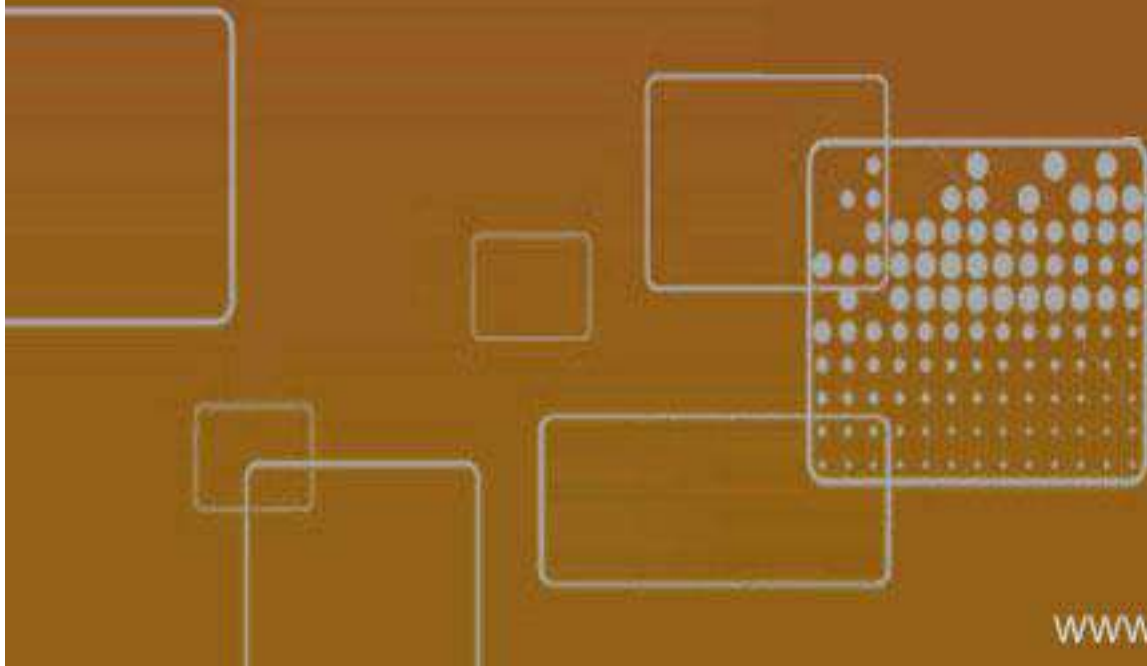


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### **Preparation Of Edible Coating Incorporated With Lemon Balm (Melissa Officinalis L.) For Extending Shelf Life Of Tofu**

Youssef M. Riyad, Mai M.M. Naeem, Marwa M. Helmy, Manal A. Sorour

Fresh tofu samples were prepared and immersed in different solutions containing gelatin (1 and 2%) and Melissa officinalis L. oil (0.1, 0.3 and 0.5%) as antimicrobial activity. The samples stored up to 14 days under cooling conditions (4 °C). Melissa officinalis L. oil was chemically and microbiologically analyzed. Rheological properties and thixotropic effect were determined. The results indicated that blends of gelatin and Melissa officinalis L. oil exhibited dilatant flow behavior and all samples showed thixotropic effect. The effect of edible coating on weight loss, moisture content, texture properties, microbiological tests, and sensory evaluation of tofu samples were determined during storage period as an indication for shelf life and quality of tofu samples.

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**1-8**

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### **Auditor Performance From The Perspective Of Emotional Intelligence And Spiritual Intelligence At The Office Of The Financial And Development Supervisory Agency (BPKP) Of The North Sumatra Representative**

Henny Zurika Lubis, Sulaiman Effendi, Dahlena Sari Marbun, Muhammad Fitri Rahmadana

This study aims to examine the effect of emotional intelligence and spiritual intelligence of auditors on the North Sumatra BPKP office. The research approach used is the Associative Approach. Measurement of emotional and spiritual intelligence on performance uses instruments adopted from Cooper and Sawaf (1998), while spiritual intelligence is adopted from Khawari (2000). The analytical tool used in this study is Path Analysis, which is used to determine the effect of emotional intelligence and spiritual intelligence both directly and indirectly on auditor performance. The analysis shows that the emotional intelligence and spiritual intelligence of auditors directly affect the performance of auditors both jointly and partially. However, emotional intelligence contributes and has a greater influence on auditor performance compared to auditor's spiritual intelligence. Indirectly emotional intelligence also affects the performance of auditors through spiritual intelligence.

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**9-13**

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## **PV Fed Sepic Triple-Lift Converter System - A Comparative Study**

T. Ezhilan, J. Ravikumar, B. Baskaran, S. Subramanian

Power converter design based on voltage-lifting (VL) techniques avoid taking a too high value of operating duty for producing large voltage conversion ratio. This study is aimed in determining the voltage boosting ability of a soft-switched single ended primary inductor converter (SSSEPIC) integrated with triple-lift converter system (TLCS). Simulation of SSSEPIC-TLCS is performed in open loop and with source disturbance by developing a Matlab Simulink model. The converter performance is studied with regard to voltage gain, ripple content present in output voltage and power output. Furthermore, the SSSEPIC-TLCS is compared with the results of elementary SEPIC, self-lift, double-lift and re-lift converter reported in literature so as to find a system with high power output and low output voltage ripple. A T-filter is connected at the output to minimize ripple content. Comparative results reveal that combination of SEPIC with re-lift system produces higher output than other VL methods and therefore it is a good substitute for the existing step-up converters. Moreover, the results suggest that there has only been a marginal difference in voltage gain and power output between triple-lift and double-lift converter system.

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**14-17**

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## **Optimal Bit Energy For IR-UWB Signaling Over AWGN Channels**

Nasr Rashid, Mohamed Shehata

This paper discusses the impact of tuning the temporal width of an information carrying waveform on the bit error rate performance of an impulse radio ultrawide band (IR-UWB) communication system. Theoretical expressions are developed for the energy per bit in terms of the pulse width of its encoding waveform. Two of the most widely adopted types of IR-UWB signaling waveforms are considered. It is shown that, under spectral constraints, only a discrete set of pulse widths should be possessed by the IR-UWB signaling waveforms such that the minimum bit error rate performance is achieved. The accuracy of the analytically obtained expressions is confirmed by the excellent agreement with the results obtained via numerical simulations.

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**18-21**

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## **Some Factors Influencing Tourism Products In Vietnam Huynh Tan Hoi**

Huynh Tan Hoi Student of Faculty of Business Administration, Ho Chi Minh City Open University, Vietnam

Currently, Vietnam tourism is developing in a context of many fluctuations, increasing competition from other countries. Many countries in the region have high levels of tourism development, many supportive policies, socio-economic development and many advantages for tourism development. Not only Vietnam but even the rest of the world see tourism as a key economic sector because of the large income source for the

economy. Besides, tourism also creates jobs, promotes peace, cultural exchanges and has an impact on other fields. The article discusses solutions to turn potential tourism into important economic sectors of the country in the coming years.

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22-25

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## **Evaluation Of Implementation Of Specific Teaching Methods During The Covid-19 Pandemic**

Syaiful Haq, Ambiyar, Fahmi Rizal, Nizwardi Jalinus, Nurhasan Syah

Improving the quality of education in Indonesia is faced with more complex problems, it is because of pandemic covid-19 around the world. The impact of this pandemic is the regulation of social distance. The other impact of the covid-19 pandemic has disrupted the implementation of education, students and educators cannot carry out learning as usual. Implementation of online learning is the best way so that education does not stop. The Specified Teaching Method Courses (STMC) which in fact are excellent programs for educational students to practice as teachers are forced to learn to teach from home, even though this learning requires demonstration by students in class and in workshops. This research is an evaluation research using Goal Oriented Evaluation model based on student assignment data and interviewing lecturers involved in this program. After researching, it was found that the implementation of STMC learning during the covid-19 pandemic could be carried out with a percentage of 74.07% or enough categories. The problems faced by students during the covid-19 pandemic are that they are not yet accustomed to learning online practices and the limitations of infrastructure and unstable internet networks in their place.

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26-28

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## **Dynamic Effect Analysis And Flexural Storage Modulus Optimization Of CFRP Hybrid Nano Composites Using RSM**

Shailesh D. Ambekar, Vipin Kumar Tripathi, Huynh Tan Hoi

In the last few years, due to the enhancement in the properties of CFRP with the presence of nano particles, the interest is increased in studying the use of CFRP hybrid nanocomposite. In this paper, the effect and evaluation of mixing of nano clay nanoZnO particles and carbon fiber plies angle orientation on dynamic mechanical properties laminates of CFRP were studied. A hand layup method followed by process of vacuum bagging was used to make the samples of composite. Dynamic mechanical analyzer (DMA) was used to inspect the dynamic mechanical properties of CFRP hybrid nanocomposite specimens with changing temperature. The response surface methodology is used for design of experiments by considering the percentage of weight of nanoclay, nanoZnO and fiber orientation angle as an independent variables and storage modulus due to the flexural loading is used as response. The optimization of the storage modulus is carried out with RSM response optimizer and optimum value of storage modulus is found.

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29-37

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## **Software Metrics: Investigating Success Factors, Challenges, Solutions And New Research Directions**

Hina Noor, Dr. Babur Hayat, AbuBakar Hamid, Tamoor Wakeel, Rashida Nasim

Software metrics is becoming important every day. A measure of software characteristics which are countable or measurable is known as software metrics. Software metrics are very important because they are used for many purposes for example, estimating efficiency, arranging work things and estimating execution of software etc. Software product and software development process specific attributes are measured by software metrics. Many metrics related to coupling, cohesion etc. have been defined. This paper investigates success factors and challenges in the implementation of software metrics and also tries to investigate solutions to those challenges. The paper explains new research directions to software metrics as well which really a need of today.

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**38-44**

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## **"COVID-19" Forecast Using Time Series Methods**

Milind Talele, Dr. Rajashree Jain

The coronavirus "COVID-19" pandemic spreading over the world. This paper presents three time series models, exponential smoothing, Prophet additive forecast and Holts forecast method on understanding predictive patterns from published data on the number of "COVID-19" infected with coronavirus in India. This paper objective to introduce a different effective time series method to predict "COVID-19" forecast. The paper presented "COVID-19" confirmed cases in India till 30 June 2020. The data set used was from the Ministry of Health & Family Welfare and COVID 19india published through kaggle. The simple exponential smoothing model was applied using the Tableau tool. Prophet additive forecast method applied using R language and Holt method used in SPSS tool.

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**45-51**

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## **Applications Of Cloud And IOT Technology For The Development Of Agricultural Sector**

Usman Anwar, Hina Noor, Dr. Babur Hayat Malik, Hafiz Wajid Ali, Iqra Muzaffar

Cloud computing is a platform of multi-systems like software, Hardware, data base storages and IT system. Whereas the Internet of Things IoT is a technology which maps real- time objects with each other by using network. Cloud computing with Internet of thing is powerful combination of handling data and sharing the information to take decisions. Cloud and IoT technology adopted by many sectors but the main focus in these days is to use these technologies in the agriculture development. This paper focus on the importance of using cloud technology and IoT technology, their application and benefits regarding the agriculture sector, as agriculture is the main root of the success for the nation also for its economic conditions. This paper propose a model by brief

study of cloud an IoT application, the purpose of this model is to highlight the how to take information of agriculture data from different sources and use the information and data regarding agriculture to reduce the man power and provide platform for the users to take the decision easily.

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52-67

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## **ANOVA And Fuzzy Logic Approach For Optimization Of Surface Finishing And Material Removal Rate In Face Milling Of Al5083 Alloy**

Ch. Devi Prasanna Kumar, Y.Venkata Ramana Murty, G. Ramprasad

In the present study, to measure the optimum controlled parameters for face milling operation of Al5083 materials under semi coolant conditions. Analysis of variance (ANOVA) in Mini Tab and fuzzy logic control in MATLAB software are used to effectively develop an analytical analysis for surface roughness and material removal rate. The experimental controlled parameters such as spindle speed, radial depth of cut, axial feed rate, and axial depth of cut are consideration for the present study. The experimental conditions are plan based on Taguchi L27 array with controlled parameters using carbide inserts (ASX 445). Significant results on surface roughness are spindle speed and interaction parameters between spindle speed and axial feed rate with contribution of 30.94 % and 33.47% respectively.

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68-75

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## **Agent Based Computational Modelling For Mapping Of Exact Ksatisfiability Representation In Hopfield Neural Network Model**

Hamza Abubakar, Sagir Abdu Masanawa, Surajo Yusuf, Yusuf Abdurrahman

Recent studies in the field of machine learning and artificial intelligence (AI) are focusing on developing hybrid models to simplify the complexity involved in the training of the neural network. This form of simplicity is valuable for seeking an established convergence artificial neural network. In this paper, agent-based modelling (ABM) using NETLOGO as a platform has been proposed to facilitate the training process of Hopfield neural modelling in carrying Exact kSatisfiability programming. The developed ABM hybrid model explored the optimal task representing Exact kSatisfiability logic due to the simplicity, flexibility and user-friendly mannerism manifest by ABM model. ABM was used to simulate the process of taking decisions of individual movements, fortification of behaviour, group dynamics, population communications and social interactions within populations. The performance has been displayed based on Global Minimum ratio, local Minimum Ratio, Hamming Distance Mean Square Error and Computation time in evaluating the model performance. The performance of the HN model in carrying Exact kSatisfiability (Exact kSAT) logic was demonstrated good agreement when compared with ordinary kSatisfiability (kSAT).

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76-85

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## **Statistical Analysis Of The Features And Classification Of Coffee Beans In Three Maturation Stages**

Jose Alfredo Palacio-Fernández, William Orozco, Bayardo Cadavid

This article presents a statistical analysis of the features of RGB, HSV, Wavelet and the relation of coffee axes based on the root square mean value, the standard deviation and the Wavelet approximation coefficients' average for the images obtained from three types of coffee beans with different maturation states. By means of a statistical analysis, the relations between the features were obtained and, three main components were selected. These were subjected to a Bayesian classifier, which allowed to determine a full classification of the three types of grains, using the two main components and, two other combinations of the features, mainly color in the second Wavelet transformation filtering level.

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**86-89**

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## **Tax Rates And Economic Growth: A Conjugal Bioscopy**

Sunday A. Effiong, Joseph O. Udoayang, Fadenipo A. Adesola

The study considered the conjugal consequences of tax rates and economic growth. A focused investigation was conducted to evaluate the direction of influence of tax rates on economic growth in Nigeria. Secondary data and ex-post-facto design were adopted. The study employed autoregressive distributed lag model (ADRL) to estimate the model coefficients, using annual data for 1989 to 2018; this was because the data used in the study have time attributes and the choice of the method was premised on the fact that it enabled the researchers to examine the long-run and co-integrating relationships between the variables of the study. However, before ADRL was conducted, some residual diagnostic tests such as normality tests, multi-collinearity test, serial correlation, and heteroscedasticity tests were engaged to ensure well-founded empirical results. The findings of the study showed that PITR, VATR, and PPTR have positive and significant relationships with economic growth while CITR has a significant negative effect on economic growth; CGTR however, has no significant relationship with economic growth. It was recommended that the government should systematically review downwards the tax rates in Nigeria and widen the tax base to bring more taxable persons into the tax net.

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**90-109**

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## **Development Of Computational Intelligence Algorithms For Modelling The Performance Of Humanin And Its Derivatives In HPLC Optimization Method Development**

Umar Muhammad Ghali, Mohamed Alhosen Ali Degm, Ahmed Nouri Alsharksi, Qendresa Hoti, Abdullahi Garba Usman

Humanin and its derivatives are considered as neural cells protecting agents against pathological proteins such as the amyloid protein precursor that causes the Alzheimer's disorder. The precise prediction of the properties of humanin in high performance liquid chromatography (HPLC) optimization method is of paramount importance. Therefore, to achieve this the development of resilient and satisfactory computational intelligence tools is crucial. In the current study, the comparative potential performance of adaptive neurofuzzy inference system (ANFIS) and multilinear regression models. The outputs given by the ANFIS and MLR models were compared with the experimental values through two statistical evaluation indices Nash-Sutcliffe efficiency (NC) and Mean squared error (MSE). Graphical illustrations such as scatter plot and time series were employed to compare the performance of the models. The results of the study indicated that ANFIS outperformed MLR for predicting the maximum retention time (tR max) and resolution of humanin and its derivatives in HPLC optimization method development. Equally, ANFIS showed the highest value of NC (0.9999/ 0.9992) for tR max and (0.9998/ 0.9994) for resolution in the training and testing stages respectively. Similarly, ANFIS indicated lowest values of MSE for tR max and resolution in both the training and testing stages. The comparative analysis of the result demonstrated that ANFIS as a promising non-linear artificial intelligence based model found to be more reliable and suitable for predicting the performance of humanin and its derivatives in HPLC optimization method development.

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**110-117**

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## **Impact Of Near Infrared Spectra Corrections To The Prediction Performance Of Soil Macro Nutrients**

Yuswar Yunus, Devianti, Purwana Satriyo, Agus Arip Munawar

This present study aimed to apply and compare three different spectra data correction methods to the overall prediction performance of near infrared calibration models used to determine soil macro nutrients. Those three spectra correction methods are: de-trending (DT), mean centering (MC) and Savitzky-Golay smoothing (SGS). Near infrared spectra data of soil samples were measured and recorded in wavelength range from 1000 to 2500 nm. Soil samples were collected in 5 and 20 cm depth respectively in rice field area in Aceh Besar district, Aceh Province. Moreover, calibration models were built to predict soil macro nutrients in form of Nitrogen (N) and Calcium (Ca). Partial least square (PLS) regression was employed to construct those models. The results showed that spectra corrections provided a better prediction performance compared to un-corrected spectra (raw). The maximum determination coefficient achieved were 0.94 for N prediction, and 0.97 for Ca prediction respectively. Thus, it may conclude that spectra corrections definitely affected to the overall prediction performances of soil macro nutrient contents.

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**124-128**

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## **Demand Potential On Canal Utilization As Alternative Urbantransportation Medium In Makassar City**

Amiruddin Akbar Fisu, Ibnu Syabri

Water transportation is the transportation of people and goods using water modes as a means of connecting one location to another. There are three canals in the center of Makassar City with a total length of 15.11 km. These canals function as an urban drainage and also as a main base for flood control. This canal has become one of the potentials that can be used to unravel road-based movements while at the same time solving the congestion problems that occur in Makassar City by utilizing it as an urban transportation medium both as a travel for daily needs (formal) and recreational activities (non-formal). This research was conducted to see how the demand preferences of canal-based transportation modes, variables that affect the willingness to use channels as a transportation medium, and the extent to which the role of channels becomes an alternative transportation medium. This study uses a descriptive quantitative method approach to achieve these objectives using the method of crosstab analysis, multinomial logistic regression and approaches with stated preference methods. Based on the results of the analysis, there are four variables that significantly affect respondents' willingness to use canal / waterway based transportation services, namely income per month, travel time, reasons for choosing modes, and tariff tolerance. In the stated preference analysis, the results show that the operation of the waterway transportation will cause the shift of road-based mode users to travel, where the increase is 31.10% for scenario 1 and 37.26% for scenario 2.

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**129-134**

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## **Chemical Characteristics And Microbiological Kefir Beverages From Bali Cattle During Storage**

Ketut Suriasih, I Nyoman Sucipta,Wayan Citra Wulan Sucipta Putri, I Putu Surya Wirawan

Bali cattle even without being fed booster are able to utilize low-quality forage, and do not experience growth disturbance. The potential of local bali cattle resources if maintained with good and sufficient feed will be a source of milk production in Indonesia that can still meet the needs of the community. Milk is a nutrient-rich food and is needed by all levels of society because it is healthy and smart. Meanwhile, Indonesian milk consumption is only 7.5 kg/capita/year, which is very far compared to other countries in the ASEAN region, because milk for most Indonesians is still a luxury / expensive item because 80% of national needs are still imported. Therefore the use of mammals other than dairy cows to produce milk needs to be considered. The microorganisms occurred in kefir grains, the chemical component of the milk used and the technology of manufacturing are factors that influence the microbiological and chemical characteristics of kefir during storage. The aims of the present study was to evaluate the microbiological and chemical attributes of refrigerated bali cattle milk kefir drink added different level of sucrose, during storage. Conclusions there was significant changes in microbial population of bali cattle milk kefir stored for 28 days. The number of lactic acid bacteria ranged from 109 cfu/ml at the beginning of the study and then decline to 108 cfu/ml on days 28. The pH of Bali cow's milk kefir also decreased from 4.3 at the start of the study and pH 3.7 on the 28th day.

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**135-138**

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## **Using Of Total Down Time (TDT) Importance Grouping And Risk Priority Number (RPN) For Failures Ranking In Gas Compression Plants**

Mohamed Hussein M. Faris, Dr. Elamin Elhusein, Dr. Hassan Osman

The gas compression plant is an essential and major unit in oil and gas industries that have high gas oil ratio or high gas production. Compressed gas is needed as fuel, support processing mechanism, increase reservoir build up pressure by gas injection as well as a useful product. Gas plants are critical and dangerous working location and it is classified as a critical zone due to circumstance parameters like high pressure, high temperature, gas specifications and the potential to impact to human health, safety, environment and possibility to impact invested revenues in case of incidents. Therefore, all recorded compression plant operational failures shall be assessed and reviewed in order to decrease the unit down time and increase plant safety and efficiency. In general, Limited studies were conducted in gas plant maintenance management. This paper studied a working gas compression unit in an operating oil and gas field and it presents a model of failures raking and sorting in gas plants based on total down time importance and risk priority number to demonstrate the area of failures which need attention of the owner and the site working team.

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**139-144**

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## **Near Infrared Technology And Multivariate Analysis Approach For A Rapid Authentication Of Patchouli Oil**

Zulfahrizal, Syaifullah Muhammad, Agus Arip Munawar, Tari Tarigan

The main objective of this present study is investigate the ability of near infrared technology combined with multivariate analysis for patchouli oil authentication. Crude patchouli oil was mixed with palm oil in different proportions: 75% crude patchouli oil: 25% palm oil, also 50%:50% of crude patchouli and palm oil respectively. Near infrared spectra data in form of absorbance spectrum were acquired in wavelength range from 1000 to 2500 nm with intervals of 2 nm. Classification models used to distinguish pure patchouli oil and its adulterations were established using principal component analysis (PCA) and linear discriminant analysis (LDA) with maximum 7 latent variables. The results showed that pure crude patchouli oil can distinguish pure patchouli oil and its adulterated ones. The maximum total variance for classification model is 94% with 2 principal components of PCA and 2 latent variables of LDA. The primary chemical properties of oil samples correspond to authentication are patchouli alcohol and fat content in wavelength range around 1378-1926 nm. Based on obtained results, it may conclude that near infrared technology in tandem with proper multivariate analysis is able to be used as a rapid and non-invasive method for patchouli oil authentications and adulterant detections.

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**145-149**

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## **Cesspool Supervision Model Of Oil Palm Blank Bunches In West Kalimantan (Optimization With The Integration Of Ahp-Goal Programming)**

Novira Kusrini

The objectives of this research are (i) to determine the optimum model of OPEB management (ii) to determine the optimal number of OPEB in waste management, which is then recommended to the company (iii) to know the achievement of various goals/targets with limited availability of resources. This research uses quantitative and qualitative approaches. Quantitative approach is done by processing the data for financing and profit analysis in OPEB waste management which. It is then used for resource approach. A qualitative approach is undertaken for weighing purposes in the AHP analysis. The research location was determined purposively in the CPO mill of PT. Pundi Lahan Khatulistiwa in Ambawang Sub-district, Kubu Raya Regency. In order that the optimal settlement can achieve the goal/target that are minimization of environmental pollution, low cost and profit gain, then the amount of OPEB that must be managed by the company is 300 tons prioritized for TM compost of 66.67 tons and mushroom growing media of 233.33 tons. Consequently, the company's cost of Rp. 4,000,000,000.00 still spares Rp. 2,026,666,670.00. The OPEB management as oyster mushroom promises a relatively high profit compared to other OPEB managements even though the cost is not the least. This research is one of the few studies that examines the waste management model of palm oil empty bunches, mainly located in western kalimantan, Indonesia. Originality is seen from the use of optimization analysis tools with integration of Analytic Hierarcical Program (AHP) with goal programming.

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**150-157**

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## **An Econometric Analysis Of Determinants Of Energy Intensity And Its Relevance To Energy Efficiency: A Case Of Saudi Arabia**

Bayan Aljahdali, Dr. Haga Elimam

Since 1971, Saudi Arabia has experienced a rapid growth in population and economic activities, which led to an increase in demand for energy sources. Therefore, in the quest to reduce local energy consumption, the study aimed to investigate the impact of real GDP per capita as economic growth indicator, energy prices, industrialization share in GDP, services share in GDP and urbanization on energy intensity over the period 1971–2015. For the study purpose, a linear dynamic model: Autoregressive Distributed Lag (ARDL) and a version of the Granger causality test based on Toda and Yamamoto (1995) approach were used. Based on ARDL estimation, real GDP per capita and energy prices have a negative impact on energy intensity, while the industrialization share in GDP, services share in GDP and urbanization have a positive effect on energy intensity. Causality tests found a unidirectional causality running from GDP per capita to energy intensity, but not vice versa. This means that an energy conservation policy would not slow the economic growth in Saudi Arabia. Also, a unidirectional causality running from industrialization and services share in GDP to economic growth implies that the impact on energy intensity is occurring through economic activities. Thus, the study suggests that Saudi Arabia should consider reducing energy consumption in non-renewable energy sources by investing in renewable energy sources. Besides that, urban environment must be improved to increase energy efficiency and achieve sustainable development in the future.

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**158-169**

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## **Complimentary Folk Therapies For Sleep Disturbances**

Vo Hoang Ca, Dong Thi Thao Nguyen, Kieu Thi Thu Chung, Huynh Tan Hoi

Sleep disturbance becomes one of many terrible symptoms to both old and young people. Western sleeping medications are considered a fast and effective way to stop this annoyance right away but are not a great solution. Many people suffer from this and do not know how to have a better sleep and a healthy life. In order to get good sleep and never encounter this situation, patients must use and apply some different ways in which medication herbs are combined in order to bring the patients a good night. This paper aims to analyze some causes of sleep disturbance, thereby finding suitable therapies to bring patients better health. Based on journals, books as well as survey data, the paper will compare and analyze advantages and disadvantages of using both Western drugs and traditional medications.

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**170-174**

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## **Performance Evaluation Of Textile Fabric Fibre-Reinforced Concrete**

N. M. Musa, M. M. Lawan, Z. B. Baba and U. Mukhtar

the use of fibres as reinforcement in concrete were investigated and reported by many research works and proved to be satisfactory in improving some properties of the concrete in which they were incorporated. In this paper, the utilization of textile fabric as fibre reinforcement in concrete was investigated. Compressive, flexural and splitting tensile strengths tests were conducted using 0%, 1%, 2%, and 3% of textile fabric fibres as additive. The performance of the textile fabric fibres concrete in acidic medium was also investigated. Compressive strength test at 28 days before immersion in acid, Weight loss assessment after immersion in acid at an interval of 3 days and strength loss assessment after immersion in 2% hydrochloric acid (HCl) medium for 27 days were carried out. The results show that the textile fabric fibres were feasible for use as fibre reinforcement in concrete. Also, nominal improvement of compressive, flexural and splitting tensile strengths of concrete due to the addition of textile fabric fibre at the optimum value of 2% addition was manifested. In conclusion and in contrast, the addition of the textile fabric fibre does not improve the concrete resistance in the acidic medium.

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**175-179**

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## **Fast And Contactless Assessment Of Waste Water Chemical Parameters In Aceh Province By Near Infrared Technology**

Devianti, Yusmanizar, Syakur, Yuswar Yunus

Presented study aimed to assess wastewater treatment installation using near infrared technology. Wastewater samples obtained in eight different districts in Aceh Province and spectral data were acquired in wavenumbers range from 4,000 – 10,000 cm<sup>-1</sup>. On the other hand, actual nitrogen, phosphor and potassium contents were measured using standard laboratory procedures. Spectra data were corrected by applying average smoothing algorithm. The wastewater quality was assessed by constructing prediction models using partial least square regression approach. The results showed that all chemical properties can be determined rapidly and simultaneously with maximum coefficient of determination are: 0.85 for nitrogen, 0.93 for phosphor, and 0.94 for potassium content prediction respectively. Spectra data using average smoothing algorithm found to be more accurate and robust for determining those three quality parameters. Based on obtained performances, it may conclude that near infrared technology was feasible to assess wastewater quality parameters rapidly and without direct contact with the samples.

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**180-185**

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## **Cationic Dye Removal By Magnesium Aluminum-Biochar Composite From Aqueous Solution**

Arini Fousty Badri, Neza Rahayu Palapa, Risfidian Mohadi, Mardiyanto, Aldes Lesbani

In this work, MgAl/BC composite has been successfully prepared and applied as efficient adsorbent of cationic dyes such as MB and RhB. The XRD properties of adsorbent shows that the presents the characterization of starting materials. The adsorption of MB and RhB was evaluated and it follows pseudo-second-order kinetic model. The adsorption study suggested Langmuir isotherm was suitable for adsorption of MB and RhB onto MgAl/BC composite with a maximum adsorption capacity up to 91.441 and 69.231 mg/g, respectively. The thermodynamic study indicates that the adsorption process is physisorption, spontaneous, and endothermic process. The regeneration study showed that three cycle adsorption process using MgAl/BC composite still has high efficiency, which confirmed that the material can be reused for further adsorption process.

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**186-190**

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## **Promoting AA\_AM Framework For Amplification And Auditing The Service Level Agreement From The End User Over Cloud Computing Paradigm**

Abel Adane., Azath M.

Cloud computing systems use virtualization technology over distributed data centers to allocate resources to customers via the Internet. Service Level Agreement (SLA) is an excellent managing technique, and it is vital to control and manage the expectations of keeping the responsibility of both cloud service providers and cloud service consumers. The objective of Service Level Agreement is to define the reference parameters for the provision of Cloud service provider and for monitoring the level of quality provided. Service level agreement is designed to create a common understanding about services, priorities, and responsibilities. In this research, we reduced the problems that happened to the cloud service consumers. Providers are just focused on how to increase their

interest rather than accomplishing what is expected according to the negotiation Service Level Agreement signed between the two parties, which include understanding about the services, priorities, and responsibilities during service provisions. This research was designed to monitor service level agreement from the cloud consumer side. To do so, we used secondary data resources like investigating different research papers and dissertation for problem identification purposes. To design this research we have used various tools like UML ( E\_Draw max ) for devising the framework, Cloud Analyst for simulation purpose, Virtual machine, memory, host and other needed parameters in the tool and MySQL server to create service level agreement signed between the cloud consumer and cloud service providers during the prototype. We developed the framework named as AA\_AH, to monitor Service Level Agreement from the client/ cloud service consumer side. It was developed from three basics components/agents. These components are Reader of Service Level Agreement, which is used to read service level agreement during service requested by cloud service consumers, monitoring agent and cloud resources. The Researchers evaluated this research based on variant scenarios and achieved the result in well mannerism.

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**191-194**

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## **A Synthesis And Review Of Ethnomedicinal Uses, Phytochemistry And Biological Activities Of *Brachylaena Huillensis* O. Hoffm. (Asteraceae)**

Alfred Maroyi

*Brachylaena huillensis* O. Hoffm. is a shrub or tree widely used as herbal medicine in tropical Africa. The main aim of this review is to provide an overview and critical analysis of the medicinal uses, phytochemistry and biological activities of *B. huillensis*. The information presented in this study was gathered using various databases such as PubMed, ScienceDirect, Scopus, Google Scholar and Web of Science, and review of books, journal articles and other scientific publications kept in the University library. The leaf and root infusion or decoction of *B. huillensis* are used as anticandida, and traditional medicine for diabetes, diarrhoea, gastro-intestinal problems, gonorrhoea, malaria and schistosomiasis. Chemical compounds identified from *B. huillensis* include sesquiterpenoids, carotenoids, coumarins, polyoses, steroids, tannins, triterpenoids and volatile oils. Ethnopharmacological review showed that *B. huillensis* and phytochemical compounds identified from the species have antibacterial, antifungal, antiprotozoal and antioxidant activities. Further research on *B. huillensis* should focus on the possible biochemical mechanisms of action of both the crude extracts and identified phytochemical compounds including toxicological, in vivo and clinical studies to corroborate the traditional medicinal applications of the species.

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**195-199**

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## **Comparison Between Effectiveness Of Corrosion Protection Methods Commonly Used In Egypt**

Ibrahim Abdel-Latif

From early sixties there has been a growing awareness that reinforced concrete structures can suffer severe deterioration in advance of its design life as a result of corrosion of the reinforcing steel. Generally, durability issues associated with reinforced concrete structures are some of the biggest problems the civil engineering community is facing today around the world. One of the most significant durability issues is the reinforcing steel corrosion, which leads to rust formation, cracking, spalling and degradation of structures. This is considered to be the main factor causing damage in bridges and other infrastructure. Many articles had been studied in details different causes of corrosion, corrosion mechanism, corrosion assessment and different protection methods. The main target of this research work is to investigate and compare between effectiveness of the protection methods most commonly used in Egypt. This will be done by comparing the results of corrosion resistance measured for the reinforced concrete specimens protected by each method individually with those of similar specimens without any protection. The used protection methods are: 1) Steel Coating with four different types of coatings (most commonly used in Egypt) with a varied number of layers. 2) Concrete Coating with a varied number of layers. 3) Concrete Admixture. 4) Combined method (Concrete Admixture + Concrete Coating). Corrosion resistance was measured by using accelerated corrosion technique where an external electric power combined with a highly concentrated sodium chloride solution were used to accelerate the corrosion process.

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**200-204**

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## **Independent Soil Node Sensor Prototype As Part Of Smart Farming System**

Roghib Muhammad Hujja, Iwan Ernanto, Muhammad Auzan, Raden Sumiharto

Smart farming systems are currently increasingly applied to agricultural production. With the rapid development of industry 4.0, the smart farming system is increasingly popular, and its benefits felt in the optimization of food production. The need for IoT sensors to provide accurate data on smart farming is very much needed. The sensors needed must also be able to withstand the conditions of the agricultural area. In this study, a sensor node prototype was created to collect soil moisture data independently with its energy source to use as input data on the smart farming system.

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**205-208**

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## **The Decision-Making Support For Production Planning & Supplier Selection Under Probabilistic Environment Using Bi-Objective Programming: A Single Period Case**

Solikhin, Sutrisno\*, Purnawan Adi Wicaksono

This article discusses the formulation of a decision-making support tool for production planning and supplier selection problem with some uncertain parameters. This involved the use of probabilistic programming with the uncertain parameter approached as a random variable. Moreover, two objective functions were optimized in the model and these include the number of products to be produce required to be maximized and the total operational cost to be minimized. The optimal decision was calculated using the

probabilistic bi-objective programming in LINGO 18.0 software after which a numerical experiment was conducted to illustrate the process involved in determining the decision. The results showed the optimal supplier to be selected corresponds to the optimal number of each raw material type while the quantity of products to be produced was also determined. This, therefore, means it is possible for manufacturing industries' actors to use this decision-making support tool.

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**209-215**

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## **Psychopathy, A.S (Abusive Supervision) Consequences Towards Emotional Exhaustion And Employees Intentions To Quit**

Md. Shahab Ali Raja, Abdur Rakib Nayeem, Adediran Adeseye John

Psychopathy and A.S (Abusive Supervision) are viewed as the clouded side of the administration, having the most noticeably terrible results for the association like human funding to stop the work environment. Both psychopathy and A.S (Abusive Supervision) make passionate depletion among the representatives which supports their expectations to stop. No past examination analyzed the joined impact of the dim initiative on worker's enthusiastic depletion and their intentions to leave the association. Reactions are accumulated from 150 private financial representatives from Azad Jammu and Kashmir, Pakistan, and found that attributes of psychopathy and A.S (Abusive Supervision) having a positive influence on Emotional Exhaustion and their intentions to stop. Structure Equation Model, Confirmatory Factor Analysis, and Correlation investigation used to assess the reactions.

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**216-221**

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## **Design And Development Of S-Band Power Amplifier Module For Satcom Manpack Terminal**

Pratiksha R Matlawar, Shambulinga M, Poornima P

Communication via satellite is one of the prominent and widely used method for transmission of data. It is significant as it provides reliable and uninterrupted communication. Satcom Manpack terminal is light weight and portable equipment used in military applications. The operating frequency and output power delivered is the vital point of concern. Communication in remote areas has to be taken into consideration for better transmission between the end users. The module used in the project is selected from Qorvo with part number TGA2830 which provides higher output power, higher gain and low phase noise. This work focuses on the design and development of S-Band Power Amplifier (PA) module for Satcom Manpack terminal. The PA module is simulated, developed and tested for various performance parameters like output power, phase noise and spurious. It was observed that the results were matching the desired specifications.

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**222-227**

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## **Compressive Strength Characteristics Of Fly Ash And Locally Processed Metakaolin Based Geopolymer Concrete**

Mohammed Hosni, Ibrahim Abdel-Latif , Fatma Ahmed Shaker

Recently, the geopolymer concrete is used in some structural applications as an alternative material to the well-known traditional concrete because it is considered an environmentally friendly construction material. The most attractive advantages of the geo-polymer concrete (compared to the traditional concrete) are: lower harmful emissions, converting a variety of waste streams into useful by-products, higher resistance to corrosion and fire, higher compressive and tensile strengths and improved durability properties. In this research, 24 different geopolymer concrete mixtures were produced using locally processed kaolinite minerals and fly ash as source materials where the alkaline liquid was a mixture of sodium hydroxide and sodium silicate. The main variables in the meta-kaolin based geopolymer concrete mixture were content of meta-kaolin, ratio of the silicate in the alkaline liquid to source material and the curing method. As for the fly ash based geo-polymer concrete mixture, the main variables were content of the fly ash in the mixture, ratio of the alkaline liquid to fly ash and molarity of the sodium hydroxide. Effect of these variables on both (slump and compressive strength) for all the 24 mixtures were experimentally investigated in details. The obtained test results concluded that: increasing of silicate/meta-kaolin ratio, content of meta-kaolin and hot curing regime will improve the compressive strength of meta-kaolin based geo-polymer concrete. Also, increasing the alkaline liquid ratio, molarity of NaOH solution, and content of fly ash will improve the compressive strength of fly ash based geopolymer concrete.

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**228-237**

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## **Optimized Neural Network-Based Improved Multiverse Optimizer Algorithm For Automated Arabic Essay Scoring**

Marwa M. Gaheen, Rania M. ElEraky, Ahmed A. Ewees

The automated essay scoring is recognized as an automatic evaluation of essays or automated essay grading. Such methods are very helpful for assessing human graders and experts when evaluating a large volume of essays. In this paper, a new method is presented to score essays automatically. It uses particle swarm optimization to generate the initial population for the multiverse optimizer algorithm to train the classic Neural Network. It is called pMVO-NN. The proposed method is evaluated using 200 student's essays. These essays are scored by two human experts then they are passed to a pre-processing phase to be prepared and converted to a digit's matrix. The results are evaluated using a set of measures and it is compared with well-known optimization algorithms. The pMVO-NN outperformed all compared algorithms and obtained a correlation equals to 0.987 with the scores of the human experts.

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**238-243**

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## **Blockchain Technology For Cyber Security: Performance Implications On Emerging Markets Multinational Corporations, Overview Of Nigerian Internationalized Banks.**

Chikelue .C. Nwabuike ,Vincent.A. Onodugo , Austine Arachie, Ugonna .C.Nkwunonwo,

Blockchain is an overwhelming technology with potentials to change business status quo, especially in emerging markets multinational corporations. This study sought to explore the adoption of Blockchain technology for cyber security of Emerging markets multinational corporations (EMNCs), with an overview of Nigerian internationalized banks. Secondary data from Internet crime complaint centre, Proshare, and Africa cybersecurity report were studied and discussed. Inferences were made from the data obtained and the study concluded that Blockchain technology will make cyber crimes costly to perpetrators and thus discourage cyber criminals from their ventures. This study becomes instrumental for emerging markets multinational corporations (EMNCs) by suggesting solutions to cybercrime challenges. The implication of the study is that performance will improve for Nigerian banks should they adopt Blockchain technology for cyber security, this will drive growth through minimization of cyber crime losses and reposition the banks to be strategically competitive with Developed banks in the industry, this further upholds the New growth theory.

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**244-252**

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## **Maintenance Scheduling On Printing Machine Using The Duane Model**

Julius Mulyono, Lorensius Anang Setiyo Waloyo, Peter Rhatodirjo Angka

The important thing to ensure the success of operations is increasing reliability, which is achieved by maintaining machines and equipment. The Duane model is an approach in determining the MTBF (mean time between failure). The Duane model modifies the MTBF data into a logarithmic form. This paper chose the printing machine as the object of this study. The conventional method uses the MTBF data distribution pattern to obtain the average operating time. Using the Duane model and conventional method resulted a relatively small difference, 2.5 hours.

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**253-255**

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## **How To Improve Employee Performance At The Forest Service**

Wijianto, Dwi Cahyono dan Nurul Qomariah

The purpose of this study was to determine the effect of job satisfaction, organizational support, and motivation on employee performance in the Jember Regional Forestry Branch Office. The total population of this study was 95, which was also used as a sample in the study. The analysis technique used is the Structural Equation Model (SEM) using WarpPLS 5.0. The results of data analysis show that job satisfaction variables significantly influence work motivation, organizational support has no significant effect on work motivation, job satisfaction has a significant effect on employee performance, organizational support has a significant effect on employee performance, work motivation has a significant effect on employee performance.



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## **Is Cluster Integration Of Distant Regions With Certain Resource Capacity Possible?**

Bogatyreva Olga, Mirokhina Alla, Safonova Svetlana, Poluyanova Natalya, Orekhova Margarita

Coastal regions are territories with a special regime for economic development. At the same time, the development level of the social sphere depends entirely on the territorial location of the region. The dependence between the technological development of the region, its institutions and the financial and economic environment exerts a crucial influence on the formation of the social and labour framework as a regional stabilizing platform for changing or introducing a new technological innovation. The article describes conditions for the integration of coastal regions in the form of a cluster considering sectoral specialization and socio-economic development capacity of territories.

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265-268

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## **The Mechanical Behavior Of Grouted Sleeve Splice Connections Under Axial Tensile Load**

Abdallh M. Soliman, Hatem H. Ibrahim, Hossam A. Hodhod

This research work thus presents rational procedure to design a grouted sleeve splice connection using a basic material such as standard pipes with little workmanship this provides the design with a good advantage in comparison to just using selection tables for costly proprietary similar connection. The mechanical behavior of such splices is a function of two important mechanisms: the bar-to-grout bond behavior and the sleeve-to-grout bond behavior. To accomplish the goal of this examination work, three arrangements with an all-out number of 66 grouted splice sleeve specimens were fabricated and tested under incremental axial tensile load. The specimens were preliminary designed according to the equations available in the literature to determine the initial sleeve dimensions. Different parameters have been examined, namely: grout compressive strength, bar embedded length, bar diameter, sleeve inner diameter, sleeve wall thickness and sleeve configuration. The examined parameters provide to have a significant impact on the mechanical behavior of the grouted splices. Considering the results, it was clear that steel bars with 18 mm, 25 mm and 32 mm diameter and 400 Mpa yield stress can be adequately spliced and the tensile strength can be reached. The steel sleeve to the grouted splice sleeve connectors significantly improve the bar-to-grout bond strength through the confinement action added by the sleeve wall. Also welding interlocking steel rings can prevent the grout-to-sleeve bond Failure. Feasibility study for tested grouted sleeves reporting their adequacy in accordance with the code provisions of ACI 318-14[1] and ECP 203-2018[5] is presented. Moreover, design equations capturing the parameters affecting the bond strength, the confining pressure, and the required embedment length are derived.

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269-284

## **Detection Of Heart Disease Using Machine Learning Techniques**

Vishal Dineshkumar Soni

We live in a 'information age,' a popular saying says. Data of terabytes are generated daily. Data mining is the method that turns data processing into information. The health industry creates huge volumes of data every day. But most of it is not used effectively. Efficient methods to obtain information from such repositories are not widespread for clinical disease diagnosis or other purposes. This paper aims at comparing specific approaches for forecasting cardiac diseases using data mining techniques, examining the numerous variations of mining algorithms employed, and assessing the techniques are efficient and successful. In fact, several potential paths have been discussed on prediction systems. Naïve Bayes, SMO, Random Forest, Decision table is one such method of data mining that can be used to diagnose patients with cardiac diseases. This paper analyzes few parameters and predicts heart disease, suggesting a prediction system based entirely on data mining approaches.

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**285-288**

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## **A Review Of Direct Method And Audio-Lingual Method In English Oral Communication**

Rabea Ali

The main issue that foreign language educators have dealt with worldwide is methods of teaching foreign languages. They developed a method after method to teach them. The direct method and the audio-lingual method are two examples from these methods. The direct method in language teaching is to establish an immediate and direct visual relationship between experience, expression, words, phrases, meanings, grammar, and presentations through teachers' body and mental skills, without any assistance from the mother tongue of learners. The Audio-lingual method is the method in which a foreign language is taught to begin with the teaching of phonemic unit and phonemic patterns before attempting to teach reading and writing. The purpose of this study aimed to present an overview of the direct method and audio-lingual method to assess how far each method is effective in teaching English oral communication. Moreover, the current study reviews the background, advantages, disadvantages, and techniques of direct and audio-lingual methods in English oral communication. A descriptive research methodology was employed as it is suitable to the topic of the current research.

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**289-293**

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## **Opportunities And Challenges In The Use Of Information And Communication Technology: Study For "Teaching From Home" For Pandemic COVID-19**

Jamaluddin Ahmad, Nurlaelah Mahmud, Abdul Jabbar, Muhammad Iqbal

Home learning since the COVID-19 pandemic has gained popularity in the field of education. However, there is little research that empirically examines the extent to which teachers are innovating using blended learning experience weaknesses and challenges compared to those who interact face to face. A total of 99 teachers who teach from home in Sidenreng Rappang Regency, Indonesia were recruited for this study. The teachers randomly sent questionnaires via Google form for eight weeks, experiencing learning from home. An interview immediately follows a survey that measures the perception of the perceived experience. Teachers belonging to the millennial generation and generation X report more variation in instructional media than the boom generation, but overall experience the same challenges and opportunities and the perceived teaching. The principal's leadership strategy determines to teach success from home by increasing competitive and comparative advantage, investing to increase strength in facing opportunities, divesting to use force to avoid threats and subsidies accompanied by assistance.

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**294-299**

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## **Students' Readiness In Facing Industrial Revolution 4.0 Among Students Of Technical Teacher's Education**

Ismail, A., Wan Hassan. W. A. S., Ahmad, F., Affan. Z., Harun, M. I.

The emergence of a new wave of technology known as 'The Fourth Industrial Revolution' or IR 4.0 led to the current development of technology that predicted 50 billion electronic devices would interact with each other. Meeting the challenges of IR 4.0, all students in Higher Educational Institutions need to get out of their comfort zone and be prepared for this new era. The Industrial Revolution 4.0 can also address dependency on energy sources that will significantly change the future of the working world. In this regard, a study was conducted on 136 Vocational Education Bachelor students in seven (7) fields of study at the one of Malaysian Technical University. This study aims to identify the knowledge, attitudes, interests and students' readiness to face the challenges of Industry Revolution 4.0. This descriptive study uses questionnaires based on Likert Scale. The data obtained were processed and analysed using the Statistical Package for the Social Sciences (SPSS) software. The findings showed that the students' knowledge on IR 4.0 was weak. The study also found that students' interest and attitudes were high and students' readiness to deal with IR 4.0 was high. Researchers recommend that more effort need to be put such as organizing seminars, courses and forums related to challenges of IR 4.0 to students. To encourage students to improve their skills in information technology and knowledge of IR4.0, it is recommended that all the students choose their IR4.0 related topic for their final year project..

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**300-305**

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## **Therapeutic Experiences Of Single Mothers Through Storytelling Therapy**

Zakaria Mohamad, Siti Salina Abdullah, Jasmi Abu Talib, Mazidah Mohd Dagang

This study aimed to understand the therapeutic experiences of single mothers through storytelling therapy in the district of Kuala Terengganu, Malaysia. Phenomenological

qualitative approach was used as a method of data collection involving eight participants who were selected through purposive sampling techniques. A total of eight group counseling sessions was carried out using a modified narrative therapy module. During the session, three interviews were conducted to gather relevant research data in addition to observation and analysis of documents from the work of the study participants. NVivo software was used to analyze and generate verbatim theme. The findings showed that the use of narrative therapy successfully provided significant therapeutic experiences for single mothers to maintain their mental health. Three main themes were generated namely the direct impact, insight and emotional impact as the essence of the therapeutic experience. The implications of this study proved that narrative therapy is useful as a method in helping single mothers.

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**306-314**

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## **Effect Of Fe Addition On ZnO Thin Films For Photodegradation Under UV And Halogens Light**

Heri Sutanto, Ilham Alkian, Vitalis Janu Pramunditya, Mukholit, Eko Hidayanto, Inten Rafika Duri, and Priyono

ZnO:Fe thin film has been successfully deposited on subtracted glass using sol-gel method with spray-coating technique. This study aims to degrade rhodamine B using ZnO with addition of 2, 4, 6, 8, and 10 wt.% solution of Fe. Optical properties characterization showed the highest transmittance of ZnO:Fe 4% (96.8%) while the lowest transmittance of ZnO:Fe 2% (53.5%). The highest absorbance is performed by ZnO:Fe 2% (0.271) and the lowest absorbance by ZnO:Fe 4% (0.014). Calculation of magnitude thin film energy band gap shows values of 3.24; 3.29; 3.27; 3.25; and 3.24 eV. Results of contact angle testing using contact angle meter showed the greatest contact angle by thin-film ZnO:Fe 2% (62.52o) with the smallest contact angle by ZnO:Fe 4% (50.66o). In UV light irradiation, the highest degradation efficiency is produced by ZnO:Fe 4% thin film of 86.14% and the lowest efficiency is produced by ZnO:Fe 2% thin film of 81.37%. In the irradiation using halogen light, the highest degradation efficiency was produced by ZnO:Fe 2% film by 68.70%, while the lowest degradation efficiency was produced by ZnO:Fe 4% film (58,87%).

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**315-318**

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## **The Influence Of Modern Video Games On Children's Second Language Acquisition**

Mohamad Ali Ahsan Mohd Ali Atma, Mohd Nazri Latiff Azmi, Isyaku Hassan

This study investigates the influence of modern video games on children's Second Language Acquisition (SLA). The study employs a qualitative, case study approach. The data were obtained through observations from a 7-year-old child selected via purposive sampling. The data were analyzed through a deductive thematic approach and discussed using Schema Theory to evaluate the participant's usage of the English language learned from video games. By analyzing and understanding this phenomenon, the researchers are inclined to understand how modern video games enable children to absorb knowledge and acquire a second language faster than other methods. We

hypothesize that the acquisition of a second language is caused by the Critical Period Hypothesis (CPH) through the facilitation of communication and context between the player and the video games. This research aspires to provide more insights into the prospect of video games as a tool for language acquisition.

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**319-323**

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## **Strategic Flexibility In Mediating The Effect Of Entrepreneurial Orientation And Dynamic Environment On Firm Performance**

Yudi Nur Supriadi, Eeng Ahman, Lili Adi Wibowo, Chairul Furqon, Dodi Subagia

This paper aims to present the role model of mediating strategic flexibility to fill the research gap between entrepreneurial orientation and a dynamic environment on firm performance. The method used in this research quantitative descriptive research with a simple dissertation approach using SEM SMART-PLS statistics. Conceptual models are developed and empirically tested through surveys. The 150 respondents at the shoe firms. These firms are based in Banten Province, DKI Jakarta, and West Java Indonesia. The main finding of this study is that the mediating variable, in this case, strategic flexibility, about the influence of entrepreneurial orientation and dynamic environment on firm performance. The implication of this research shows that strategic flexibility has an important role in maintaining a business in the future, especially in facing business decline due to the impact of the COVID-19 pandemic on shoe firms. The novelty and originality of research that strategic flexibility is used to mediate the influence of entrepreneurial orientation and a dynamic environment have the potential to improve firm performance, and this is one of the new things in this research that is an attempt to fill this gap.

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**324-330**

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## **Sundanese Language Level Detection Using Rule-Based Classification: Case Studies On Twitter**

Ade Sutedi, Dede Kurniadi, Wiyoga Baswardono

Along with the history of the Sundanese tradition, language has an important role to show the existence of Sundanese culture, especially in Banten and West Java. Today, the use of Sundanese language are decreased due to a competition of regional languages with national languages even with foreign languages. In addition, the divergence of language in the society cause disparities between young people and older people. The native speaker are reduced due to social developments in society that are increasingly wide open. This issue becomes popular in the last decade due to the death of language especially for regional language. To discover the existence of Sundanese language in social media today, Twitter was used to analyze as a parameter that indicate the existence of a Sundanese language used by the people. The objectives of this research are: (1) to identified the existence of Sundanese language in social media; (2) to classify the word levels of Sundanese language used and comparing their levels to get the summary of characteristic of Sundanese language for every region. In this research, classification process taken from Sundanese vocabulary which divided into three levels: Ribaldry level (Loma), Standard level (Hormat ka sorangan), and Polite

level (Hormat ka batur). Classification involves the word n-grams (unigram, bigram, and trigram) features with rule-based classification to determine Sundanese and non Sundanese language with their levels. In this research, the data was retrieved from Twitter user based on their region especially in Banten and West Java provinces. The result shows that the use of Sundanese language among the people still exists and also used and in social media with ribaldry level dominated. Prediction score for several feature is smaller than previous research. But, we consider the precision value of the experimental results obtained score 0.841 which can be used to determine the predictive value close to the actual positive value.

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**331-335**

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## **Tourism Marketing And Perceived Risks Impact On Attracting Libyan Local Tourists**

Ali Mohamed Ali Akasha; Albattat, Ahmad; Jacqueline Tham

The function of tourism marketing carries a broader and more comprehensive concept than the concept of activities and activities carried out by the traditional marketing department because tourism marketing requires close cooperation between marketers and those managers responsible for operations and human resources. The objectives of this study are to study local tourists in the tourism areas of the central region of Libya; to examine the effect of the marketing of tourist service on attracting local tourists in the tourism areas of the central region of Libya. The descriptive analytical method to describe the problem of the study and then analyze it to reach the results. The study community includes local tourists in the central region of Libya who visit the various tourist areas in the central region of Libya (15000). The sample of the study was selected using the random sample method. The sample of the study included the visitors and tourists of the different tourist areas with their different scientific qualifications. The number of questionnaires to be distributed was (375). The descriptive statistics, and the package of statistical programs for social sciences (SPSS). This study is bounded by its objectives to conclude the conceptual 'Perceived Risk toward Tourist Attraction in product equipment assembly in Libyan central region industry. Knowledge is crucial for operation management in every industry in this century. In Libyan central region industry, Tourist Attraction to the company is very crucial to the 'Tourism marketing' concept knowledge especially regarding engineering, procurement, and construction. Employees from that equipment product assembly who able to share their 'Tourism marketing' knowledge to their customer will bring satisfaction from the customer as well. Thus, it is a high recommendation for the entire production equipment assembly organisation to implement and distribute the 'Tourism marketing' knowledge among the employees. Operation management will have much easier distribute all the organisation knows when they able to implement an effective knowledge distribution method. Usually, barrier happened in the knowledge distribution due to information from the creator is biased through words understanding by the applier. This knowledge barrier and biased issue typically happen for those activities which often apply Tourism Service.

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**336-346**

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## **The Influence Of Hydraulic Parameters In Different Groundwater Systems On The Results Of Modular Groundwater Optimizer (MGO)**



AHMED M. I. ABD ELHAMID

The aim of this study is to evaluate the effect of the hydraulic parameters of groundwater systems on the results of simulation optimization modelling when applied to the dewatering systems design for different construction sites in Egypt. The hydraulic parameter which will be evaluated is mainly the hydraulic conductivity represented by the position of the groundwater table according to different soil stratification taking into account the different excavation depths at the construction sites. This work takes into consideration six executed construction projects, classified into two groups according to the position of the groundwater table with respect to the depth of excavation; the first group where the excavation reaches Sandy Soil (ESS), the second group where excavation reaches Clayey Soil (ECS) the two systems are treated as semi-confined and confined systems respectively. The Modflow as a numerical simulation model and the Modular Groundwater Optimizer (MGO) as an optimization model were integrated with each other as a simulation-optimization tool. Each group or system was simulated by the model using the pumping test results obtained from the field data and the wells which were already executed for pumping. The model was run until reaching the values of the drawdown that were observed by the piezometric/observed wells at each site. The model was run another time using MGO in order to minimize the wells number, the quantity of water pumped from them and the dewatering systems cost. By comparing the outputs of the two runs for the same site regarding the achieved drawdown value either by the executed wells or from the optimization results of the two groups of ESS and ECS, the comparison revealed that the drawdown can be achieved with average saving of (28%, and 25%) of the actually number of executed wells respectively, so it is highly recommended to apply MGO when designing any dewatering system in order to achieve the most cost-effective pumping system especially in the case of ESS.

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**347-354**

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## **Analysis Of Satisfaction Of Banque Populaire Customers Through Their Tweets**

Youssef CHOUNI, Mohammed ERRITALI, Youssef OUADID

The Social networks are an excellent source of information, and extraction of opinion. Nowadays, the most of internet users are using these platforms in order to share their sentiments and opinions about the products or services. The exploitation of these opinions is fruitfully. In this work, we expose the problem of sentiment analysis in social networks by showing the multiple experiments made in this context on Tweets using the two important approaches of this domain, namely, the Lexicon-Based Approach and the Machine Learning Approach. Also we introduce an original approach which incorporates the semantics in the second approach using the WorldNet lexical database.

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**355-359**

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## **Digital Technology Support In Orthodontic Care: A Literature Study**

Eka Erwansyah, Mulyati Yunus, Fuad Husain Akbar, Nadiah Hulwah, Eryanti Abbas

Technology that has developed and integrated with digital solution in personal practice has changed the diagnosis and planning for treatment from two dimension (2D) traditional approach into three dimension (3D) developed techniques. In this generation of technology, the use of Smartphone and tablet has made life simpler. Smartphone provide routine access to seek for information, including medics and dental education. This study aimed to browse a variety of scientific information to understand digital technology support in orthodontic treatment. Digital technology in orthodontic practice could help orthodontics in examination and straightening diagnosis on patients, increase efficiency, accuracy, consistency, and certainty on the results of treatment. Digital technology also could help patients to obtain information, and monitor the treatment teleorthodontics.

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**360-364**

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## **Reclamation Of Saline And Gypsed Hungry Steppe Soils Using Deep Loosening And Chemical Biological Preparations**

Farhod Fatulloevich Sadiev, Ilkhom Ernazarovich Makhmudov, Yuliya Illarionovna Shirokova, Gauharay Qalbaevna Paluashova, Mahmud Zohidovich Yuldashev

The effect of deep loosening in the early spring and soil treatment with Biosolvent was studied in this research paper. During irrigation, on the physical properties of gypsum soils and the desalination processes in them. The studies were carried out in the Syrdarya region of Uzbekistan in 3 experimental plots under cotton. Objects of research - saline, compacted, gypsum-bearing soils. Field and phenological observations, soil analyzes were carried out according to generally accepted methods. It was revealed that loosening the soil to a depth of 70 cm contributes to: a decrease in bulk density by 4–9%, respectively, porosity, and also to an increase in water permeability by 3–14 times. This led to an increase in irrigation rates by 350 m<sup>3</sup> / ha, with a washing fraction of 9%. Along with a decrease in soil density, this contributed to an increase in cotton yield - 4.6 c/ha. Due to the rupture of capillaries in the soil when loosening, the accumulation of chlorine salts from spring to autumn, in a soil layer of 0-60 cm, decreased by 1.8 times, and with conventional plowing of the soil - increased by 2.4 times. When loosening gypsum soils to a depth of 70 cm, the bulk soil mass decreased from 1.60 g/cm<sup>3</sup> to 1.20-1.36 g/cm<sup>3</sup>. When spraying heavily salted loose soil with Biosolvent before watering the cotton, the leaching of the toxic chlorine ion by irrigation reached 90%. The combination of deep loosening of the soil with the Biosolvent preparation is recommended for land reclamation of the Hungry Steppe lands.

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**365-371**

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## **The Characteristiks Of Bricks In West Sumatera**

Muhammad Giatman, Totoh Andayono, Prima Yane, Syaiful Haq

The majority of earthquake victims were caused by building debris. The latest research after earthquake in Padang city found that there were many victims fell due to the collapse of the brick wall. Other research states that bricks in Sumatera Barat was not in Indonesian standard or Indonesian National Standards or SNI 15-2094-2000. This is the reason to study the characteristics of bricks in Sumatera Barat. This associative



research collected bricks in Sumatera Barat randomly. In each place, brick samples were taken when people or worker building a houses. It was found that the average Sumatera Barat bricks had a higher density than the standard, which was 1.39 gr/cm<sup>2</sup> or above SNI 1.2 gr/cm<sup>2</sup>, and the highest was found from Pesisir Selatan 1, 44 gr/cm<sup>2</sup>. All dimensions are below the minimum standard, the average length of 18.17 cm, width 8.88 cm, height 4.64 cm, while according to the standard the length is 23 cm, width 11 cm, and height 5.5 cm. For the brick water absorption test found an average of 26.21%, which exceeds the maximum standard of only 20%. Furthermore, the average compressive strength was found to be 43.04 kg/cm<sup>2</sup>, meaning that it was below the SNI standard of 50 kg/cm<sup>2</sup>. No dimensional, density and water absorption effects were found on the compressive strength of bricks, with an average influence value <0.4. This finding is important as a basis for the need to improve the characteristics of bricks in Sumatera Barat, so that they are more better and friendly to earthquakes to be used in Sumatera Barat.

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**372-374**

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## **Techno-Economic Aspects Of Electricity Generation From A School Biogas Digester**

Nothando K. Mkhabela, Patrick Mukumba, Golden Makaka

This study assesses the technical and economic aspects of electricity generation from school biogas digesters using human wastes as substrate. The study focuses on all rural low-income schools with an enrolment of 300, 500, 700, 900 and 1100 learners respectively. The research is important The schools' total energy demands of 1342kWh, 2082 kWh, 2491 kWh, 2683 kWh and 3093 kWh /month respectively. The designed biogas digesters have volumes of 4 m<sup>3</sup>, 7 m<sup>3</sup>, 9 m<sup>3</sup>, 12 m<sup>3</sup> and 14 m<sup>3</sup> respectively. The profitability values were 35%, 53 %, 56%, 58%, and 59%, respectively. Finally, the payback period values are 2.6 years, 1.9 years, 1.8 years, 1.7 years and 1.6 years respectively. The study is recommended because it will not only provide energy for all rural low- income schools, but also help reduce air pollution, environmental pollution and help the schools to generate some income from selling the biogas.

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**380-389**

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## **Digital Pedagogy Analysis On Technology Trend Relevant To Education 4.0**

Eric G. Pardiñan, Romarico A. Loremia

Technology is essential in the development of the educational process. The rapid growth of information technologies has led to the birth of information societies and led organizations to adjust to new technological advances. The 4th industrial revolution or Industry 4.0 can be referred to as the current and developmental transformation, which results from innovative technologies and trends. Hence, the study would look into the implications of the technology-supported pedagogies; the article would introduce a hybrid instructional platform adapting technology trends relevant to Education 4.0 called Systematic Computer Assisted Learning Environment (SCALE). The study used an experimental research design, sought to compare the level of learning in terms of

knowledge, practical skills acquisition, and craftsmanship, involving learners using the conventional methods in teaching-learning and the SCALE platform. The study used two instruments that were based on the instructional objectives of lessons on Embedded Systems Programming & Industrial Automation. Data obtained were analyzed using weighted mean, standard deviation, and T-test analysis. Cohen's Kappa was also used to determine the inter-rater level of agreement of respondents using the SCALE platform. According to the results, the SCALE contributed to the academic success of the group that had used the computer-assisted learning environment as compared to the group that utilized conventional methods. The researchers somehow express that despite the existing gaps and mixed findings, a list of significant recommendations for when and how to use technologies on a computer-assisted learning environment may be considered to increase the likelihood of promoting student engagement

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**390-399**

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## **Analysis Of Motorized Vehicle Sound Pollutionin Front Of Mall Yogya Plaza Bogor**

Syaiful Syaiful

Motorized vehicles are a means of transportation to move people from one place to another place. This transfer requires space and time. The space where the motorized vehicle runs is road. Whereas facilities for road users are people. So that vehicles and people are highly interdependent to move them. This study emphasizes the noise pollution of motor vehicles in the surrounding area. The place to go is Mall Yogya Plaza Bogor. The observation point of the highway is 5.75m, 8.85m and the farthest distance on the side of the building wall is 12.42m. Survey data collection, namely the number of motorized vehicles, motorcycles, public passenger cars and freight vehicles. Measuring the level of noise pollution from all three points with point 1, point 2 and point 3. Calculate the speed of vehicles passing through the research point. The relationship between noise pollution and road geometry is with equations such as  $y = 62.490 + 0.266x_1$  for a distance of 4.75m from the highway is 68.91 dBA without protective trees and  $y = 62.259 + 0.195x_2$  for a distance of 8.85m from the highway is 66 , 20 dBA without tree cover means the level of noise pollution caused. So the results of the analysis of background noise have an influence in the study of sampling distance more than 12.42m. Furthermore, to get better results, measurements of wind speed, wind direction and field conditions such as a toll road that blocks and reflects sound will affect the measurement results, so the accuracy of noise pollution data can be detected properly and measured.

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**400-405**

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## **Addressing Sinkhole Attacks In Wireless Sensor Networks - A Review**

Mubashir Ali, Muhammad Nadeem, Ayesha Siddique, Shahbaz Ahmad, Amir Ijaz

Wireless Sensor Networks is a cooperative network of number of sensor devices that communicate in a short range to share the sensed information. The sensor networks have got a great attention due to low cost and ad-hoc deployment structure. Thus,

wireless sensor networks have become an important interest of research and many researchers have been working on different aspects of wireless sensor networks i.e. routing mechanism, energy efficiency and security etc. Wireless sensor networks are characterized with low resources i.e. low processing power, low communication resources, low memory and are powered by a battery. To utilize these scarce resources well different trade-offs are their when designing the protocols for wireless sensor networks. Security is most crucial issue in wireless sensor networks due to their nature. The low processing and low memory constraints prohibit the deployment of a protocol with security mechanisms in it. Wireless Sensor networks are deployed in vulnerable environment and are open to sinkhole attacks, wormhole attacks, Greyhole attacks etc. Sinkhole attacks are one of the most dangerous attacks where some fake node advertises fake routing update i.e. shortest path to sink node to malfunction network traffic. In this paper, a systematic literature review is conducted to highlight up to date sinkhole attacks along with their prevention techniques in wireless networks. The analysis is based on various parameters of proposed solutions. The paper also discusses the challenges in detecting the sinkhole attacks.

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**406-411**

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## **A Planar Keyhole Shape UWB Antenna For Retransmission Based Chipless RFID**

AKM Zakir Hossain, Win Adiyansyah Indra, Jamil Abedalrahim Jamil Alsayaydeh, Mohamad Zoinol Abidin Bin Abd. Aziz

In the retransmission based chipless RFID, the receiving and transmitting antennas are an essential element and play a vital role for the tag performance and occupied area as well. In this article a new planar microstrip keyhole shape UWB antenna for retransmission based chipless RFID tag is proposed. The proposed antenna is a UWB antenna, covering from 3.45 GHz to 10.7 GHz and has a 7.25 GHz bandwidth with a dimension of only 32×20 mm<sup>2</sup>. The antenna has the radiation efficiency between 96.5% to 99% within the bandwidth. The radiation pattern of the antenna is Omni-directional and the max realized gain is 4 dBi which is suitable for the transmitting and receiving antennas for chipless retransmission based RFID tags and readers as well.

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**412-416**

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## **Effect Of Nano-Zirconia Addition On The Tribological Behavior Of Al-7075 Nano Composites**

Naguib G. Yakoub

Metal matrix nano composites are widely used in aerospace, automotive, marine, and many other applications due to their high rigidity, enhanced mechanical properties and extremely resistant to wear. In the present study, wear behavior of Al-7075 reinforced by 5 wt.% of nano-boron carbide B<sub>4</sub>C + 10 wt.% of aluminum oxide Al<sub>2</sub>O<sub>3</sub> and improved by 2,4,6 and 8wt.% of ZrO<sub>2</sub> nanoparticles was studied. Samples were prepared using stir casting method. The dry wear test was conducted using a computerized pin-on-disc apparatus to examine the tribological behavior of different aluminum nanocomposites. The effect of sliding speed and applied load was studied.

The experimental results show that the resistance to wear is increased as weight fraction of ZrO<sub>2</sub> increases within AL-7075 hybrid nanocomposites.

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417-421

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## **A Data Recovery Technique Improves On Hybrid-Mapping For NAND Flash Memory**

Van-Dai Tran and Dong-Joo Park

Flash memory has been built upon EEPROM (Electrically Erasable Programmable Read-Only Memory). Unlike traditional magnetic disks, Flash memory has disadvantages, like the limitations of life cycle and erase-before-write, which require a resolution well-known namely Flash Translation Layer (FTL) to resolve. Volatile memory today is used to save periodic retrieve requests for mapping-tables in flash memory. These tables can be missed when an unexpected power outage occurs. In order to address this problem, Page-mapping, Block-mapping, and Hybrid-mapping methods have been introduced. However, these methods also have shortcomings, for example, the mapping-information management overhead and the recovery time. In this paper, we introduce a data recovery scheme improves on Hybrid-mapping together with the spare area separate to ECC (Error Code Correction), block information, ASN (Allocation Sequence Number), mapping-information, Flag, and reserved in FTL. The results display that our technique has the less recovery time and mapping-information management overhead than the previous methods.

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422-426

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## **Generic Framework For Verifying Embedded Components**

Lamia Eljadiri, Ismail Assayad

Formal verification has become very useful and popular in last decade in area of embedded systems design and in analysis of critical systems. It can reveal common errors like deadlocks, starvation, check system invariants, but also verify more complex properties defined by LTL formulas whose writing may be very error prone for non expert users. To reduce the time-to-market for embedded systems and assist designers in the complexity of verification step at design time, we advocate the predevelopment of reusable behavioral properties for each family of embedded components to be verified. The proposed approach is to predefine the reusable properties by specifying them as logics on standard input/output signals and standard data values. Obtaining this reusable form enables them to be used for every new component in the product line, hence without the need to spend additional time to redo the verification setup every time a new component is used to create a new design. We have successfully predefined LTL reusable properties for widely used industrial embedded components families such as FIFOs and BUSES, and have performed generic verification using SPIN tool. This paper presents a framework for the formal verification of standard embedded components such as bus protocol, microprocessor, memory blocks, various IP blocks, and a software component. It includes a model checking of embedded systems components. The algorithms are modeled on SystemC and transformed on Promela language (PROcess or PROtocol MEta LANGUAGE) with the integration of LTL (Linear

Temporal Logic) properties extracting from state machines in order to reduce verification complexity. Thus, SysVerPml is not only dedicated to verifying generated properties but also for the automation integration of other properties in models if needed. In the following, we will provide the answer to the problems of component representation on the design system, what properties are appropriate for each component, and how to verify properties. Until now, there have been few research papers directed towards converting SystemC models to Promela language.

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**427-433**

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## **Effects Of Magnetic Field And Citric Acid On Polymorph And Morphology Of Calcium Carbonate Crystallized In A Flow-Water Pipe**

S. Sutomo, W. Mangestiyono, S. Muryanto, J.Jamari, A.P. Bayuseno

In the study, the polymorph and morphology of calcium carbonate scale generated in the flow-water pipe under the influence of the magnetic field with and without citric acid was investigated. Calcium carbonate was precipitated from the supersaturated solution containing 0.087 M Ca<sup>2+</sup> and CO<sub>3</sub><sup>-2</sup>. Moreover, citric acid (C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>) (5 and 10 ppm) were added to the calcium solution, whilst varying temperatures (30, 40 and 50 OC) were selected. The experiments used a batch crystallizer equipped with a flow-water pipe at a rate of 30 ml/min and direct current in the solenoid generating a magnetic field of 2000 Gauss. Nucleation time was found to be faster than that for the experiments with the citric acid additive. Simply, the deposition rate was found decreasingly in the experiments without citric acid. Phase abundances in calcium carbonate corresponding to aragonite, calcite, and vaterite were confirmed by XRPD and FTIR. Additionally, a change in the calcite/aragonite/vaterite proportions could be linked up to the treatments by inducing magnetic field and citric acid additive. The morphology of the resulting scale consisted of rhombohedral calcite, a flower structure of vaterite and a dumbbell form of aragonite. These experiments provided the knowledge of prevention scaling methods in the wastewater treatment with magnetic systems.

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**434-440**

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## **Insights Of Safety Practices In The Shipping Industry – A Qualitative Assessment**

Veluplay G.K., Tsimplis M.N., Shenoj R.A., Abdul Rahman, N.S.F.

This paper assesses the insights of safety practices in the shipping industry using secondary data from shipping accident report from MAIB and primary evidence from responses to interviews on safety practice completed by ten shipping personnel (shipping company managers and seafarers). Human Factor Analysis and Classification System (HFACS) framework has been used to analyse the reports to identify the root causes of accidents and group them into four levels of human error. NVivo was used to group the responses from the interviews into relevant themes based on safety practice aspects. Based on the HFACS framework, human error from Level 1-unsafe acts and Level 2-preconditions for unsafe acts has been identified as the most accident contributed factors. Based on the interviews, six themes of safety practice have been identified as most contributed aspects towards an improved on-board safety culture.

## **Safety Practice In The UK Shipping Industry – A Quantitative Assessment**

Veluplay G.K., Shenoi R.A., Tsimplis M.N., Abdul Rahman, N.S.F.

This paper assesses the safety practice of the shipping industry using primary evidence from responses to a questionnaire on safety aspects completed by 317 seafarers who either work on UK registered vessels or hold a UK Certificate of Competency (CoC) while working on non-UK vessels. Hierarchical Cluster analysis has been used to classify the selected safety aspects into two clusters based on their internal consistency. Multiple Regression Analysis has been used to identify the parameters based on the seafarer's perception that, influence the safety culture in shipping based on the seafarer's perception. Five parameters have a particularly close relationship with safety culture: these are reporting culture; communication and language barrier; health awareness; importance of maritime regulations; and risk awareness. The results also highlight some areas of concern as perceived by seafarers. Safety practice aspects where improvements need to be made are also identified in the paper.

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454-473

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## **Security Issues, Threats And Respective Mitigation In Cloud Computing – A Systematic Review**

Mubashir Ali, Shaista Malik, Zainab Khalid, Maham Mehr Awan, Shahbaz Ahmad

Cloud computing is one of those emerging technologies that has occupied vital importance in today's age. The proficiency of lessening expenses of computing, growing scalability and flexibility for storage related computer processes has made it to attain prime place in emerging trends. In cloud computing, entire data exist over a set of interconnected resources and is accessed through virtual machines over the network. It provides promising platform that allows efficient usage of numerous applications such as storage resources and computing infrastructure. In spite of all these benefits, there are various challenges to secure the cloud environment from vulnerabilities. Therefore, this state of the art study is conducted to highlight security related issues that arise at different levels of computations using cloud services. Moreover, taxonomy has been formulated by categorizing identified challenges in security issues and security attacks respectively. To identify the security challenges; A Systematic Literature Review (SLR) has also been conducted from the existing literature. Results show that major security issues are related to the client side, network side and at the backend. Furthermore, this study shed some light on the security issues that are encountered in cloud computing at different levels by designing architecture and offering cloud users the elucidations for safeguarding cloud data.

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474-484

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## **Work-Life Balance Model Among Female Engineers: PLS-SEM Analysis**

Ummu Sakinah Subri, Ridzwan Che' Rus, Ramlee Mustapha, and Zaliza Hanapi

In the process of learning and developing careers, women can't avoid facing the challenge of achieving life balance and resistance before successfully mastering the skills to the highest level. In response to this issue, this study aims to build a work-life balance model that caters the demand for work-life balance among women in the century. The model comprises four independent constructs namely flexible career, childcare, leaves and family support. Meanwhile, the dependent construct of this study is work-life balance conflict faces by women. The scope of the study comprises female engineers with families and 211 respondents were selected to answer the questionnaire. The data obtained were analyzed using the PLS-SEM 2.0 software via the algorithm, bootstrapping and blindfolding method. The construction process of this model involves two tests including the construction of the measurement model and the structure model. Testing the measurement model involves internal consistency namely (a) convergent validity and (b) discriminant validity in which these two legitimates have six analyses; (i) external loading, (ii) composite reliability, (iii) average variance extracted (AVE), (iv) Fornell-Larcker, (v) cross loading and (vi) Heterotrait-Monotrait Ratio (HTMT). Meanwhile, the structural model testing involves the analysis of (i) Multicollinearity (Inner VIF), (ii) Path Coefficient (T), (iii) R square (R<sup>2</sup>), (iv) size effect (f<sup>2</sup>) and (v) Predictive Relevance (Q<sup>2</sup>). The results of this study indicate that the instrument of research has fulfilled the criteria for measurement and structural model requirement. The findings also indicate that flexible career and family support have significant relationships in influencing work-life balance conflict. Hence, this model is expected to contribute new knowledge to the literature in HRM.

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**485-490**

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## **Effect Of Acidity And Electromagnetic Field Strengths On Raw Water Treatment (Turbidity And Color)**

Noveriansyah, Sri Haryati, Muhammad Djoni Bustan

Water is not only used to help the lives of organism such as bathing and washing, but also for consumption. Water is an important component that must be absorbed by the body of living things, both humans, animals, and plants so that water must have a standard that is safe for consumption. Over time, the quality of water sources has declined, resulting in a decrease in quality. The scarcity and decline in the quality of fresh water is accompanied by an increasing need for society and industry. Based on data from the Regional Water Supply Company (PDAM) Tirta Musi Palembang in December 2019 the turbidity level is more than 1200 NTU [1]. This is due to the subsequent solid particles suspended in the water from upstream and downstream of the river. Raw water treatment requires a fee of Rp 3,390 per one cubic meter of clean water [2]. To reduce the cost of raw water treatment, it is necessary to develop methods that replace the use of chemicals, including using strong electromagnetic fields in the raw water treatment process. A study by treating raw water by comparing two water samples to determine the reduction in turbidity removal efficiency. The variations in the intensity of the magnetic field are 1.38 T, 2.76 T, 4.14 T, 5.52 T, 6.9 T, 8.28 T. Turbidity reduced from 662 NTU to 0.36 NTU and from 45.25 NTU becomes 0 NTU [3]. Meanwhile, in other studies, the results obtained in the form of an increase in turbidity

removal efficiency from 60% to 99.48% using magnetic flux density 0.7 T. While the results without using a magnetic field are only 18.19% at 1.5 hours and reach a maximum value by 39.14% [4] Therefore, in this study raw water treatment obtained from the Ogan River using a magnetic field was then observed based on the turbidity and color. The variations used are variations in the pH of raw water of 2, 3, 4, and 5. While in the processing process the magnetic field strength variations are carried out by 15 V, 25 V, 35 V, and 45 V. Sampling is done every 30 minutes 4 times the analysis test is then performed. In observing the turbidity value, the best results were obtained at 1.40 NTU, namely in raw water treatment with a pH of 5 and the use of a magnetic field strength of 45 V. While in observing the color value, the best results were obtained at 3 TCU, namely in processing raw water with pH of 3 and the use of a magnetic field strength of 45 V. For the best duration of processing that is for 120 minutes.

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**491-495**

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## **Developing Strategic Reading Skills Among University Students Of Arabic As A Foreign Language In Malaysia**

Nurazan Mohmad Rouyan, Isyaku Hassan, Nik Hanan Mustapha, Nik Farhan Mustapha, Mohd Nazri Latiff Azmi

Many learners of Arabic as a Foreign Language (AFL) in Malaysia lack the necessary skills and strategies to comprehend Arabic texts. It is important, thus, for Malaysian AFL learners to know how to read skilfully and to be able to deal with an Arabic text independently. Therefore, this study aims to explore the Malaysian AFL learners' major problems in reading Arabic texts and determine the appropriate set of design principles for effective strategic reading. The study employed a qualitative approach in which semi-structured interviews were conducted. The problems of AFL learners in reading were examined from a teaching perspective. The interview participants consist of a purposively selected sample of five Arabic language experts from the International Islamic University Malaysia (IIUM). The study found that the AFL learners' approach towards Arabic reading is similar to those described in the previous studies as poor comprehension and lack of reading skills. Based on these findings, design principles for effective strategic reading were developed. These design principles represent a significant contribution to the development of Arabic reading, particularly in the Malaysian context.

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**496-503**

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## **Human Factors That Contribute To Maritime Accidents Involving Oil Tankers**

Dr. Capt. Mohammed Ismail Russtam Suhrab, Ahmad Faizal Ahmad Fuad, Mohd Hafizi Said, Dheva Rhueben Velaudam, Tamim Ahmed

An oil tanker is a ship designed for the bulk transport of oil or its products. Even though many safety measures are being practiced on board, oil tankers are known to encounter the most risk of being involved in a disaster. Maritime accidents can be caused by various factors including perils of the sea, nature of cargo, and human error. However, the main factor that induces the present situation is the human factor. The purpose of



this research was to identify the human factors that contribute to oil tanker accidents, to identify the most prominent root cause of human factors, and to propose a suggestion for minimizing the risk of human factors that lead to oil tanker accidents. For this purpose, the data was collected through a questionnaire that focused on the causes of human factors that contribute to oil tanker accidents. The questionnaire was distributed to the targeted respondents, who were experts of the maritime industry, captains, deck officers, and deck cadets sailing onboard an oil tanker; the collected data were analyzed by using Statistical Package for the Social Sciences (SPSS) to achieve the objective of this study. The result of the research was as expected, where occupational fatigue was identified as the most prominent root cause. With the result of this research, a suggestion can be proposed to minimize the risk of human factors resulting in oil tanker accidents, thus, the number of oil tanker accidents can be greatly reduced, and the aftermaths can be hindered.

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**504-510**

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## **The Comparison Between Water Models In Predicting Water Thermal And Dynamic Properties From Molecular Dynamics**

Abdusalam Alkhwaji, Salem Elbahloul, Khairil Fadzli Bin Abu Bakar, Mohd Zulkifly Abdullah

This molecular dynamic simulation study is made using Lammmps software to compare outcome results of thermal properties of most known five rigid water models. The water has received special attention because it is commonly used base-fluid in heat transfer application. This study focuses on computing water thermal conductivity, dynamic viscosity, density, specific isobaric heat capacity, specific isochoric heat capacity. A significant outcome of this study is to compare results and suggest an optimal model which can be used to evaluate water thermal properties. Lammmps, a powerful molecular dynamics software, is used to do the molecular dynamics calculation in this study. Atomic initial position, intermolecular forces, etc., are prepared using Moltemplate. Atomistic model types of water used in this study are the simple point charge (SPC) model, The extended simple point charge (SPC/E) model, The TIP-type models (TIP3PEW, TIP4PEW and TIP4-2005). This study investigates efficiency of five water types in predicting thermal properties at four temperatures. A comparison between these five models is made by calculating thermal conductivity, viscosity, density, specific isochoric heat capacity, and specific isobaric heat capacity. Results were verified against reference thermal properties at 288, 300, 312 and 324 K. Results of this research indicate that values of thermal properties were very accurate and close to known values, that could make this study very useful in helping researchers to pick up the right water model when calculating any of the studied properties.

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**511-516**

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## **Behavior Of Composite Steel I-Girder Bridges Under Blast Loads Below Bridge Surface**

Ahmed Amer, Walid Attia, Kamel Tamer

Bridges play an essential role in the movement of people and goods in and out of cities. Therefore, the bridges are considered susceptible to explosion. The explosion did not

only occur as a result of terrorist acts, but can also occur as a result of a collision between two vehicles on the bridge, so it is necessary to understand the effect of these loads on bridges. The main objective of this research is to evaluate behavior of the bridges under blast loads considering different parameters. Also, to study the effect of bridge length on behavior of the bridges subject to blast loads. Hence the analysis would refer to the most popular bridges. A girder bridge with concrete deck, particularly steel girder bridge, is the most popular constructed in the world. Based on the results, two modes of failure are noticed as a results of loaded bridges by blast loads. Bending failure mode occurs in case of blast at mid-span and shear failure mode occurs in case of blast at span ends. Reinforced concrete slabs is more prone to failure in case of the blast at mid-span than blast at span ends but steel girder is more prone to failure in case of the blast at span ends than blast at mid-span. Steel girder failure is the key cause of the bridge failure but the reinforced concrete slabs do not cause bridge failure. Area collapsed in reinforced concrete slab is inversely proportional to the length of bridge. Also, steel girders became less prone to failure with increasing bridge length.

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**517-522**

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## **H2S Dissociation In Natural Gas becomes H2 And S8 By Zeolite And Caocomposite Synthesis Catalyst**

Rifqi Sufra, Muhammad Djoni Bustan, Sri Hartati

The petrochemical industry is predicted for the next few years to still use raw materials from fossil fuels such as natural gas. The natural gas used still contains H<sub>2</sub>S which is corrosive and has the risk of poisoning the catalyst so that the presence of H<sub>2</sub>S is avoided before it damages or degrades the performance of the catalyst as used in the steam reforming or steam converting process. Several studies aimed at recovering hydrogen and sulfur. One such effort is through a thermal dissociation process. To dissociate H<sub>2</sub>S into hydrogen gas and S<sub>2</sub> gas, an operating temperature of 1300°C is required. This method is less economical to apply to industry because it requires large amounts of energy and does not produce solid sulfur [9]. As a result researchers used catalysts to reduce energy consumption and also sought to convert into solid sulfur. From several studies by Nguyen et al, 2015 [8], zeolite modification with metal has the potential to increase H<sub>2</sub>S absorption in room temperature. It is hoped that the invention can be considered as an alternative ZnO catalyst. Therefore, in this study an attempt was made to make a catalyst made from natural zeolite combined with a metal compound, CaO. The catalyst preparation process is carried out by the impregnation method, in which there are 3 variations of the catalyst based on CaO : Natural Zeolite ratio that is, 1 : 5, 1 : 7.5, and 1 : 10. These three types of catalyst have been tested using SEM and XRD, where the results show success in the impregnation process. Furthermore, in this study a trial was carried out on the use of catalysts to absorb the gas that became the raw material. The mass of the catalyst in each variation of the composition used is also varied in mass, namely 40 gr, 50 gr, 60 gr, 70 gr, and 80 gr. In the process, variations in the feed flow rate of the catalyst are varied, namely 5, 10, 30, 50, and 80 Liters / minute. Therefore, it is known that the composition of CaO and Zeolite 1: 5 is the best composition and produces the highest conversion. The lower the flow rate and the higher the value of the catalyst mass, the better dissociation of H<sub>2</sub>S.

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**523-527**

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## **Wireless Monitoring System For Photovoltaic Generation With Graphical User Interface**

Asnil Asnil, Krismadinata Krismadinata, Irma Husnaini, Fauzan Gunawan

Monitoring Photovoltaic (PV) parameters is very important to see the performance of a PV in producing electrical energy. The energy produced from PV is greatly determined by changes in solar radiation and temperature from PV. The energy produced will vary according to the level of solar radiation and temperature changes. Monitoring in real conditions is required to improve reliability, evaluation, implementation and costs. Aside from that, the description of the characteristics obtained is also useful for determining the design of PV installation configurations and the determination of control algorithms to match the load requirements. So that the electric energy produced can be maximized and the efficiency of PV can be increased. This paper describes a technique for monitoring PV parameters (current and voltage generated and temperature on PV) using wireless nRF24L01 as a communication device between PV and PC as host. PV parameter monitoring uses the ACS712 current sensor, the voltage sensor uses the concept of a voltage divider and a DHT11 sensor for temperature detection. The parameters obtained (current and voltage generated and temperature on PV) are processed using Atmel AVR ATmega 328 MCU which is then transmitted to a PC using the nRF24L01 transceiver system as an intermediary. The test results show that the system built can monitor PV parameters in the form of voltage, current and temperature in real time.

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**528-533**

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## **Analysis Of Use Of Mobile Banking With Acceptance And Use Of Technology (Utaut)**

Ike Kusdyah Rachmawati, Mohammad Bukhori, Yuniz Majidah, Syarif Hidayatullah, Abdul Waris

With the development of increasingly advanced technology, all banks, both state banks and private banks, are competing to launch a banking service application, namely Mobile Banking. Mobile Banking is a banking service that aims to provide smoothness and convenience in banking by utilizing information technology. Research to examine the extent to which Performance Expectancy, Effort Expectancy Social Influence and Facilitating Conditions influence on Behavioral Intention, see whether Facilitating Conditions and Behavioral intention affect the Behavioral Usage and Facilitating Conditions have a positive and significant effect on Behavioral Usage through Behavioral Intention. This research is an explanatory research, the location of this study was conducted in the city of Malang, East Java. The population in this study were all people who transacted using Mobile Banking with a sample of 190 respondents. Data analysis techniques using Descriptive Statistical Analysis, Path Analysis and Testing Hypotheses. Analysis results 1) Performance Expectancy influences Behavioral Intention, 2) Effort Expectancy influences Behavioral Intention, 3) Social Influence influences Behavioral Intention, 4) Facilitating Conditions influences Behavioral Intention, then 5) Facilitating Conditions influences Behavioral Usage, 6) Behavioral Intention affects Behavioral Usage and 7) Facilitating Conditions do not affect Behavioral Usage through Behavioral intention.

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**534-540**

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## **The Development Of 1 Phase Induction Motor Training Kits**

Ahyanuardi, Habibullah, Oriza Candra, Doni Tri Putra Yanto, Arisa Amriyani Amir Bata

The use of instructional media in the Electrical Motor Maintenance and Repair (EMMR) learning process has not been optimal to achieve the stated learning goals. Therefore, it is necessary to develop practical learning media like a training kit. this research develops a 1 phase induction motor training kits that can be used in the learning process. The purpose of this study is to produce a valid and practical 1 phase induction motor training tools for use in the EMMR learning process. The research method used is the Research and Development (R&D) research method. The research phase begins with the needs analysis, product design, product manufacturing, and product testing phases to determine the level of validity and practicality of the product being developed. The validators consisted of instructional media experts, electrical motor experts, and EMMR subject teachers. Product validity is known based on the opinion of the validator (Expert Judgment) of the developed training kits. The practicality of the Training Kits is seen through the opinions of the teacher and students after using the Training Kits in the learning process. The results of the validation conducted by the validator stated that the 1 phase induction motor training kits is valid with a percentage of 89%. Then, the results of practicality by subject teachers and Students get a percentage of 83% with the practical category. It can be concluded that the Instructional media of 1 phase induction motor training kits is valid and practical as a practical learning media in the EMMR learning process for electrical engineering students at basic level.

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**541-545**

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## **OPTIMIZATION FOR PREDICTING MISSING DATA IN DATABASE TRANSFER PROCESSING**

SUMITRA NUANMEESRI

THE OBJECTIVE OF THE ARTICLE IS TO OPTIMIZING DATA FOR PREDICTING AND FILLING THE MISSING DATA IN THE PROCESS OF DATABASE TRANSFER FROM SEVERAL DATABASES TO A CENTRAL DATABASE OR THE NEW DATABASE SYSTEM. THE RESEARCH RESULT SHOWS THAT THE RESAMPLE TECHNIQUE CAN IMPROVE THE DATASET FROM 3,190 TO 29,800 RECORDS, WHILE THE SYNTHETIC MINORITY OVERSAMPLING TECHNIQUE GAINS THE DATASET UP TO 16,563 RECORDS, WHICH GENERATED AT 1000% OF THE ORIGINAL DATASET. WHEN CREATING A MODEL TO PREDICTING THE MISSING DATA IN DATABASE TRANSFER PROCESS WITH THE RANDOM FOREST TECHNIQUE, IT WAS FOUND THAT THE EFFICIENCY OF THE MODEL EVALUATION BY USING THE 10-FOLD CROSS-VALIDATION METHOD GAVE THE MODEL ACCURACY OF THE SYNTHETIC MINORITY OVERSAMPLING TECHNIQUE THAT APPROACH TO THE HIGHER THAN RESAMPLE METHOD IN EVERY DATA RANGE. IT WILL BE ABLE TO CLASSIFY THE DATA TO REPRESENT THE MISSING DATA DURING THE DATABASE TRANSFER PROCESS WITH MORE THAN 96% EFFICIENCY.

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**546-553**

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## **Investigating Indoor Scattering At Mmwave Frequencies**

Anioke Chidera Linda, Nnamani Obinna Christantus, Ani Ikechukwu Cosmas

This paper investigates the effects of scattering on the received signal at mmWave bands. Four surfaces commonly found in indoor scenarios were analyzed to determine their roughness and scattering effects on radio wave signals. The received signal energy was determined from a modified version of the Saleh Valenzuela Ultrawideband (SV UWB) model through simulations at frequencies of 28GHz, 73GHz and 140GHz. Results show that scattering at mmWave frequencies cannot be neglected as a propagation mechanism due to its dependence on material surface texture, grazing angle and frequency. Therefore, optimal designs and successful deployment of high performance indoor wireless networks – 5G and 6G require a good understanding of scattering effects resulting from indoor surfaces.

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**554-560**

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## **The Development Of Smart Farming Technologies And Its Application In Malaysia**

Gabriel Wee Wei En, Haritharan Devanthran

Smart farming is a development in the agriculture industry by integrating information and communication technologies (ICT) into agricultural production. New technologies such as the Internet of Things (IoT) and Cloud system are expected to enhance this development by introducing artificial intelligence and robots in farming. This paper aims to gain insight into the development of smart farming technologies based on worldwide scientific literatures and to explore the adoption of smart farming technologies in Malaysia from the perspectives of experienced farmers in this field. The research includes conducting meta-analysis to combine the results from worldwide journals on the development of smart farming technologies in Malaysia. The research on Smart Farming technology started from 1999 with 'Precision Farming', 'Soil Properties' and 'Sustainable Agriculture' after the introduction of the Third National Agricultural Policy (NAP3) in 1998. 'Internet of Things' was identified as the most researched Smart Farming technology in Malaysia. The trend of the development of Smart Farming technology in Malaysia is pointing towards urban farming solutions and achieving sustainable agriculture.

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**561-566**

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## **Biomass Potential As Power Generation Sources: A Case Study In Kerman-Iran**

Hüseyin Gökçekuş, Youssef Kassem, Shaghayegh Ostovar Ravari

The use of renewable energy sources has improved around the world in recent decades. One of the most popular sources of renewable energy is biomass. Energy production from biomass is highly dependent on the resources available in the area and can bring many benefits depending on the type of resources. In this paper, the agricultural

residues and animal wastes in Kerman, Iran are shown, then three different countries (Turkey, India, and China) have selected and controlled the benefits of using biomass in these countries with the same resources that are available in Kerman. The benefits of establishing a biomass energy production plants in Kerman-Iran are illustrated which can be environmental, social, economic, technological, and political benefits.

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**567-572**

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## **Restless Leg Syndrome Detection Using Kinect Sensor**

Nada Nabilah Hernawati, Fiky Yosef Suratman, Achmad Rizal

Sleep activity is a critical factor in determining the quality of human life. Sleep activity is closely related to sleep quality, which is influenced by several factors, including daily activities, physical conditions, and emotional conditions. The sleep monitoring device that is commonly used is polysomnography. This device is commonly used to monitor sleep by attaching electrodes to the patient's head. This tool's weakness is the feeling of discomfort in the patient, resulting in disruption of sleep monitoring analysis because too many devices are attached to the patient's body. Sleep Disorder is a disorder that makes it difficult for sufferers to regulate their sleep patterns. There are several characteristics for people with sleep disorders: not fresh when waking up, fast drowsiness, difficulty concentrating, fatigue, and memory that continues to decline. In this study, a sleep pattern monitoring system was built using Microsoft Kinect Sensor v.2 for Restless Leg Syndrome (RLS). This device has sensors that can capture every movement of movements produced by the human body. Among the indicators to determine sleep disorders are sleep breathing and sleep posture. The output of this sleep disturbance detection system is a change in the movement of nine joints. The system test has a duration of 120 minutes and changes in subject joint movement per 5 seconds. Sleep disorders are classified into three parts: mild, moderate, and severe, based on the PLMS index. PLMS index values were obtained based on the value of joint movement divided by total sleep time. The system designed has a relative error value of 0.39% in determining the PLMS index.

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**573-575**

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## **A Mobile Robot / Thermal Camera System For Intrusion Detection In Nocturnal Environment**

Khaled Kaaniche, Nasr Rashid

This paper introduces the integration of a perceptual capacity for a mobile security robot in order to detect a possible intrusion in nocturnal environment. A thermal Camera is used to extract possible intrusion. An algorithm based on the calculation of the optical flow of the scene is proposed in order to differentiate between a real intrusion and an existing heat source (Computer, Machine, ... etc.).

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**576-579**



# How To Improve Employee Performance At The Forest Service

Wijianto, Dwi Cahyono dan Nurul Qomariah

**Abstract:** The purpose of this study was to determine the effect of job satisfaction, organizational support, and motivation on employee performance in the Jember Regional Forestry Branch Office. The total population of this study was 95, which was also used as a sample in the study. The analysis technique used is the Structural Equation Model (SEM) using WarpPLS 5.0. The results of data analysis show that job satisfaction variables significantly influence work motivation, organizational support has no significant effect on work motivation, job satisfaction has a significant effect on employee performance, organizational support has a significant effect on employee performance, work motivation has a significant effect on employee performance.

**Index Terms:** job satisfaction, organizational support, work motivation, and employee performance

## 1. INTRODUCTION

Human resources are important assets and play a role as the main driving factor in the implementation of all activities or activities of the agency, so it must be managed properly through Human Resource Management (HRM). Human resource management is an effort in processing to obtain, train, assess, and compensate employees and to take care of labor relations, health, and safety, as well as matters relating to justice [1]. Human resource management is the utilization, development, assessment, remuneration, and management of individual members of an organization or group of workers [2]. In order for an organization to run as expected, it is necessary to pay attention to the performance of its employees. Performance is defined as the willingness of a person or group of people to carry out an activity and perfect it according to their responsibilities with the results as expected [3]. Performance can be seen as a process or result of work. Performance is a process of how the work takes place to achieve work results. However, the results of the work itself also show performance [4]. Many factors can improve employee performance in an organization or institution. Factors that can improve employee performance include job satisfaction, organizational support / organizational commitment, and work motivation. Job satisfaction is a feeling of an employee is doing work [1]. A general attitude towards one's work that shows the difference between the number of awards received by workers and the amount they believe they should receive [5]. Someone can be relatively satisfied with one aspect of work and not satisfied with one or more other aspects [6]. Between job satisfaction and employee performance are interconnected. Employees who are satisfied with their work then they will do the tasks that are ordered properly so that all work can be completed as planned. Research on the relationship between performance and job satisfaction of an employee has been done a lot. Research [7], [8], [9], [10], [11], [12], [13], [14] is a study conducted by linking satisfaction with employee performance.

In addition to job satisfaction, the next factor that can also improve employee performance is organizational support. Organizational support is one form of commitment from the organization to support efforts that can improve employee performance [1]. Strong Organizational Support can also improve employee performance because of the positive effect of organizational support on employees supporting employee attitudes at work. This organizational support needs to be carried out by organizations or institutions both government and private so that it can improve employee performance. Thus the relationship between organizational support and employee performance is very close. Research [15], [16], [17], [18], [19], [20], [21], conducting research that links organizational support with employee performance. Increased employee performance is also inseparable from work motivation. Motivation means encouragement or giving a driving force that creates the excitement of one's work so that someone wants to work together, work effectively, and be integrated with all their efforts to achieve optimal performance [22]. Work motivation is a condition or energy that moves employees to be directed or directed to achieve the goals of the organization of the company. The mental attitude of employees who are pro and positive towards work situations is what strengthens their work motivation to achieve maximum performance [23]. Employee motivation needs to be improved in order to improve performance. Employees who is motivated to work harder then all the work will be done on time. Research on the relationship between motivation and performance has been widely carried out, including [24], [25], [26], [27], [28], [29], [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40], [41], [42], [20], [43]. The object of research chosen was the Jember Regional Forestry Service Branch. Forests are natural resources that must be managed/arranged in a planned and measured manner. Forest resource management planning needs to be done very professionally so that forests are able to provide more equitable benefits for human life and the environment. The existence of forest area in East Java, until now, has not been able to reach the minimum forest area stipulation as mandated in Law Number 41 of 1999 concerning Forestry, which is 30% of the land area. Until now, the total forest area in East Java is still around + 1,361,146 Ha or + 28.38% of the total area of East Java Province, while the forest area for the Jember Regional Forestry Service Branch covering Jember Regency and Bondowoso Regency It is around + 190,556, 29 hectares. To be able to achieve the function of the area of forest in question, it requires efforts to manage, protect, and protect the

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forest more intensively as well as solid and synergic planning. Through this strategic plan, it is hoped that East Java forestry development goals and targets will be more specific, measurable, acceptable, realistic, time-bound (SMART), consistent with the vision and mission of the selected regional head while taking into account and considering forestry development goals, objectives regional and national, regional timeframes and capabilities so that understanding can be built from all stakeholders for the development of East Java that is more productive, efficient and effective, equitable, and sustainable. The Purpose of Compiling Changes in the OPD Strategic Plan of the East Java Provincial Forestry Office in 2019-2024 is an effort to translate the Changes in the East Java RPJMD in 2019-2024 into a more detailed plan and in accordance with medium-term planning at the OPD level. The aim is to make this planning document as a reference for Officials and State Civil Servants (ASN) in charge of forestry in East Java (both ASN Ministry of Environment and Forestry in East Java, Perum Perhutani Regional Division of East Java Regional) and possibly other forestry stakeholders in management activities forests in East Java as well as a system of control and evaluation of the implementation of forestry development activities over the next two years (2020-2021) based on the indicator targets set out therein. The regional autonomy government system requires regions to have independence in regulating their regions according to regional authority as stated in Law No. 32 of 2004 article 10 paragraph (1) which states that regional governments exercise the widest possible autonomy to regulate and manage their own regional government affairs based on the principle of autonomy and co-administration. The district forestry service as a new implementer in the forestry sector has an important role in the utilization and management of forests in the district. One of the functions of the District Forestry Office in forest management is the coordinating function. Forest resources produce many benefits (multi functions), ranging from the most easily recognized benefits such as wood and non-wood to its function as life support. As a result, forest utilization involves many parties where the use of one party will affect the other party. Management of forest resources is not only limited to taking wood from the forest, but it involves social activities,

agriculture, fisheries, plantations, mining, and no less important safety factors. Coordination and counseling are carried out because the management of forest resources involves many parties, including the Department of Agriculture, the Department of Agriculture, the Office of Cooperatives, BPPMD, Kesbanglinmas, and the Department of Industry. Coordination and counseling are expected to unite the objectives and direct activities in the management of forest resources so that in their implementation they maintain the sustainability of the forest. The current coordination between the Forestry Service and other relevant agencies in Bondowoso and Jember districts is very limited in providing technical recommendations by other relevant agencies and forming an integrated team that can meet certain needs at the time. Almost all activities in the field of forestry that should be coordinated with other agencies are carried out by the Forestry Service itself. This turned out to be closely related to problems that occurred within the Forestry Service itself. The planned program or activity exceeds the capacity of the Forest Service and the capacity of the region, both in terms of funding and implementation capacity. Program or activity planning should be adjusted to budget estimates that can be supported by the allocation of funds, both from the district or special funds from the center and the capacity of the Forestry Service to implement them. Planning activities beyond ability will result in the achievement of reported goals to be low or even not carried out at all. Achieving low goals due to over-planning is also caused by low motivation and participation. Based on the main tasks and functions as well as the aims and objectives of the Jember Regional Forestry Branch, there are strategic issues that are displayed in table 1. In 2016 the number of licensed timber forest product primary industries by 46 companies increased by 6 units or 11.5% from the year 2017. In 2018 the number of licensed wood forest primary industry as many as 56 units increased by 4 units or 7% from 2017. This shows that the increase in IPHHK was not so significant. Only ranges from 7-11.5%. From the explanation in table 1. then the area of community forest development over the past 3 years has decreased significantly from the predetermined target. Only in 2016 has exceeded the specified target.

**Table 1. Performance Achievement of Jember Regional Forestry Service Branch in 2016-2018**

No	Performance Indicator	Unit	Target	Year			Add.
				2016	2017	2018	
1.	Percentage of increase in licensed IPHHK (%)	%	100 %	46	52	56	
2.	Extensive area of community forest development (Ha)	Ha	100.000	108.067,48	52.864,65	57.088,53	
3.	Percentage of forest fires (Ha)	Ha	0	1.013,90	1.907,22	6.967,70	
4.	Total area of forest conserved (Ha)	Ha	50.000	46.440,45	49.700,10	51.215,02	

Based on the description of the theory and exposure to the problem of performance phenomena that are strategic issues that exist in the Jember Regional Forestry Service Branch covering Jember Regency and Bondowoso Regency, the research question that arises is how to improve the performance of Jember Regional Forestry Service employees based on job satisfaction, organizational support and work motivation.

## 2 LITERATURE REVIEW

### Job satisfaction

Job satisfaction is a general attitude towards one's work that shows the difference between the number of awards received by workers and the amount they believe they should receive [5]. Job satisfaction is an affective or emotional response to

various aspects or aspects of one's work so that job satisfaction is not a single concept. Someone can be relatively satisfied with one aspect of work and not satisfied with one or more other aspects [44]. Job Satisfaction is a (positive) attitude towards the workforce, arising from an assessment of the work situation. The assessment can be done on one of the work, the assessment is done as a sense of respect in achieving one of the important values in the work. Satisfied employees prefer to work situations rather than dislike them. Feelings related to job satisfaction and dissatisfaction tend to reflect the assessment of the workforce about work experiences in the past and present rather than expectations for the future. So it can be concluded that there are two important elements of job satisfaction, namely work values and basic needs [2].

### Organizational Support

Perceptions of organizational support refer to employees' perceptions of the extent to which organizations value contributions, provide support, and care for their well-being [45]. If the employee considers that the organizational support he receives is high, then the employee will integrate membership as a member of the organization into their identity and then develop a more positive relationship and perception of the organization. By combining membership in an organization with employee identity, the employee feels part of the organization and feels responsible for contributing and giving the best performance to the organization [45]. Perception of organizational support is also considered a global belief formed by each employee regarding their assessment of the organization's policies and procedures. These beliefs are formed based on their experience of the organization's policies and procedures, the receipt of resources, interactions with its agency agents, and their perceptions of the organization's concern for their well-being. 11 From various organizations found that employees who feel they have the support of the organization will have a sense of meaningfulness in the employee. This is what will increase the commitment to employees. This commitment will ultimately encourage employees to try to help the organization achieve its goals, and increase expectations that work performance will be noticed and valued by the organization [45].

### Work motivation

Work motivation is something that raises morale or work motivation [46]. Motivation comes from the Latin word movere which means encouragement or giving a driving force that creates the excitement of one's work so that someone wants to work together, work effectively, and be integrated with all their efforts to achieve satisfaction. Work motivation is a condition or energy that moves employees to be directed or directed to achieve the goals of the organization of the company. The mental attitude of employees who are pro and positive towards work situations is what strengthens their work motivation to achieve maximum performance [47]. Work motivation as a willingness to spend a high level of effort towards organizational goals, which is conditioned by the ability of these efforts to meet an individual's needs. Work motivation is a person's attitude towards his work to bring

### Characteristics of Respondents by Gender

Jember Regional Forest Service Branch employees who were respondents in this study can be broken down by gender as in table 2.

satisfaction to his performance. The theory developed by Herzberg is known as the theory of two factors, namely motivational factors and hygiene or maintenance factors. Motivational factors are drives for achievement that are intrinsic, which means that they originate from within a person, while hygiene or maintenance factors are extrinsic factors, which means that they originate from outside oneself [5].

### Employee Performance

Performance is the rate at which employees reach work requirements efficiently and effectively [48]. Employee performance is a work performance, which is a comparison between work results that can be seen clearly with work standards set by the organization. Performance is a result achieved by employees in their work according to certain criteria that apply to a job [5]. Performance is the result of work both in quality and quantity achieved by an employee in carrying out tasks following the responsibilities given to him [49]. Performance is defined as the willingness of a person or group of people to carry out an activity, and perfect it according to their responsibilities with the results as expected[50].

## 3 METHODOLOGY

The research design is the overall design of a research plan that will be carried out and will be used as a guide in conducting research. The research method is a scientific way to obtain valid data with the aim that it can be found, proven and developed knowledge so that in turn it can be used to understand, solve and identify problems [51]. Research variables are anything in the form of what is determined by researchers to be studied to obtain information about it, then conclude[52]. The independent variable in this study is the variable; job satisfaction and organizational support. The intervening variable is work motivation and the dependent variable is employee performance. The population in this study were all employees of Jember Regional Forestry Branch Office Jl. Bandeng No.37 - Hamlet Check - Sukorambi - Jember totaling 34 employees. The sampling method uses saturated sampling (census) techniques. The census technique is the technique of determining the sample if all members of the population are used as samples. This is done because the population is relatively small, less than 100 people, then all populations in this study were sampled as many as 34 people. The data analysis technique used is Partial Least Square (PLS). Partial Least Square is a multivariate statistical technique that can handle multiple response / dependent / dependent variables and explanatory variables at once. This analysis is a good alternative to the method of multiple regression analysis and principal component regression, because this method is more robust or invulnerable. Robust means that the parameters of the model do not change much when new samples are taken from the total population[53].

## 4 RESEARCH RESULTS AND DISCUSSION

The results of this study are divided into two namely descriptive statistics and inductive statistics.

**Table 2. Characteristics of Respondents by Gender**

Gender	Respondents	Percentage
Man	21	61,76%
Woman	13	38,24%
Total	34	100%

### Characteristics of Respondents by Age

Jember Regional Forest Service Branch employees who were respondents in this study can be broken down by Age as in table 3.

**Table 3. Characteristics of Respondents by Age**

Age	Respondents	Percentage
20 - 30 years	9	26,47%
31 - 40 years	11	32,35%
41 - 50 years	8	23,53%
51 - 60 years	6	17,65%
Total	34	100%

### Characteristics of Respondents Based on Years of Service

Jember Regional Forest Service Branch Employees who were respondents in this study can be detailed based on years of service as in table 4.

**Table 4. Characteristics of Respondents Based on Years of Service**

Years of service	Respondents	Percentage
0 - 10 tahun	10	29,41%
11 - 20 tahun	14	41,18%
21 - 30 tahun	8	23,53%
31 - 40 tahun	2	5,88%
Total	34	100.00

## Outer Model Evaluation

### Validity Test

This validity test shows the suitability of each indicator with the theories used to define a construct [53]. The validation test criteria are using the loadings factor with a value of more than 0.50 and the average variance extracted (AVE) with a value exceeding 0.50 for the convergent validity test and the discriminant validity test using the root comparison of AVE with correlation between variables. The construct AVE value should be higher than the correlation between latent variables. The results of WarpPLS 6.0 are in table 5. The calculation results of WarpPLS 6.0 in table 5 show that each value on the cross-loadings factor has reached a value above 0.7 with a p value below 0.001. Thus the convergent validity test criteria have been met. In table 6. information can be obtained that

the root value of AVE of the same variable has been higher than the value of root of AVE in different variables. This shows that the discriminant validity test criteria have been met. Thus the instrument used in this study had fulfilled all the validity test provisions.

### Reliability Test

Reliability testing is carried out with the aim of ensuring the research instruments used can provide consistent measurement of concepts without bias. The results of WarpPLS 6.0 data processing are shown in table 7. The basis used in the reliability test is the value of Composite reliability coefficients and Cronbach's alpha coefficients above 0.5. The results in table 7 show that the questionnaire instrument in this study had fulfilled the reliability test requirements.

**Table 5. Combined Loadings And Cross-Loadings**

	X1	X2	Z	Y	Type (a)	SE	P value
X1.1	0.785	-0.171	-0.220	0.473	Reflect	0.119	<0.001
X1.2	0.713	0.314	0.174	-0.162	Reflect	0.148	<0.001
X1.3	0.845	-0.225	-0.138	-0.170	Reflect	0.116	<0.001
X1.4	0.701	0.554	0.147	-0.294	Reflect	0.149	<0.001
X1.5	0.762	0.224	0.728	-0.336	Reflect	0.152	<0.001
X2.1	-0.163	0.738	-0.233	0.433	Reflect	0.122	<0.001
X2.2	0.088	0.870	0.138	-0.149	Reflect	0.114	<0.001

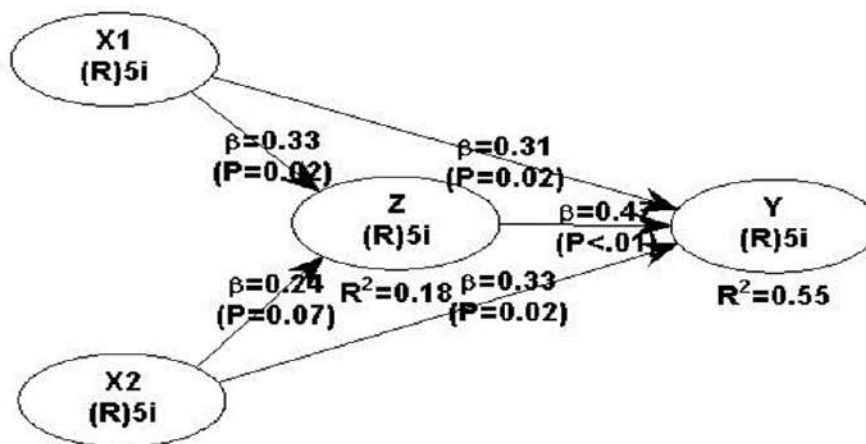
X2.3	0.755	0.762	0.263	0.485	Reflect	0.167	<0.001
X2.4	0.313	0.729	0.094	-0.054	Reflect	0.147	<0.001
X2.5	0.030	0.759	-0.011	0.310	Reflect	0.138	<0.001
Z1.1	-0.172	0.324	0.718	-0.390	Reflect	0.135	<0.001
Z1.2	0.203	-0.224	0.778	-0.466	Reflect	0.131	<0.001
Z1.3	-0.040	0.067	0.760	0.055	Reflect	0.120	<0.001
Z1.4	-0.544	0.059	0.747	0.744	Reflect	0.146	<0.001
Z1.5	0.233	-0.135	0.819	0.510	Reflect	0.117	<0.001
Y1.1	-0.227	0.063	0.143	0.709	Reflect	0.123	<0.001
Y1.2	0.419	-0.081	0.054	0.802	Reflect	0.118	<0.001
Y1.3	-0.064	0.016	-0.553	0.795	Reflect	0.124	<0.001
Y1.4	-0.274	0.003	0.527	0.772	Reflect	0.138	<0.001
Y1.5	-0.008	0.098	-0.115	0.879	Reflect	0.165	<0.001

**Table 6. Comparison of Roots of AVE With Correlations Between Variables**

	X1	X2	Z	Y
X1	0,7612	0,1392	0,1382	-0,0978
X2	0,2046	0,7716	0,0502	0,205
Z	-0,064	0,0182	0,7644	0,0906
Y	-0,0308	0,0198	0,0112	0,7914

**Table 7. Reliability Tests**

Variable	Composite reliability	Cronbach's alpha
Satisfaction	0.748	0.606
Organizational Support	0.773	0.673
Motivation	0.751	0.628
Performance	0.707	0.684



**Figure 1. Path Analysis Results**

**Table 8. Coefficient Value of Direct Influence Pathway**

No.	Independent Variable	Dependent Variable	Path Coefficient	p-value	Information
1.	X1	Z	0,326	0,017	Significant
2.	X2	Z	0,238	0,065	Significant
3.	X1	Y	0,314	0,021	Significant
4.	X2	Y	0,328	0,016	Significant
5.	Z	Y	0,469	0,001	Significant

**Table 9. Test Research Models**

Informatian	Value	Ideal
Average path coefficient (APC)	P 0.007	<= 0,05
Average R-squared (ARS)	P 0.004	<= 0,05
Average adjusted R-squared (AARS)	P 0.010	<= 0,05
Average block VIF (AVIF)	1,042	<= 3,3
Average full collinearity VIF (AFVIF)	1,369	<= 3,3
Tenenhaus GoF (GoF)	0.369	besar
Sympson's paradox ratio (SPR)	1	1
R-squared contribution ratio (RSCR)	1	1
Statistical suppression ratio (SSR)	1	>= 0,7
Nonlinear bivariate causality direction ratio (NLBCDR)	0,800	>= 0,7

### Inner Model Evaluation

Hypothesis testing is based on the results of the analysis of the PLS SEM model that contains all the variables supporting the hypothesis test. The PLS model with the addition of work motivation as a mediating variable explains that the addition of the variable will make an additional contribution as an explanation of employee performance.

### Calculation of Direct Effect Pathway Coefficients

In this section, describe each path in the model section using path analysis. Each track tested shows direct and indirect effects of job satisfaction (X1) and organizational support (X2) on work motivation (Z) and employee performance (Y) of the Jember Regional Forestry Service Branch. By knowing the significance of each pathway, the answer will be whether the proposed hypothesis is accepted or rejected. Each path tested represents the hypothesis in this study. The path coefficient values can be seen in table 8.

### Structural Model Testing

The research model test was conducted to see the suitability of the model built in the study. A good research model will be able to describe the suitability of the relationship between variables in the study. The use of WarpPLS 6.0 has provided calculation results that indicate the criteria used to assess whether the model is appropriate. Based on table 9 it can be seen that each value in the study has fulfilled the ideal criteria. APC, ARS, and AVIF values that meet the ideal criteria indicate that the overall model of this study is good. Model compatibility can also be calculated using a goodness of fit index. The goodness of fit index (GoF) is defined as the geometric mean or root of the average communality and the average R2 for all endogenous constructs. The GoF index shows the predictive power of the overall model. GoF values have intervals between 0 and 1. GoF values close to 1

indicate a good estimation of the path model. The GoF index for this research model is 0.369. Thus, the structural model that explains the relationship between the four variables has good predictive power. Structural model test results can be seen in R-square (R2) in each endogenous construct, path coefficient, t value and p value for each path relationship between constructs. The path coefficient and t value for each path will be explained in the sub-discussion of the results of hypothesis testing. The value of R2 is used to measure the level of variation in endogenous variables which are explained by a number of influencing variables. The higher the value of R2 means the better the prediction model from the proposed model. In general, the coefficient of determination is classified as low if it is 0.20, while the results of this model both coefficients are more than 0.20. So based on these results the suitability of the model is quite good. Calculating model compatibility can be done with the following formula: Total determination coefficient:  $R_m^2 = 1 - P_{e1}^2 - P_{e2}^2$

$$\begin{aligned} R_m^2 &= 1 - (0.729)^2 - [(0.606)]^2 \\ &= 1 - (0.531 \cdot 0.367) \\ &= 1 - 0.195 \\ &= 0.805 \end{aligned}$$

The calculation results show that the inner Rm2 value of the model is 0.805, which means this research model has a high model compatibility. The accuracy of the model of 80.5% explains that the contribution of the model to explain the structural relationship of the four variables studied was equal to 80.5% and the rest is explained by other variables not involved in the model.

## DISCUSSION

### Effect of Job Satisfaction on Employee Performance

Based on the results of testing the variable job satisfaction on employee performance obtained a coefficient value of 0.314



with p-value of 0.021. Because the value of p-value is smaller than  $\alpha$  ( $0.021 < 0.05$ ),  $H_0$  is rejected, thus there is a significant effect of job satisfaction on employee performance. This means that job satisfaction has a significant effect on the performance of employees of the Jember Regional Forestry Branch Office, which is proven to be true or  $H_3$  is accepted. Employees who are satisfied then they will work wholeheartedly so that the work that is charged will also be completed in accordance with the specified time [1]. Thus it can be concluded that the level of employee satisfaction will affect performance. If job satisfaction is achieved, employee performance will be high, and vice versa

### The Effect of Organizational Support on Employee Performance

Based on the results of testing the organizational support variable on employee performance obtained a coefficient value of 0.328 with p-value of 0.016. Because the value of p-value is smaller than  $\alpha$  ( $0.016 < 0.05$ ),  $H_0$  is rejected, thus there is a significant influence of organizational support on employee performance. Based on the fourth hypothesis, organizational support affects employee performance. This means that organizational support has a significant effect on the performance of employees of the Jember Regional Forestry Branch Office, as evidenced by the fact that  $H_4$  is accepted. According to [45], although organizations value contributions and care for employee welfare is important, organizations must continue to pay attention that employees will continue to combine the real support shown by organizations with the individual perceptions they have. Employees believe that the organization has goals and orientations, both positive and negative, that will ultimately influence performance improvement.

### Effect of Work Motivation on Employee Performance

Based on the test results of work motivation variables on employee performance, the coefficient value is 0.469 with p-value of 0.001. Because the value of p-value is smaller than  $\alpha$  ( $0.001 < 0.05$ ),  $H_0$  is rejected, thus there is a significant influence of work motivation on employee performance. This means that work motivation has a significant effect on the performance of employees of the Jember Regional Forestry Branch Office, as proven by the truth or  $H_5$  is accepted. The factors that influence the performance of the success factors and the motivational factors [49]. The theory that assumes the overriding motivation of the theorists. This theory has a concept that is just the same as what will be expected by me. Intention to work towards the goal of providing a major source of motivation for work [5].

## 4 CONCLUSIONS

The test results prove job satisfaction, positive and significant effect on the performance of Jember Regional Forestry Office employees. The test results prove organizational support, a positive and significant effect on the performance of Jember Regional Forestry Office employees. The test results prove work motivation, positive and significant effect on the performance of Jember Regional Forestry Office employees. From the results of the discussion, by looking at the background of the research, justification of the theory and research methods, it can be conveyed some limitations of this study are: the lack of understanding of the respondents to the questions in the questionnaire as well as the attitude of

concern and seriousness in answering all the questions that become constraints in this study. This is recognized by the researcher as a limitation due to the researcher not using in-depth interviews with all respondents in this study. This study uses a data collection method in the form of a questionnaire with an interval scale in the form of a rating as a measurement scale. The Likert scale used in this study was 5, which is strongly agree, agree, neutral, disagree, and strongly disagree. The tendency of questionnaires to use an odd scale is that respondents who do not understand the question or statement of the questionnaire will tend to give neutral answers. The subjectivity problems of the respondents can result in the results of this study being vulnerable to the bias of respondents' answers. This is realized by researchers is a limitation in research that uses primary data. The suggestions that can be given based on the results of the study are as follows: referring to the conclusions stating that job satisfaction has a positive and significant influence on work motivation and employee performance, the Jember Regional Forestry Service Branch should increase attention to aspects of employee satisfaction in work. Organizational support has an uninformed influence on the work motivation of Jember Regional Forestry Office employees. This needs reflections from both superiors and policy makers to continue evaluating the forms of support needed by employees to increase work motivation so that it impacts on employee performance. For future research it is recommended to consider other factors that also influence work motivation and employee performance such as leadership, work environment and work discipline. Future research can also broaden research orientation to the scope of larger organizations or larger populations.

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