGE

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Abstract

One of the road accesses to help services and transportation of goods and services is on the regency road in the Teluk Gelam District. Due to the importance of the route, it is necessary to consider the condition of the road pavement to provide driver comfort. Analyze the stability of road sections using the International Roughness Index (IRI) method with an android application, namely Roadbump Pro using three types of vehicles, namely Pick Up, SUV, and sedan. To ensure that the data on the Roadbump Pro application is appropriate, you can use the QGIS application to validate it. The results of the analysis show that the comparison between the type of Hilux Pick Up vehicle in 2014, Kijang Inova SUV in 2016, Sedan City in 2005 year difference and vehicle type greatly affects the IRI value. The results of digitizing road stability mapping on the road section of Teluk Gelam District using the QGIS application are in accordance with the data obtained from the Roadbump Pro application

Keywords: IRI, Roadbump pro, QGIS

THE EFFECT OF ULTRASONIC WAVES ON THE CORROSION RATE OF LOW-CARBON STEEL UNDER VARIOUS SULFURIC ACID (H_2SO_4) CONCENTRATIONS

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Abstract

This study aims to analyze the effect of ultrasonic waves on the corrosion rate of low-carbon steel (AISI 1018) under varying concentrations of sulfuric acid (H_2SO_4) solution and immersion durations. Corrosion testing was conducted using the weight loss method with H_2SO_4 concentrations of 0.5%, 1.0%, 1.5%, 2.0%, and 2.5%, as well as ultrasonic exposure times of 5, 10, 15, 20, and 25 minutes. The results indicate that the highest corrosion rate occurred at an immersion time of 5 minutes, whereas increasing the immersion duration tended to reduce the corrosion rate at all solution concentrations. This phenomenon is attributed to the effect of ultrasonic waves, which can reduce the accumulation of corrosion products and inhibit further oxidation processes. These findings may serve as a reference for selecting appropriate surface treatment methods for low-carbon steel in construction and automotive industry applications requiring optimal corrosion resistance.

Keywords: *Ultrasonic waves, low-carbon steel, AISI 1018, corrosion rate, sulfuric acid*

GeoAI-Integrated Artificial Neural Network for Family Socioeconomic Status Classification: A Regional Mapping Approach in South Sumatra Province, Indonesia

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Abstract: Disparities in household socioeconomic conditions remain a critical challenge in regional development in Indonesia, particularly in South Sumatra Province. Conventional statistical approaches often fail to capture the complex, non-linear relationships between socioeconomic and spatial factors. This study proposes an integrated framework combining Geospatial Artificial Intelligence (GeoAI) and an Artificial Neural Network (ANN) to classify households by socioeconomic status into three categories: economically vulnerable, economically stable, and economically advanced. Socioeconomic data were obtained from the Central Bureau of Statistics (BPS) of South Sumatra Province, while geospatial data were derived from Google Earth Engine (GEE) satellite imagery for the period 2021–2024. Spatial variables, including settlement density, land-use patterns, and infrastructure accessibility, were integrated into the GeoAI framework as enriched inputs to the ANN model. Model performance was evaluated using accuracy, precision, recall, and F1-score metrics. This research addresses existing gaps in GeoAI-ANN integration at the provincial scale and aims to support evidence-based spatial policy formulation for regional development.

Keywords: GeoAI; Artificial Neural Network, Socioeconomic Classification; Regional Mapping; South Sumatra.

ANALISIS FAKTOR-FAKTOR KRITIS YANG MEMPENGARUHI KEBERHASILAN *BIM-LEAN CONSTRUCTION* PADA PROYEK KONSTRUKSI DI SUMATERA SELATAN

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ABSTRAK

Produktivitas proyek konstruksi merupakan salah satu indikator utama keberhasilan pembangunan infrastruktur. Namun, industri konstruksi di Indonesia masih menghadapi berbagai kendala, seperti rendahnya efisiensi pelaksanaan proyek, tingginya pemborosan (*waste*), lemahnya koordinasi antar pemangku kepentingan, serta keterbatasan pemanfaatan teknologi digital. Integrasi *Building Information Modeling (BIM)* dan *Lean Construction* dipandang sebagai pendekatan yang mampu meningkatkan produktivitas proyek melalui optimalisasi proses perencanaan, koordinasi, dan pengendalian pekerjaan. Meskipun demikian, penelitian yang mengidentifikasi faktor-faktor kritis yang memengaruhi keberhasilan integrasi *BIM* dan *Lean Construction* pada proyek konstruksi di Indonesia masih terbatas. Penelitian ini bertujuan menganalisis faktor-faktor kritis yang memengaruhi keberhasilan integrasi *Building Information Modeling (BIM)* dan *Lean Construction* pada proyek konstruksi di Sumatera Selatan. Penelitian menggunakan pendekatan kuantitatif dengan metode *Structural Equation Modeling-Partial Least Squares (SEM-PLS)*. Data primer diperoleh dari 119 responden yang terdiri atas kontraktor, konsultan, dan pemilik proyek konstruksi di Sumatera Selatan. Variabel penelitian meliputi Dukungan Manajemen, Kompetensi Sumber Daya Manusia, Kesiapan Teknologi, Kolaborasi dan Komunikasi, Budaya *Lean Construction*, serta Keberhasilan Integrasi *BIM* dan *Lean Construction*. Hasil penelitian menunjukkan bahwa seluruh variabel eksogen berpengaruh positif dan signifikan terhadap keberhasilan integrasi *BIM* dan *Lean Construction*. Budaya *Lean Construction* merupakan faktor yang memberikan pengaruh terbesar ($\beta = 0,297$), diikuti oleh Kolaborasi dan Komunikasi ($\beta = 0,278$), Kompetensi Sumber Daya Manusia ($\beta = 0,262$), Dukungan Manajemen ($\beta = 0,233$), dan Kesiapan Teknologi ($\beta = 0,224$). Model struktural memiliki kemampuan prediksi yang sangat baik dengan nilai R^2 sebesar 0,918, Q^2 sebesar 0,712, *Standardized Root Mean Square Residual (SRMR)* sebesar 0,046, dan *Normed Fit Index (NFI)* sebesar 0,932. Kontribusi penelitian ini adalah mengidentifikasi dan memvalidasi faktor-faktor kritis yang memengaruhi keberhasilan integrasi *BIM* dan *Lean Construction* melalui lima dimensi utama, yaitu aspek organisasi, sumber daya manusia, teknologi, kolaborasi dan komunikasi, serta budaya *Lean Construction*. Temuan penelitian ini diharapkan menjadi referensi bagi pemerintah, akademisi, dan pelaku industri konstruksi dalam merumuskan strategi implementasi *BIM* dan *Lean Construction* guna mendukung transformasi digital dan peningkatan produktivitas proyek konstruksi di Indonesia.

Kata kunci: *Building Information Modeling (BIM)*; *Lean Construction*; Faktor-Faktor Kritis Keberhasilan; Produktivitas Proyek; *SEM-PLS*; Transformasi Digital.

ANALISIS PENGARUH ABU SEKAM PADI SEBAGAI SUBSTITUSI PARSIAL SEMEN DAN LARUTAN NaCl TERHADAP KUAT TEKAN BETON MUTU K-200

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ABSTRAK

Beton merupakan salah satu material konstruksi yang paling banyak digunakan dalam pembangunan infrastruktur karena memiliki kekuatan tekan yang tinggi, mudah dibentuk, serta relatif ekonomis. Namun, penggunaan semen sebagai bahan utama penyusun beton memiliki dampak lingkungan yang cukup besar akibat emisi karbon dioksida (CO₂) yang dihasilkan selama proses produksinya. Salah satu upaya untuk mengurangi penggunaan semen adalah dengan memanfaatkan abu sekam padi sebagai bahan substitusi parsial semen. Abu sekam padi memiliki kandungan silika yang berpotensi memberikan sifat pozzolanik dan dapat berkontribusi terhadap pembentukan senyawa pengikat dalam beton. Selain itu, penggunaan larutan natrium klorida (NaCl) dalam campuran beton dikaji sebagai bahan yang dapat memengaruhi proses hidrasi dan perkembangan kekuatan beton. Penelitian ini bertujuan untuk menganalisis pengaruh penggunaan abu sekam padi sebagai substitusi parsial semen terhadap workability dan kuat tekan beton mutu K-200 dengan penggunaan larutan NaCl dalam campuran beton. Penelitian menggunakan metode eksperimen laboratorium dengan benda uji berbentuk kubus yang diuji pada umur 28 hari. Variasi abu sekam padi yang digunakan adalah 0%, 10%, 15%, dan 20% dari berat semen. Hasil pengujian slump menunjukkan nilai berturut-turut sebesar 9,9 cm, 8,9 cm, 7,8 cm, dan 6,7 cm. Hasil pengujian kuat tekan beton umur 28 hari menunjukkan bahwa beton normal menghasilkan kuat tekan sebesar 200,78 kg/cm², sedangkan substitusi abu sekam padi 10%, 15%, dan 20% menghasilkan kuat tekan masing-masing sebesar 196,25 kg/cm², 169,08 kg/cm², dan 166,06 kg/cm². Hasil penelitian menunjukkan bahwa peningkatan persentase abu sekam padi cenderung menurunkan nilai slump dan kuat tekan beton. Variasi abu sekam padi sebesar 10% merupakan variasi paling optimal dalam penelitian ini karena menghasilkan kuat tekan 196,25 kg/cm² atau sekitar 97,74% dari kuat tekan beton normal dan masih mendekati mutu rencana K-200.

Kata kunci: Beton K-200, Abu Sekam Padi, NaCl, Kuat Tekan, Slump, Beton Ramah Lingkungan.

ANALISIS KUAT TEKAN BETON MUTU K-250 DENGAN SUBSTITUSI PARSIAL SEMEN MENGGUNAKAN ABU SEKAM PADI

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ABSTRAK

Industri konstruksi merupakan salah satu sektor yang memiliki kontribusi besar terhadap emisi karbon akibat tingginya penggunaan semen sebagai bahan pengikat utama dalam beton. Salah satu alternatif untuk mengurangi penggunaan semen adalah memanfaatkan abu sekam padi (ASP) sebagai bahan substitusi parsial semen karena memiliki kandungan silika yang tinggi dan bersifat pozzolan. Penelitian ini bertujuan menganalisis pengaruh penggunaan abu sekam padi terhadap kuat tekan beton mutu K-250. Penelitian menggunakan metode eksperimen laboratorium dengan variasi substitusi abu sekam padi sebesar 0%, 15%, 20%, dan 25% dari berat semen. Benda uji berupa kubus beton dirawat selama 28 hari sebelum dilakukan pengujian kuat tekan menggunakan *Compression Testing Machine*. Hasil penelitian menunjukkan bahwa beton normal menghasilkan kuat tekan rata-rata sebesar 251 kg/cm², sedangkan variasi 15%, 20%, dan 25% berturut-turut menghasilkan kuat tekan sebesar 214 kg/cm², 184 kg/cm², dan 171 kg/cm². Semakin besar persentase abu sekam padi yang digunakan, semakin rendah kuat tekan beton yang dihasilkan. Variasi substitusi 15% memberikan nilai kuat tekan tertinggi di antara seluruh variasi abu sekam padi, namun masih lebih rendah dibandingkan beton normal. Penelitian ini menunjukkan bahwa penggunaan abu sekam padi pada kadar 15–25% belum mampu mempertahankan mutu beton K-250, meskipun tetap memiliki potensi sebagai material ramah lingkungan yang dapat mengurangi penggunaan semen.

Kata kunci: Beton K-250, Abu Sekam Padi, Substitusi Semen, Kuat Tekan Beton, Beton Ramah Lingkungan.

MARSHALL CHARACTERISTICS OF A COMBINATION OF STONE DUST FILLER AND STYROFOAM IN ASPHALT CONCRETE WEARING COURSE (AC-WC) MIXTURE

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Abstract

Asphalt Concrete Wearing Course (AC-WC) pavement requires a mixture with good stability, durability, and resistance to traffic loads. One effort to improve the quality of asphalt mixtures is by utilizing alternative materials such as stone dust filler and styrofoam waste. This study aims to determine the effect of the combination of stone dust filler and styrofoam on the Marshall characteristics of AC-WC mixtures and to identify the most optimal mixture variation. The research method used was a laboratory experimental method by conducting Marshall tests on several variations of stone dust filler and styrofoam mixtures. The materials used consisted of coarse aggregate, fine aggregate, 60/70 penetration asphalt, stone dust, and styrofoam. The mixture variations studied included different proportions of stone dust and styrofoam at the same Optimum Asphalt Content (OAC), namely 5.90%. The tested parameters included Bulk Density, Void in Mix (VIM), Void in Mineral Aggregate (VMA), Void Filled with Asphalt (VFA), Stability, Flow, and Marshall Quotient (MQ). The results showed that the addition of styrofoam tended to increase the density of the mixture and the VFA value, while reducing the VIM and flow values. The highest stability value was obtained in the standard mixture at 1007.5 kg and was almost equal to the ABS-3 variation at 1004.6 kg. The highest Marshall Quotient (MQ) value was obtained in the ABS-3 mixture at 324.05 kg/mm, indicating the best combination of strength and stiffness. Overall, the ABS-3 mixture variation provided the most optimal Marshall characteristics compared to the other variations. Based on the research results, it can be concluded that the combination of stone dust filler and styrofoam affects the Marshall characteristics of AC-WC mixtures, and the ABS-3 variation has the potential to become an effective and environmentally friendly alternative pavement mixture through the utilization of styrofoam waste.

Keywords: AC-WC, stone dust, styrofoam, Marshall characteristics, filler, pavement.

The Dynamics of Public Service Motivation as a Key Factor in Improving Public Services in South Sumatra

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ABSTRACT

The rapid transformation of digital public services demands a shift in the way civil servant performance is evaluated, moving beyond procedural compliance to intrinsically motivated competencies. Despite the crucial role of Public Service Motivation (PSM) in enhancing government effectiveness, empirical evidence on its specific dimensions in the context of Indonesia's evolving urban administration remains limited. This study addresses this gap by analyzing the dynamics of civil servant performance through the lens of PSM in South Sumatra. Using a quantitative descriptive approach, the study identifies which specific dimensions—interest in public policymaking, commitment to the public interest, empathy, and self-sacrifice—most effectively drive performance. The results indicate that empathy is the most dominant driver of performance, while self-sacrifice shows significant potential for improvement. These findings provide a data-driven roadmap for regional human resource management, demonstrating that training interventions tailored to specific PSM dimensions can significantly optimize public service outcomes. This study also contributes to broader theoretical developments in public management by offering a localized, evidence-based model for evaluating and improving civil servant performance in rapidly evolving local governments.

Keywords: Public Service Motivation, PSM, Civil Servant, Performance, South Sumatera

EVALUATION OF THE EFFECTIVENESS OF CREDIT RISK CONTROL POLICIES AT PT BANK PEREKONOMIAN RAKYAT PALEMBANG (BANK PALEMBANG)

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Abstract

Credit distribution is the largest revenue contributor for banks. Bank Palembang, as a Regionally-Owned Enterprise, is required to apply the prudential banking principle to maintain the bank's soundness. This study aims to evaluate the implementation and effectiveness of credit risk control policies implemented by Bank Palembang, and analyze this effectiveness when measured through the compliance function. This study uses a descriptive evaluative design with a qualitative approach. Primary data were obtained through in-depth interviews with several key informants, including the Director in charge of the Compliance function, the Risk Management Executive Officer, the Internal Supervisory Unit, credit managers, and Account Officers. Secondary data were obtained through analysis of internal policy documents, Standard Operating Procedures, risk management reports, and Financial Services Authority regulations. The results of the study indicate that the credit risk identification process at Bank Palembang has been carried out systematically and quite effectively through the application of 5C analysis (Character, Capacity, Capital, Condition, Collateral), document verification, and field surveys. Risk measurements reflected in financial ratios indicate the level of Non-Performing Loans and Capital Adequacy Ratio are in the healthy and safe category in accordance with the limits of OJK regulations. In terms of the Loan to Deposit Ratio, the bank faces liquidity challenges due to higher credit distribution expansion compared to the collection of third-party funds. However, operational challenges are still found in the form of administrative deviations in the form of deviation memos on debtor age limits, potential fraud risks, and external macroeconomic factors that require stricter supervision. Overall, the credit risk control policy at Bank Palembang is evaluated as being in the fairly effective category, but requires continuous optimization in strengthening human resources, integrating risk culture, and increasing the effectiveness of internal supervision.

Keywords: Banking Governance, Compliance Function; Credit Risk Control Policy; Credit Risk Management; Risk Management Effectiveness; Rural Bank.

Smart Packaging and Sustainable Financial Management: A Conceptual Framework for Green Policy Implementation in the Packaging Industry

Research Area: Green Finance • Sustainable Management • Smart Technology

JEL Classification: G30 | G38 | L65 | Q01 | Q58

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Abstract

This systematic literature review examines the conceptual intersection of smart packaging technologies, sustainable financial management, and green policy implementation within the packaging industry. Adopting a PRISMA-based narrative synthesis protocol (Page et al., 2021), this study analysed 87 peer-reviewed articles and institutional reports published between 2015 and 2024, sourced from Scopus, Web of Science, Google Scholar, and SSRN. The findings reveal that, while research on smart packaging and green finance has independently matured, their conceptual integration within a unified green policy framework for the packaging sector remains substantially underexplored. Drawing on Stakeholder Theory, Signaling Theory, Institutional Theory, and the Resource-Based View (RBV), this paper constructs a three-pillar integrative conceptual framework linking smart packaging adoption (SP), green policy implementation (GPI), and sustainable financial management (SFM). Five research propositions are derived, emphasising: (1) the facilitative role of smart packaging in regulatory compliance; (2) the transformative impact of green policy on corporate financial structures; and (3) the mediating function of governance, risk, and compliance (GRC) systems in translating policy pressure into sustainable financial performance. Six research gaps are identified concerning: conceptual integration, empirical evidence from ASEAN markets, GRC mediation, standardised measurement instruments, longitudinal dynamics, and mixed-method design. The proposed framework offers a robust theoretical foundation for future empirical investigation using panel data and structural equation modelling (SEM) across ASEAN packaging firms.

Keywords: *smart packaging; sustainable financial management; green policy; ESG; packaging industry; ASEAN; systematic literature review*

Digital Transformation Strategy in Hospitals: Testing the Role *Dynamic Capabilities, Digital Leadership, And Organizational Agility*

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ABSTRACT

Digital transformation in the healthcare sector has now become a strategic mandate due to stricter regulations on the integration of Health Records and Electronic Medical Records (EMDRs). However, adoption failure often results from an ethnocentric approach that ignores managerial aspects and internal organizational capabilities. This study aims to analyze the influence of digital leadership (*digital leadership*) and dynamic capabilities (*dynamic capabilities*) towards the success of digital transformation in hospitals, by placing organizational agility (*organizational agility*) as a mediating variable. The research design uses a causal associative quantitative approach with a structured questionnaire as a data collection instrument. Using the technique *purposive sampling*, data were collected from 135 respondents consisting of top management, middle management, medical committee, and head of IT unit in the hospital. Data analysis was conducted using variance-based structural equation model (*Variance-Based Structural Equation Modeling/ SEM-PLS*) using SmartPLS software. The results show that digital leadership and dynamic capabilities have a positive and significant effect on organizational agility and the success of digital transformation. The crucial finding of this study proves that organizational agility acts as a significant partial mediator. The characteristics of hospitals as professional bureaucracies mean that the digital leadership vision cannot have an instant impact, but rather requires operational agility and organizational responsiveness to translate technology into daily adaptive work behavior. The managerial implications of this study emphasize that hospital managers must focus on building digital leadership at every level of work unit and create flexible operational procedures to ensure the success of digital transformation without sacrificing patient safety (*patient safety*).

Keywords: Digital Transformation; Digital Leadership; Dynamic Capabilities; Organizational Agility; Hospital Strategic Management.

THE EFFECT OF GREEN PERCEIVED VALUE ON CONSUMER ATTITUDE WITH GREEN TRUST AS A MEDIATING VARIABLE IN FEMALE CONSUMERS WHO USE ECO-FRIENDLY COSMETICS IN PALEMBANG CITY

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Abstract

This study aims to analyze the influence of green perceived value on consumer attitude with green trust as a mediating variable in female consumers who use eco-friendly cosmetics in Palembang City. Increasing public awareness of environmental issues encourages changes in consumption behavior, including the use of more sustainable cosmetic products. However, high product prices and doubts about eco-friendly claims are still the main obstacles in forming positive consumer attitudes. This study uses a quantitative approach with an online survey method through the distribution of questionnaires to 120 respondents who are female consumers in Palembang City who have bought and used eco-friendly cosmetics. The data analysis technique used Partial Least Square-Structural Equation Modeling (PLS-SEM) with the application of SmartPLS 3.0. The results of the study showed that green perceived value has a positive and significant effect on green trust and consumer attitude. In addition, green trust also has a positive and significant effect on consumer attitude. The results of the mediation test showed that green trust was able to partially mediate the relationship between green perceived value and consumer attitude. This finding indicates that the higher of the value that consumers feel about the benefits of eco-friendly cosmetic products, the higher the level of consumer trust which ultimately encourages the formation of positive attitudes towards the product. This research provides implications for cosmetics industry players to increase the perception of consumer value and trust through eco-friendly cosmetics product quality, information transparency, and credibility of eco-friendly claims.

Keywords: green perceived value, green trust, consumer attitude, consumer behavior

BUYER INTEREST IN THE HAR RESTAURANT SINCE 1947 IN THE CITY OF PALEMBANG

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Abstract

Consumer behavior manifests as an interest or desire to purchase a product or service. In terms of purchasing interest, consumers are categorized as potential consumers—that is, consumers who have not yet made a purchase at the present time and can be referred to as prospective buyers. This study aims to determine the influence of product innovation, price perception, and promotion on purchase interest at HAR Restaurant in Palembang, considering that HAR Restaurant, which has been in operation since 1947, remains in business despite the emergence of many modern food options that are also popular among the public. The population in this study consists of all consumers who have dined at HAR Restaurant across from the Grand Mosque, at Simpang Sekip, and in front of PTC within the last 3 months. Based on the survey, more than 1,000 people have dined at HAR Restaurant, but only 850 respondents returned the questionnaire; therefore, the sample size is 850 respondents. The sampling technique used was random sampling. To determine the sample size, the researcher used the Slovin formula with a 10% margin of error, resulting in a sample of 90 respondents. The results of the multiple regression analysis showed that, in part, product innovation influences purchase intention with a coefficient value of 0.618, price perception influences purchase intention with a coefficient value of 0.319, and promotion influences purchase intention with a coefficient value of 0.327. The results of the coefficient of determination test indicate that the variables of product innovation, price perception, and promotion account for 60.1% of the variation, while the remaining 38.9% is influenced by other variables not included in this study.

Keywords: *Product Innovation, Price Perception, Promotion, Purchase Intention*

Influence Service Excellent Quality, Price Value, And Customer Experience to Customer Loyalty with Customer EngagementAs a Mediating Variable

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Abstract

This study aims to determine the influence *Service Excellent Quality, Price Value, And Customer Experience* to *Customer Loyalty* with *Customer Engagement*As a Mediating Variable at PT Pesonna Optima Jasa. The population is all consumers of PT Pesonna Optima Jasa whose number is unknown and the sample used is 100 respondents with a sampling technique using *Purposive sampling*. The analysis technique used is SEM (*Structure Equation Modelling*). The results of the study were that there was a positive and significant influence *Service Excellent Quality* to *Customer Engagement*, there is a positive and insignificant influence *Price Value* to *Customer Engagement*, there is a positive and significant influence *Customer Experience* to *Customer Engagement*, there is a positive and significant influence *Service Excellent Quality* to *Customer Loyalty*, there is a positive and insignificant influence *Price Value* to *Customer Loyalty*, there is a positive and insignificant influence *Customer Experience* to *Customer Loyalty* and there is a positive and significant influence *Customer Engagement* to *Customer Loyalty*.

Keywords: *Service Excellent Quality, Price Value, Customer Experience, Customer Loyalty and Customer Engagement*

Reconstruction of Student Competence in the Era of Multiple Disruptions: A Systematic Literature Review Based on *the Graduate Capital Model Approach*

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ABSTRACT

The era of digital disruption and the dynamics of global economic restructuring demand a radical redefinition of the anatomy of student competencies in higher education. This study aims to map the transformation of graduate profiles by adopting the *Graduate Capital Model framework*, while positioning " *Meaning of Work* " as the main psychological mediator that shifts the paradigm of traditional academic engagement. Through the Systematic Literature Review (SLR) method that strictly adheres to the PRISMA protocol guidelines, this study extracts globally reputable empirical literature from Scopus, Web of Science, and ERIC databases within the publication period of 2018 to mid-2026. The results of the thematic analysis synthesize four structural pillars of modern competency: (1) the transition of digital literacy towards algorithmic mindset agility and critical data evaluation; (2) strengthening psychological capital driven by clarity of work meaning to build resilience; (3) the urgency of accumulating social capital through building relational networks and cross-disciplinary collaboration skills; and (4) the crucial role of institutional orchestration in providing an industrial simulation ecosystem and curriculum alignment with practitioners. This study concludes that to neutralize the skills gap, universities must break down rigid scientific barriers, completely restructure the opportunity infrastructure, and transform the role of lecturers into strategic mentors who oversee the formation of students' professional identities holistically.

Keywords: Student Competence, *Meaning of Work*, *Graduate Capital Model*, Systematic Literature Review, Work Readiness, Digital Era.

DYNAMICS AND TRANSFORMATION OF THE MODERN ERA JOB FIELD: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

The dynamics of the labor market in the modern era are experiencing massive structural transformation due to the penetration of artificial intelligence technology, shifts in employment relationship models, and demands for global ecological sustainability. This study aims to synthesize literature related to the evolution of employment and map the shift in workforce competency profiles using the analysis instruments of the Ability, Motivation, and Opportunity Theory (AMO) and *the Resource-Based View* (RBV). Through the Systematic Literature Review (SLR) method that strictly adopts the PRISMA protocol guidelines, data searches are conducted on reputable academic databases namely Scopus, Web of Science, and Google Scholar for the publication year range 2019–2026. The results of the qualitative synthesis of the selected literature reveal three main pillars of employment transformation: (1) the acceleration of job polarization due to automation that disrupts middle-class administrative-routine tasks and triggers a surge in demand for complex cognitive skills; (2) the rise of the part-time economy (*gig economy*) that presents a dualism between flexible autonomy and vulnerability of social protection under the control of algorithmic management; and (3) the growth of the green jobs sector , which is urging organizations to implement *Green Human Resource Management* (GHRM) to build environmentally friendly competencies holistically. This study concludes that the resilience and competitive advantage of human resources are no longer solely based on basic technical skills, but rather on the integration of emotional intelligence, adaptive agility, and lifelong learning capacity. The strategic implications of this study require collaboration between educational institutions, governments, and human resource management architects in designing an ecosystem for skills improvement (*upskilling* and *reskilling*) to bridge the competency gap amidst the waves of future disruption.

Keywords: Job Transformation, Job Polarization, *Gig Economy* , *Green Jobs* , Systematic Literature Review, Human Resource Management.

STUDENTS' PERCEPTION OF USING PICTURE DICTIONARY IN LEARNING VOCABULARY OF FIFTH GRADE AT SD NEGERI 10 PALEMBANG.

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ABSTRACT

This study aimed to investigate students' perceptions of using picture dictionaries in learning English vocabulary at SD Negeri 10 Palembang. The study employed a qualitative research design involving 38 students from Grade V and Grade VI as the participants. The data were collected through observation, interviews, and questionnaires. The data were analyzed using the interactive model proposed by Miles, Huberman, and Saldaña, consisting of data reduction, data display, and conclusion drawing.

The findings showed that students had positive perceptions toward the use of picture dictionaries in vocabulary learning. The observation results indicated that 73.7% of students demonstrated positive responses, while 15.8% showed neutral responses and 10.5% showed negative responses. The interview results revealed that picture dictionaries helped students understand and remember vocabulary more easily, increased their motivation, and encouraged active participation during classroom activities. Furthermore, the questionnaire results showed that the majority of students selected "Strongly Agree" (39.21%) and "Agree" (34.91%) responses regarding the effectiveness of picture dictionaries. The cognitive, affective, and behavioral aspects of students' perceptions were categorized as very positive.

In conclusion, picture dictionaries were perceived positively by students and contributed to better vocabulary understanding, increased learning motivation, and greater classroom engagement. Therefore, picture dictionaries can be considered an effective learning medium for teaching English vocabulary to elementary school students.

Keywords: Students' Perception, Picture Dictionary, Vocabulary Learning, Elementary School Students, English Vocabulary.

AN ANALYSIS OF VOCABULARY LEARNING DIFFICULTIES FACED BY FOURTH-GRADE STUDENTS AT SD NEGERI 010 PALEMBANG

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Abstract

Vocabulary is one of the most essential components in language learning because it supports learners in developing listening, speaking, reading, and writing skills. However, many elementary school students still experience difficulties in mastering English vocabulary, which may hinder their language development and academic achievement. This study aimed to analyze the vocabulary learning difficulties faced by fourth-grade students at SD Negeri 010 Palembang. The research employed a descriptive qualitative design. The participants consisted of 30 fourth-grade students selected through total sampling. Data were collected through a questionnaire consisting of 50 statements related to vocabulary learning difficulties. The data were analyzed using descriptive statistical techniques and qualitative interpretation. The findings showed that 55.47% of the students experienced difficulties in learning English vocabulary. These difficulties were classified into four main categories: cognitive difficulties, linguistic difficulties, psychological difficulties, and environmental difficulties. Cognitive difficulties included forgetting vocabulary and slow comprehension of word meanings. Linguistic difficulties involved pronunciation, spelling, understanding multiple meanings of words, and contextual usage. Psychological difficulties included low motivation, boredom, exam pressure, and lack of self-confidence. Environmental difficulties were related to limited language exposure, less attractive learning resources, and monotonous teaching methods. The study concludes that vocabulary learning difficulties are influenced by various interconnected factors and require comprehensive efforts from teachers, students, and educational institutions to improve vocabulary mastery.

Keywords: vocabulary learning, learning difficulties, English vocabulary, elementary students, qualitative research, language learning

CORRELATION OF THE ABILITY TO LISTEN TO FABLES WITH THE ABILITY TO WRITE FABLE FOR GRADE VIII STUDENTS OF SMP NEGERI 2 KAYUAGUNG

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Abstract

This study aims to investigate whether there is a relationship between the ability to listen to fables and the ability to write fables among grade VIII students at SMP Negeri 2 Kayuagung. The method applied in this study is a quantitative approach with a correlational type. The sample used was students from class VIII.2. Data collection was carried out through objective tests and performance assessments. To analyze the data, the product-moment formula and SPSS software version 25 were used. The results of the analysis showed a positive relationship between the ability to listen to fables and the ability to write fable stories. The average score for the ability to listen to a fable was recorded at 2296, while the average score for the ability to write a fable was 1985. From the analysis carried out, the r_{xy} value was obtained of 163920, with a calculation of 0.454 and a table of 0.374. This suggests that the two variables have a significant positive relationship at a confidence level of 5%. Therefore, the research hypothesis (H_a) is acceptable, which indicates an important relationship between the ability to listen to fables and write fable stories among grade VIII students of SMP Negeri 2 Kayuagung.

Keywords: *listening, writing, fable*

THE EFFECT OF DUOLINGO-ASSISTED LEARNING ON ENGLISH VOCABULARY MASTERY OF EFL STUDENTS

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Abstract

Vocabulary mastery plays a crucial role in English language learning, as it supports learners' ability to understand and communicate effectively. This study investigated the effect of Duolingo-assisted learning on the English vocabulary mastery of EFL students. The study employed a pre-experimental one-group pretest-posttest design involving 20 students from the English Education Study Program at Universitas Islam Ogan Komering Ilir (UNISKI) Kayuagung. A vocabulary test consisting of 50 items was administered before and after a 30-day Duolingo-assisted learning intervention. The collected data were analyzed using descriptive statistics and a paired-samples t-test. The findings revealed a significant improvement in students' vocabulary achievement. The mean score increased from 75.05 in the pre-test to 96.60 in the post-test, with a mean gain of 21.55 points. The paired-samples t-test indicated a statistically significant difference between the pre-test and post-test scores ($t = 3.964$, $p = .001$), confirming that Duolingo-assisted learning had a positive effect on students' English vocabulary mastery. The findings suggest that Duolingo facilitates vocabulary acquisition through interactive activities, repeated exposure, and continuous practice. The study highlights the potential of mobile-assisted language learning applications as effective supplementary tools for vocabulary development among EFL learners. It is recommended that English educators consider integrating Duolingo into language learning activities to support vocabulary improvement and promote autonomous learning.

Keywords: *Duolingo-assisted learning, vocabulary mastery, EFL students, mobile-assisted language learning, English vocabulary*

CONSUMER PROTECTION AGAINST BUSINESS ACTORS' ADVERTISING AND PROMOTIONAL ACTIVITIES ON SOCIAL MEDIA

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Abstract

The development of social media has provided business actors with greater convenience in promoting and marketing products to the public. However, the use of social media has also created various legal issues, particularly regarding misleading advertisements and promotions that may harm consumers. This study aims to examine the legal regulations concerning consumer protection against advertisements and promotions on social media, to analyze the responsibilities of business actors in digital promotions, and to identify legal protection efforts available for consumers against violations in digital promotional activities. This research employs a normative legal research method using statutory and conceptual approaches. The results indicate that consumer protection in Indonesia is regulated under Law Number 8 of 1999 concerning Consumer Protection, the Electronic Information and Transactions Law, and Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions. Business actors are legally obligated to provide accurate, clear, and honest information regarding products promoted through social media. In cases where consumers suffer losses due to misleading promotions, business actors may be subject to civil, administrative, and criminal liabilities in accordance with applicable laws and regulations. Legal protection for consumers may be carried out through preventive measures, such as public education and supervision of digital advertisements, as well as repressive measures through complaints to the Consumer Dispute Settlement Agency (BPSK) or through court proceedings. Therefore, cooperation among the government, business actors, and society is necessary to create a safe, fair, and responsible digital trading environment.

Keywords: *consumer protection; social media; digital advertising; business actors; digital promotion*

LAW AND FREEDOM OF EXPRESSION ON SOCIAL MEDIA: AN INDONESIAN LEGAL PERSPECTIVE

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Abstract

The development of information technology has brought significant changes to society, especially in the use of social media as a means of expressing opinions. Freedom of expression is part of human rights guaranteed by the 1945 Constitution of the Republic of Indonesia. However, in practice, such freedom often creates legal issues due to the misuse of social media, including hate speech, hoaxes, defamation, and provocation. This study aims to analyze the relationship between law and freedom of expression on social media and to identify the legal limitations on such freedom in Indonesia. The research method used is normative juridical with statutory and conceptual approaches. The results indicate that freedom of expression on social media must still comply with applicable laws, particularly the Electronic Information and Transactions Law (ITE Law) and human rights regulations. Therefore, a balance is needed between protecting freedom of expression and enforcing the law to maintain public order and security.

Keywords: *Law, Freedom of Expression, Social Media, ITE Law, Human Rights.*

LEGAL PROTECTION FOR WORKERS IN INDONESIA IN THE DIGITAL ERA

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Abstract

This article is entitled Legal Protection for Workers in Indonesia in the Digital Era. The problem discussed in this article is How is Legal Protection for Workers in Indonesia in the Digital Era? The research method used in this study is the normative legal research method. The purpose of this study is to determine how is legal protection for workers in the digital era while the benefits obtained from this study are expected to enable readers to know and understand legal protection for workers in the digital era. From this study it can be concluded that current technological developments have had an impact on legal protection for workers in the current digital era, however, protection for workers in the digital era has not been specifically regulated in law, either regarding Termination of Employment due to technological developments or regarding Occupational Health and Safety for workers in the current digital era.

Keywords : legal protection; workers; digital era

CHARACTER-BASED LEADERSHIP IN EFFORTS TO INCREASE THE QUALITY OF VILLAGE HR TOWARDS A DIGITAL VILLAGE IN SOUTH SUMATRA

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Abstract

Village government is the level of government that has direct contact with the community and is responsible for implementing development programs initiated by the central government. The village head plays a crucial role in the administration of village governance, including the planning and implementation of village development. In the current digital era, where digital technologies have become increasingly integrated into government administration, the leadership of a village head significantly influences the success of village development and public service delivery. Therefore, effective leadership characteristics are essential to support good governance and community welfare. This study aims to contribute to the literature by identifying the ideal characteristics that should be possessed by village heads as leaders in village governance. The findings are expected to provide insights for policymakers, particularly the central government, in developing leadership capacity-building programs for village heads. Such efforts are important to ensure that village governments can deliver effective, efficient, and responsive public services in the digital era.

Keywords: *Village Government, Village Head Leadership, Leadership Characteristics, Digital Era, Public Service*

DISPUTE RESOLUTION OF FRANCHISE AGREEMENTS THROUGH ARBITRATION

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ABSTRACT

This study employs normative legal research, also known as library legal research, which examines the legal system through the analysis of legal materials. The research is conducted by reviewing secondary data consisting of primary, secondary, and tertiary legal materials. These materials are systematically compiled, analyzed, and subsequently used as the basis for drawing conclusions related to the legal issues under investigation. Government Regulation Number 35 of 2024 concerning Franchising stipulates in Article 1 paragraph (1) that a franchise is a special right owned by an individual or a business entity over a business system that fulfills predetermined criteria for the purpose of marketing goods and/or services that have been proven successful and may be utilized and/or operated by another party based on a franchise agreement. The establishment of a franchise agreement between a franchisor and a franchisee is based on Article 1320 of the Indonesian Civil Code concerning the validity requirements of agreements and Article 1338 of the Indonesian Civil Code concerning the binding force of agreements (pacta sunt servanda). Furthermore, Article 4 paragraph (4) of Government Regulation Number 35 of 2024 concerning Franchising stipulates that franchise agreements must be executed in writing and be governed by Indonesian law. With regard to dispute resolution, Article 6 paragraph (1) of Government Regulation Number 35 of 2024 concerning Franchising provides that disputes arising from franchise agreements may be resolved through litigation (court proceedings) or non-litigation mechanisms outside the court system, namely arbitration. In addition, Article 8 of Law Number 30 of 1999 concerning Arbitration and Alternative Dispute Resolution stipulates that disputes arising from franchise agreements may be resolved by submitting a written application to the Indonesian National Arbitration Board (Badan Arbitrase Nasional Indonesia/BANI). The written application must contain: The full names and addresses of the disputing parties; A description of the dispute; The legal basis of the claim or demand submitted; and The arbitration agreement serving as the basis for dispute resolution.

Keywords: *Franchise dispute resolution, franchise agreements, arbitration.*

**JUDICIAL CONSIDERATIONS OF JUSTICE IN CLASS ACTION LAWSUITS
AGAINST CORPORATE ACTIVITIES CAUSING ENVIRONMENTAL POLLUTION
(A CASE STUDY OF SUKOHARJO RESIDENTS VS PT RAYON UTAMA
MAKMUR)**

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Abstract

This thesis examines the environmental impacts of the business activities of PT Rayon Utama Makmur (PT RUM) on the surrounding community, which led to the filing of a class action lawsuit, and analyzes whether the judicial considerations at each level of the judiciary in adjudicating the class action between the residents of Sukoharjo and PT RUM reflected principles of justice. This study employs a normative legal research method using secondary data collected through library research.

The findings reveal that PT RUM's waste management activities generated air pollution containing Hydrogen Sulfide (H₂S), which caused widespread respiratory disorders and other health problems among local residents. Regarding judicial considerations, the decisions rendered by the courts at the first-instance and cassation levels did not fully provide justice to the affected community. However, at the cassation level, the court ultimately ruled that PT RUM had committed an unlawful act and ordered the company to compensate the plaintiffs for material damages and undertake measures to restore the rights of the affected residents. Therefore, this decision can be regarded as providing justice for the community members who suffered the adverse impacts of the pollution.

Keywords: Class Action; Justice; Environmental Pollution.

ENVIRONMENTAL CRIMINAL LAW ENFORCEMENT BASED ON INFORMATION TECHNOLOGY

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The development of information technology has significantly influenced environmental criminal law enforcement in Indonesia. Digital technology has become an important instrument in monitoring, preventing, and proving environmental crimes such as illegal logging, forest fires, waste pollution, and illegal mining. This article aims to analyze the role of information technology in environmental criminal law enforcement and examine the challenges faced in its implementation. The research method used is normative juridical research with statutory and conceptual approaches. The study shows that information technology, including satellite imagery, drones, electronic reporting systems, and digital evidence, has strengthened the effectiveness of environmental law enforcement. Electronic evidence has also gained legal recognition under Indonesian law, particularly through the Law on Electronic Information and Transactions. However, challenges remain, including limited technological infrastructure, lack of digital expertise among law enforcement officers, and weak inter-agency coordination. Therefore, strengthening regulations, improving digital literacy, and enhancing technological facilities are necessary to support effective environmental criminal law enforcement in the digital era.

Keywords: *environmental criminal law; information technology; digital evidence; environmental crimes; law enforcement*

CROSS BORDER PENALTIES TO INTERNATIONAL CORPORATION IN INDONESIA JURISDICTION BY BRIBERY CASE: A CASE STUDY OF CHROMEBOOK PROCUREMENT BY NADIEM MAKARIM

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Abstract. In the era of digital transformation, the education digitalization program has become a priority policy of the Indonesian government to improve the quality and equality of access to education across all regions. Various education digitalization programs, both those supporting academic and non-academic activities, have proven effective in expanding and accelerating access to education. Education is one of the steps in supporting the Freedom to Learn program initiated by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek). However, the implementation of education digitalization programs that involve large budgets for the procurement of information and communication technology devices opens new opportunities for corruption. In the 2021 Chromebook laptop procurement program by Kemendikbudristek with a value of nearly IDR 10 trillion, corruption is suspected in the procurement process, which is currently under investigation by the Attorney General's Office. Nadiem is suspected of abusing his authority in the procurement process by directing technical specifications to match Chromebook products before the procurement process begins. Nadiem's role was also evident in his meeting with Google Indonesia to discuss the Google for Education program, as well as the issuance of Minister of Education and Culture Regulation Number 5 of 2021, which specifically locks the use of Chrome OS in Information and Communication Technology (ICT) procurement. These actions served as a strong basis for the suspect's determination, as they were deemed to contain indications of a conflict of interest and policy manipulation that harmed state finances. The type of research used in this study was normative. The results of the discussion showed that the Public Prosecutor did not indict Google Asia Pacific because it did not find any malicious intent; Google's investment was directed to PT Aplikasi Karya Anak Bangsa which later became PT GoTo Gojek Tokopedia. The prosecutor suspected Nadiem of using an investment of US\$786.99 million and internal transactions of Rp809.59 billion for personal gain in the procurement of Chromebook laptops 2019 2022. Nadiem rejected the accusation, stating that Google's investment in Gojek occurred before he became a minister, did not enrich Google, and criticized the prosecutor's rejection of the testimony of three former Google executives. Corporations such as Google can be prosecuted as suspects for giving bribes based on Article 20 of Law Number 31 of 1999 in conjunction with Law Number 20 of 2001 concerning the Eradication of Criminal Acts of Corruption (Corruption Law). This corporate criminal liability is operationalized through the guidelines for investigation and trial procedures in Supreme Court Regulation (PERMA) Number 13 of 2016. To determine Google as a suspect corporation, investigators (such as the Corruption Eradication Commission or the Prosecutor's Office) must fulfill the following specific elements: (1) Actions Carried Out by Corporate Organs; (2) Profits for the Corporation; and (3) Corporate Misconduct. In his personal defense, Nadiem rejected all of the prosecutor's charges and requested an acquittal. Nadiem claimed that the use of Chrome OS was actually an effort to save state funds and there was no evidence of illegal funds flowing into his personal account.

Keywords: Chromebook Laptop, Corruption Crime, Conflict of Interest, Google

THE EFFECT OF SULFUR APPLICATION ON THE GROWTH, YIELD, AND ANTIOXIDANT ACTIVITY OF SHALLOT (*Allium ascalonicum* L.) ON FLOATING CULTURE

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Abstract

*Shallot (*Allium ascalonicum* L.) is one of the horticultural crops classified as a spice vegetable that is widely consumed and highly demanded by the community. Floating cultivation is an innovative agricultural system developed to address farming constraints in areas characterized by aquatic geographical conditions. This study aimed to determine the effect of sulfur application on the growth, yield, and antioxidant compounds of the Bima Brebes shallot variety under a floating cultivation system. The study was conducted in Indralaya District, Ogan Ilir Regency, South Sumatra Province, Indonesia, at an altitude of approximately 10 meters above sea level. The study employed a Completely Randomized Design (CRD) with sulfur application treatments consisting of: A1 (0 kg ha⁻¹), A2 (30 kg ha⁻¹), A3 (60 kg ha⁻¹), A4 (120 kg ha⁻¹), A5 (240 kg ha⁻¹). The results of this study showed that the optimum leaf length was 37.17 cm, achieved with an optimum fertilizer application rate of 116.67 kg ha⁻¹. The optimum number of leaves was 26.9 strands obtained at a fertilizer application rate of 121.20 kg ha⁻¹. The optimum plant growth rate was 1.08 kg ha⁻¹ day⁻¹ achieved with a fertilizer application rate of 97.23 kg ha⁻¹. The optimum fresh weight per plant was 54.7 g obtained at a fertilizer application rate of 97.11 kg ha⁻¹. The optimum total chlorophyll content was 9.58 mg L⁻¹ achieved with a fertilizer application rate of 114.00 kg ha⁻¹, while the optimum antioxidant activity was 7215.9 obtained at a fertilizer application rate of 127.03 kg ha⁻¹.*

Keywords: *Floating culture; Shallot; Sulfur*

OPTIMIZATION OF CHICKEN MANURE AND ZA FERTILIZER DOSAGE ON THE YIELD AND PRODUCTIVITY OF RED ONION PLANTS IN A FLOATING CULTIVATION SYSTEM

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Abstract

The floating cultivation system is an alternative technology for the development of shallots in flooded land. This study aims to determine the optimal combination of chicken manure and ZA fertilizer doses on the yield and productivity of shallots in a floating cultivation system. The research used a factorial Randomized Block Design with doses of chicken manure (0, 1, 2, and 3 kg per plant) and ZA fertilizer (0, 2, 5, and 7 g per plant). The research results show that the interaction of both fertilizers significantly affects tuber volume, tuber number, fresh tuber weight, air-dry tuber weight, and productivity. The combination of 2 kg of manure per plant and 5 g of ZA fertilizer per plant resulted in the highest yield and productivity. The increase in yield is supported by the increased availability of nutrients, especially nitrogen and sulfur, which play a role in tuber formation and biomass accumulation. Thus, the combination is recommended to increase red onion production in floating cultivation systems.

Keywords: shallots, productivity, chicken manure, ZA fertilizer, floating cultivation sistem.

