



**SURAT TUGAS**  
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Dekan Fakultas Industri Kreatif dan Telematika dengan ini menugaskan kepada:

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Untuk melakukan publikasi artikel penelitian pada **The 2021 Asia Pacific Industrial Engineering & Management Systems 5th Webinar and Conference**, yang akan diselenggarakan Kamis – Jum'at, 2 – 3 Desember 2021.

Demikian surat tugas ini kami sampaikan, untuk dilaksanakan dengan sebaik-baiknya dan penuh tanggung jawab.

Jakarta, 01 Desember 2021



**Oki Kurniawan, S.Sn., M.Ds.**

**Dekan Fakultas Industri Kreatif dan Telematika**

**Tembusan:**  
Kepala Biro SDM, Etika dan Hukum



Asia Pacific Industrial Engineering & Management  
Systems

## **Certificate of Presentation**

*This is to certify that Nina Sariana  
presented the paper*

***“Scared of the Coronavirus disease Covid-19 risk? Avoid by using an online  
Fiqh learning management system”***

*at the*

*The 2021 Asia Pacific Industrial Engineering & Management Systems 5th Webinar  
On December 3rd - 4th, 2021 held online*

A handwritten signature in blue ink, appearing to read "Ming-Lang TSENG", written over a horizontal line.

*Ming-Lang TSENG*

*Chair Professor, Department of Business Administration,  
Director, Institute of Innovation and Circular Economy, Asia University, Taiwan*



***2021 Asia Pacific Industrial Engineering & Management  
Systems 5th Webinar  
(2021 APIEMS Online Symposium)***

December 3rd - 4th, 2021

"Industrial Engineering in Practices"  
[www.apiems2021.org](http://www.apiems2021.org)

**Conference Chairs**

**Ming-Lang Tseng**, Asia University, Taiwan

**Anthony SF Chiu**, De La Salle University,  
Philippines

**Remen CW Lin**, Asia University, Taiwan

**Mohd Helmi Ali**, Universiti Kebangsaan Malaysia

## **Table of Contents**

<i>Organizers</i> .....	<i>ii</i>
<i>International Advisory Team</i> .....	<i>iv</i>
<i>The 2021 APIEMS 5th Webinar Schedule</i> .....	<i>v</i>
<b>SESSION PROGRAM</b> .....	<b>vi</b>
<i>Conference chair</i> .....	<i>viii</i>
<i>Opening Remarks</i> .....	<i>x</i>
<i>Conference Keynotes</i> .....	<i>xi</i>
<i>Plenary Speaker</i> .....	<i>xii</i>
<i>Abstracts</i> .....	<i>1</i>

## Organizers

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## The 2021 APIEMS 5th Webinar Schedule

### Day 1: December 3rd, 2021

Time	
13:50-14:00	The online system will be open
14:00-14:10	Opening remarks: Prof. <b>Kono Hirokazu</b> President, APIEMS (2021 - 2022) Keio University, Japan
14:10-14:20	Opening remarks: Prof. <b>Chen Fu Chien</b> President, CIE Tsinghua University, Hsinchu, Taiwan
14:20-14:50	<b>Keynote Speaker:</b> Prof. Dr. <b>Kanchana Sethanan</b> Khon Kaen University, Thailand <i>Topic: IE at Work in Thailand</i>
14:50-15:20	<b>Keynote Speaker:</b> Prof Dr. <b>Charlle Sy</b> De La Salle University, Philippines <i>Topic: Integrating Uncertainty in Decision Planning Systems: A Target Oriented Robust Optimization Approach</i>
15:20-15:50	<b>Keynote Speaker: Assoc. Prof Dr. Yudi Fernando</b> Universiti Malaysia Pahang, Malaysia <i>Topic: The Implications of Industry 4.0 for Circular Economy-Based Reverse Logistics</i>

### Day 2: December 4th, 2021

Time	
08:20-08:30	The online system will be open
08:30-08:40	Welcome speech Yeneneh Tamirat Negash Department of Business Administration, Asia University, Taiwan Institute of Innovation and Circular Economy, Asia University, Taiwan
08:40-09:10	<b>Plenary Speech: Municipal solid waste management technological barriers under industry 4.0 practices</b> Dr. Tat-Dat Bui Institute of Innovation and Circular Economy, Asia University, Taiwan



**SESSION PROGRAM**  
**(Day 2: December 4th, 2021)**

*Parallel section I – Moderated by Raditia Yudistira Sujanto*

09:10-09:25	<b>APIEMS_2021_001:</b> Sustainable recycle packaging in Indonesian food and beverage industry: a consumption process integration
09:25-09:40	<b>APIEMS_2021_003:</b> A Spherical Fuzzy Subjective Weighting Method to Evaluate Critical Risks on Agribusiness Supply Chain Under COVID-19 Impacts
09:40-09:55	<b>APIEMS_2021_005:</b> Causality of circular business strategy under uncertainty in the seafood processing industry in Vietnam
09:55-10:10	<b>APIEMS_2021_007:</b> Nexus of Sustainable Social Supply Chain Practices, Local Supplier Development and Safety Performance
10:10-10:25	<b>APIEMS_2021_009:</b> Sentiment Analysis of 5G Implementation and Its Impact on Technological Developments in Jakarta using the Latent Dirichlet Allocation Model
10:25-10:40	<b>APIEMS_2021_0011:</b> Developing food and beverage corporate sustainability performance structure in Indonesia: enhancing leadership role and tenet value in ethical perspective
10:40-10:55	<b>APIEMS_2021_0013:</b> Hybrid approach to corporate sustainability performance in Indonesia's cement industry
10:55-11:05	<b>APIEMS_2021_0015:</b> internet of things technology for operational efficiency strategies in freshwater fish cultivation business in Indonesia
11:05-11:20	<b>APIEMS_2021_0017:</b> 3 dimensional object marketplace application design for building information modeling
11:20-11:35	<b>APIEMS_2021_0019:</b> Interplay between Supply Chain Visibility and Cyber Security Performance
11:35-11:50	<b>APIEMS_2021_0021:</b> AI-Improved in Identifying Chained Virus Transmissions for COVID-19
11:50-12:05	<b>APIEMS_2021_0023:</b> The Business Process of Domain Architecture Design on Electronic-Based Governance System in Bogor City
12:05-12:20	<b>APIEMS_2021_0025:</b> Augmented Reality Technology Development in Indonesia
12:31-12:45	<b>APIEMS_2021_0027:</b> Economic status grouping system using naive bayes algorithm in citizens of rt. 002 rw.04 kampung kekupu pancoran mas depok west java indonesia

*Parallel section II– Moderated by Vigi Ardaniah*

09:10-09:25	<b>APIEMS_2021_002:</b> Constructing the corporate sustainability transition practices within port and shipping industry: a hierarchical structure approach
09:25-09:40	<b>APIEMS_2021_004:</b> A Data-driven Analysis on a Hierarchical Circular Supply Chain Structure
09:40-09:55	<b>APIEMS_2021_006:</b> Exploration of Fishing Ground Model Combination of Backpropagation Neural Network and Generalized Additive - Genetic Algorithm
09:55-10:10	<b>APIEMS_2021_008:</b> LOW COST 2G TECHNOLOGY BASE ON GSM FOR INTERNET OF THINGS (IOT) APPLICATION
10:10-10:25	<b>APIEMS_2021_0010:</b> TIKTOK, A New Business Model That So Adorable
10:25-10:40	<b>APIEMS_2021_0012:</b> MULTIPLE CRITERIA TRANSPORTATION APPLICATION WITH FUZZY COST PARAMETERS USING GENETIC ALGORITHM
10:40-10:55	<b>APIEMS_2021_0014:</b> Analysis of Sharia Banking Management Strategies In The Digital Era
10:55-11:05	<b>APIEMS_2021_0016:</b> Trend Issue Artificial Intelligence for Industrial Engineering in Post Pandemic Covid-19 Era
11:05-11:20	<b>APIEMS_2021_0018:</b> Low Carbon Warehousing Practices and Its Challenges: Insights from Emerging Country
11:20-11:35	<b>APIEMS_2021_0020:</b> Green Technopreneurship: A Content analysis review using social network analysis
11:35-11:50	<b>APIEMS_2021_0022:</b> Scared of the Coronavirus Disease Covid-19 Risk? Avoid By Using an Online Fiqh Learning Management System
11:50-12:05	<b>APIEMS_2021_0024:</b> Evaluation And Monitoring Of Electronic-Based Government System Using Maturity Model E-Government (Case In Banten Regional Government)
12:05-12:20	<b>APIEMS_2021_0026:</b> Corporate Sustainability Transition in Indonesia Banking Industry: economic-environmental transition drives the socio-economy and socio-environment transition
12:20-12:25	<b>APIEMS_2021_0028:</b> Classification system of palawija plant potential using K-means method

## Conference chair



### ***Prof. Dr. Ming-Lang TSENG***

*Chair Professor, Department of Business Administration,  
Director, Institute of Innovation and Circular Economy (Ext. 1770), Asia University, Taiwan*



### ***Prof. Dr. Anthony Shun Fung Chiu***

*BSME MEng IE&M DBA PIE ASEAN ENG FAPIEMS  
University Fellow, Professor and Research Fellow, JM Reyes Professorial Chair, De La Salle  
University, Manila, Philippines*



***Prof. Chun-Wei Remen Lin***

*Distinguished Professor, Department of Business Administration, Asia University, Taiwan  
Director, Center for Creative Innovation and Leadership, Asia University, Taiwan,  
Vice-Director, Institute of Innovation and Circular Economy, Asia University, Taiwan*



***Assoc. Prof. Dr. Mohd Helmi Ali***

*Faculty of Economics and Management, Universiti Kebangsaan Malaysia.*

## **Opening Remarks**



***Prof. Dr. Kono Hirokazu***  
*President, APIEMS (2021 - 2022)*  
*Keio University, Japan*



***Prof. Chen Fu Chien***  
*President, CIIE*  
*Tsinghua University, Hsinchu, Taiwan*

## **Conference Keynotes**



***Assoc. Prof Dr. Yudi Fernando***  
*Universiti Malaysia Pahang, Malaysia*



***Prof. Dr. Charlle Sy***  
*De La Salle University, Philippines*



***Prof Dr. Kanchana Sethanan***  
*Khon Kaen University, Thailand*

**Plenary Speaker**



***Dr. Tat-Dat Bui***

*Associate researcher, Institute of Innovation and Circular Economy, Asia University, Taichung, Taiwan*

*Assistant professor, Department of Business Management, Asia University, Taichung, Taiwan*

## Abstracts

ID no. 001

### Sustainable recylcate packaging in Indonesian food and beverage industry: a consumption process integration

Chih-Cheng Chen<sup>1,2\*</sup>, Raditia Yudistira Sujanto<sup>2,3</sup>, Ming-Lang Tseng<sup>4,5</sup>, Anthony SF Chiu<sup>6</sup>,  
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#### Abstract

This study establishes a valid theoretical model for food and beverage sustainable packaging in Indonesia along with packaged product pre-, during-, post-consumption stages. Food and beverage product packaging dominates the total waste composition due to slow recycling rates and low recylcate supply, and packaging tends to be littered in the post-consumption stage. This study aims to address the sustainable packaging attributes and understand which consumption stage needs prioritizing for improvement. The hybrid method is employed, fuzzy Delphi method is to eliminate and validate the attributes. The interrelationships among attributes are examined and visualized using fuzzy decision-making trial and evaluation laboratory. The priority consumption stage is identified by applying Choquet integral method. The result shows that post-consumption stage fundamentally aims to address sustainable packaging. This study finds conservation proficiency, environmental communication, and cost consideration are the driving aspects in improving sustainable packaging. For practices, the top criteria are identified as recylates for packaging, multi-stakeholder interaction, waste disposal infrastructure, waste collection infrastructure and waste disposal management.

**Keywords:** *Sustainable packaging; consumption process; conservation proficiency; environmental communication; cost consideration; fuzzy decision-making trial and evaluation laboratory*

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ID no. 002

## Constructing the corporate sustainability transition practices within port and shipping industry: a hierarchical structure approach.

Taufik Kurrahman

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Keelung, Taiwan*

### Abstract

Port and maritime shipping are crucial for international logistics chains which also benefitted countries' economic growth. Although, port and shipping industry are fundamental for logistics chain; industrial; and economic, the tremendous environmental impact produced by immense port and maritime shipping is not negligible. Therefore, the port and shipping industry practices are required to be transformed from the traditional shipping perspectives into sustainable shipping operations. A corporate sustainability transition plays an essential role to balance the triple bottom line, added with the technological adoption to guide companies in shifting the conventional corporates' activities into sustainable practices. However, numerous criteria included in CST practices and the valid necessary criteria are unknown. This study aims to determine the valid CST attributes from qualitative information and construct a theoretical and hierarchical framework based on the attributes' causal relationship. This study applies the fuzzy Delphi method to validate the reliability of port and shipping industry measures and eliminates invalid and unnecessary CST criteria. Further, the fuzzy decision-making trial and evaluation laboratory method was used to remove the professional's subjectivity preferences on qualitative information, determine valid attributes, and establish a hierarchical model from the attributes' causal relationship. This study is expected to provides theoretical contributions for CST literature and practical contributions to port and shipping industry's decision makers.

**Keywords:** *Corporate sustainability transition, corporate sustainability, fuzzy decision-making trial and evaluation laboratory.*

ID no. 003

## A Spherical Fuzzy Subjective Weighting Method to Evaluate Critical Risks on Agribusiness Supply Chain Under COVID-19 Impacts

Phi-Hung Nguyen<sup>1,2\*</sup>, Kim-Anh Nguyen<sup>2</sup>, and Thi-Ly Nguyen<sup>3</sup>

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### Abstract

The outbreak of the COVID-19 pandemic has had severe impacts on the development of the global economy. This has resulted in the government's decisions on social distancing in many areas across the country. Consequently, agribusiness is unable to trade agricultural products while consumers struggle to buy food. This leads to an uneasy paradox due to COVID-19 travel restrictions and the suspension of the agriculture supply chain. This study proposes a Spherical Fuzzy Weighting Method based Analytic Hierarchy Process (SF-AHP) to investigate critical risks associated with the agribusiness supply chain under COVID-19 impacts and prioritize them appropriately towards better management. SF-AHP technique is applied to prioritize the identified criteria, which is consolidated with academicians and professionals' expertise. A set of seven main criteria are selected, including Supply-side risks (SR), Demand-side risks (DR), Operational risks (OR), Logistical/infrastructural side risks (LR), Financial-side risks (FR), Policy-side risks (PR) and Environmental and Biological risks (ER). The research results suggested that LR is the most important criterion, followed by market-related risks (SR, DR). Due to a lack of adequate transportation techniques, high transportation expenses, a lack of temperature-controlled trucks to transport goods, high road and bridge expenditures, and other factors.

Furthermore, PR is ranked highly because the government's policy has a significant impact on industry in preventing the spread of the COVID-19 pandemic. As a result, the study's findings can provide managers with a comprehensive view of agriculture supply chain risk reduction. This study may help managers share information on agricultural product processing from top to bottom to manage risk in the supply chain.

**Keywords:** *AHP, Supply Chain Risk, Agribusiness, COVID-19*

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ID no. 004

## A Data-driven Analysis on a Hierarchical Circular Supply Chain Structure

Hien Minh Ha<sup>1,2\*</sup>, Ming-Lang Tseng<sup>3,4,5</sup>, Thi Phuong Thuy Tran<sup>1,2</sup>, Tat Dat Bui<sup>3</sup>

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### Abstract

This study aims to construct hierarchical model for circular supply chain and the interrelationship within, then decisive attributes are determined; later, implications for theoretical circular supply chain, and circular supply chain practices expressing opportunities towards the accomplishment challenges are provided. The circular supply chain has received more attention in the recent years as a relevant solution to effectively tackle environmental problems while achieving economic and social benefits simultaneously. Still, holistic viewpoint on detecting the opportunities and challenges of circular supply chain and practices is deficient. To handle such a gap, a data driven combination of content and cluster analysis, fuzzy Delphi Method, fuzzy decision-making trial and evaluation laboratory, entropy weight method has been utilized. A set of attributes is criticized from the literature. There are five aspects and 23 criteria is validated. The results present that resource recovery implementation, Industry 4.0 and digitalization, reverse supply chain practice pertain to the causal group; while circular business strategy and life cycle sustainability assessment are included in the effect group. The conclusive criteria comprise material efficiency, waste-to-energy, machine learning, e-waste, plastic recycling, and artificial intelligence.

**Keywords:** *circular supply chain; cluster analysis; content analysis; Entropy Weight Method; fuzzy Delphi Method; fuzzy Decision-making Trial and Evaluation Laboratory*

ID no. 005

## Causality of circular business strategy under uncertainty in the seafood processing industry in Vietnam

Thi Phuong Thuy Tran<sup>1,2\*</sup>, Ming-Lang Tseng<sup>3,4,5</sup>, Hien Minh Ha<sup>1,2</sup>, Tat Dat Bui<sup>3</sup>

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*\*Corresponding author: tranthiphuongthuy.cs2@ftu.edu.vn*

### Abstract

The circular business strategy has increasingly attracted more notice as a proper solution to accomplish economic and social benefit as well as addressing the environmental issues with the ultimate target of zero waste. Yet, prior studies are lacking in determining circular business strategy attributes with the complete viewpoint and adequate measurement. To deal with such gap, this study aims to determine the decisive circular business strategy attributes, their interrelationships in view of sustainable balanced scorecard approach and examine zero waste practices at the firm level. A hybrid method, including the fuzzy Delphi method, fuzzy decision-making trial and evaluation laboratory, and Choquet integral is employed. From a set of attributes that is judged from the literature, five aspects and 20 criteria are validated. The results present that collaborative circularity, strategic internal process, and technology competency belong to the causal group whereas financial strategy and stakeholder integrity are involved in the effect group. The decisive criteria for the seafood processing industry encompass resource consumption minimization, waste minimization, clean technology, by-product marketplace, network development, and coordination upgradation. Two critical zero waste practices include reuse and recycle.

**Keywords:** *circular business strategy, sustainable balanced scorecard, Fuzzy Delphi method, Fuzzy decision-making trial and evaluation laboratory, Choquet integral*

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ID no. 006

## Exploration of Fishing Ground Model Combination of Backpropagation Neural Network and Generalized Additive - Genetic Algorithm

Mukhlis, S.Kom., MT.

*Computer Scinece, IPB University*  
*clisfadhlimumkhlis@apps.ipb.ac.id*

### Abstract

Potential fishing is a material or environment that is the target of fishing. The existence of fishing grounds in waters will always be dynamic, always changing or moving according to the movement of environmental conditions, which naturally means that fish will choose a more suitable habitat. Meanwhile, the habitat is strongly influenced by oceanographic conditions or parameters such as sea surface temperature (SST), salinity (SSS), sea level (SSH), depth, chlorophyll concentration (CHL-A), and Upwelling and Downwelling. Melting ice, then the input of fresh water from melting results in a low density, so this is not strong enough to move water downwards as the origin of the Ocean Conveyor Belt (OCB) which is the origin of the water masses that circle the world from these waters. The need to exploit marine resources in a lower cost-effective manner has created a strong need to save fuel and time in fishing activities and the burning of fossil fuels is the increase in carbon dioxide generation in the atmosphere and the onset of global warming.

Methods and models for predicting time-series environmental data to determine potential fishing globally with the Backpropagation Neural Netwok (BPNN), which is part of the Artificaial Neural Network, has developed in this study by training and testing in the 2014-2018 data set to produce an accurate environmental data prediction model. . then correlated with fishing point data using the Generalized Additiv Model (GAM) and Genetic Algorithm (GA) in the same area as the environmental data. Prediction of Fishing Areas (DPI) using environmental data, sst, ssh, sss and chl-a from Modis images from 2014 to 2018, around Banda Sea. The results of this study show that the correlation between environmental data models that produce future 90% predictions in weekly and monthly orders using BPPN and correlates with fishing point data from The Ministry of Marine Affairs and Fisheries produces a prediction of fishing areas.

**Keywords:** *Genetic Algorithm, Backpropagation Neural Network, Fishing Area, GA-GAM, Potential Fishing*

ID no. 007

## Nexus of Sustainable Social Supply Chain Practices, Local Supplier Development and Safety Performance

Munira Halili<sup>1\*</sup>, Yudi Fernando<sup>2\*</sup>, Ming-Lang Tseng<sup>3,4,5</sup>

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### Abstract

The purpose of this study is to develop a theoretical model that examines the effect of sustainable social supply chain practices on safety. The development of local suppliers has been identified as a mediating variable as a way to improve company's social performance. This study focused on manufacturing companies registered with the Malaysian Federation of Manufacturers. The 144 questionnaires data were analyzed using structural equation modelling. The findings show that sustainable practices have a significant impact on local supplier development. Furthermore, local supplier development mediated the relationship between sustainable social supply chain practices and safety. It also increases awareness of sustainable practices that can have a substantial impact on firms' attempts to implement safety measure, allowing decision-makers and industrial managers to examine the extent of positive influences on increasing companies' safety measure.

**Keywords:** *Supplier development, sustainable, social supply chain, manufacturing, supplier*

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ID no. 008

## LOW COST 2G TECHNOLOGY BASE ON GSM FOR INTERNET OF THINGS (IOT) APPLICATION

Gerry Firmansyah<sup>1,2</sup>, Budi Aribowo<sup>1,2</sup>

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### Abstract

The needs of the Internet of Things (IoT) nowadays is increasing in many sectors and industries, which means the need for electronic devices especially in wireless communication networking technology to support the IoT is increasing as well. One networking which still active today is GSM or Global System for Mobile Communication developed by European Telecommunication Standard Institute (ETSI). GSM knows as 2G technology and then develop as 2.5G GPRS (General Packet Radio Service) and 2.75G EDGE (Enhance Data Rates for GSM Evolution). To support the wireless technology, one company name SIMcom make device electronic modules and embedded in handphone or handset commercially. In Indonesia market at least there are 3 modules which can applied in 2G technology: SIM800L, SIM800 V2 and SIM900. SIM800 is the cheapest device, it is only Rp 35.000 or \$2.5 per part. But SIM800L needs a stepdown device if connected with the Arduino controller. Base on searching using Google Scholar with the keyword SIM800L in period 2018 until 2020 there are about 400 articles, it means the using of SIM800L module still needed for research and development of IoT

**Keywords:** *Internet of Things, GSM, 2G Technology, low cost, SIM800L Module*

ID no. 009

## Sentiment Analysis of 5G Implementation and Its Impact on Technological Developments in Jakarta using the Latent Dirichlet Allocation Model

Gerry Firmansyah<sup>1</sup>, Arif Pami Setiaji<sup>2</sup>, Eko Andrianto<sup>3</sup>, TB Fajri Mulyana<sup>4</sup>

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### Abstract

Communication media has experienced enormous technological advances in the last few decades, these rapid changes have an impact on the activities and routines of humanitarian activities and the way they see the world's changes that are very impactful, one of which is twitter which has become a huge resource for sentiment analysis and exploration. opinion data almost every day thousands of users are free to express their opinion on this social network. In this study, we analyze and classify the sentiments of joint publications that have the hashtag "#technology, #5G, #jakarta" as positive, negative or neutral. We used Google Cloud Sentiment Analysis with Latent Dirichlet Allocation (LDA) Model and we obtained a classification model with 90.09% accuracy and recall, also applied Latent Dirichlet Allocation to detect topics. The results show that it is possible to identify the main factors regarding public opinion in the acceptance or rejection of 5G technology, this information can be useful for technology companies especially in Jakarta.

**Keywords:** *Twitter, Sentiment Analysis, Technology, 5G*

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ID no. 010

## TIKTOK, A New Business Model That So Adorable

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### Abstract

As a new business model, Tiktok, does not only carry music video content but can also carry advertising video content. Yes, Tiktok is now the newest e-commerce platform that is very much loved by millennials. Lots of interesting and funny content that can entertain you. Tiktok also provides freedom with certain rules in accommodating millennials in making video content. With the above reason, it makes us to raise the theme of this writing so that the Indonesian people know more about the e-commerce platform that is currently viral in our homeland. As for the purpose of this paper is to give a new perspective to the public about the meaning of added value in introducing the new concept of advertising. And also wants the public to understand how the Tiktok algorithm works so that many people watch the video content that is made, so that it can boost sales of products promoted through the Tiktok video. The research method that we use in this paper is descriptive analysis. Through that method, we distribute questionnaires using Google Form media to connect with TikTok users in Indonesia. and based on the results of the questionnaire analysis, we found that there are still many tiktok users who do not know how to use tiktok as an e-commerce platform. they only know that tiktok is only used for creative video uploading purposes.

**Keywords:** *Tiktok, e-commerce, new business model, creative industry, content creator, small business.*

ID no. 011

## Developing food and beverage corporate sustainability performance structure in Indonesia: Enhancing leadership role and tenet value in ethical perspective

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### Abstract

This study aims to develop a corporate sustainability performance structure of hierarchical 51 attributes, as well as the decisive attributes that forces successful corporate sustainability. These 52 studies contribute to the corporate sustainability performance literature by offering new 53 theoretical angles as a hierarchical structure and the causal linkages among the attributes. 54 Practical guidelines are provided to the Indonesian food and beverage industry; thus, help to 55 archive firm's performance and competitive advantages. The food and beverage industry are the 56 second largest contributor to Indonesian's economy; however, most of the firms significantly 57 negatively impact to the ecological and economy performance, and corporate sustainability 58 performance is considered for significantly improvement. Fuzzy Delphi method develops a valid 59 structure for food and beverage industry in Indonesia and fuzzy decision-making trial and 60 evaluation laboratory addresses the causal effect of corporate sustainability performance. In 61 additions, the fuzzy kano model is to find out the decisive attributes to enhance the corporate 62 sustainability performance in practices. There are nine aspects and 35 criteria derived from triple 63 bottom line and firm ethics perspectives; in which, eight aspects and fourteen criteria remain 64 accepted as validated structure. The result shows that leadership role, tenet value, human 65 potential development, and environmental impact, are the causing aspects, and the role of 66 ethical issues is confirmed though the leading of leadership role and tenet value aspects. The 67 eco-friendly reward system, return on equity, quality management systems, reduced costs are 68 decisive criteria to improve the corporate sustainability practices.

**Keywords:** *Corporate sustainability performance; firm ethics; tenet value; leadership role; fuzzy decision-making trial and evaluation laboratory; fuzzy kano model*

ID no. 012

## Multiple Criteria Transportation Application With Fuzzy Cost Parameters Using Genetic Algorithm

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### Abstract

The design and implementation of a software used as a tool aid to create a multiple criteria transportation model which is equipped with a fuzzy cost parameter by using genetic algorithm, has been made. This software is called TraFAG.

Waterfall methodology, which comprised of analyzing, designing, implementing and testing processes, was used in the software engineering. The algorithm used in these processes is a genetic algorithm. It is based on the genetic processed of living creatures, that is, generation processes in a natural population which ultimately follow selection principles, or where it is only the strong that will survive. In the transportation system, the impacts of transportation causes uncertainty on some or all coefficients of the objective functions, such as transportation costs or delivery time becomes unclear. One way to deal with uncertainty in making such decision is by using fuzzy principles. The parameters of the fuzzy costs on TraFAG uses Triangular Fuzzy Number (TFN). In multiple criteria optimizations, the decision of optimum value uses Pareto solution. Pareto Solution is determined on the basis of ordered values of fuzzy destination. The comparison and order of the fuzzy values uses integral values. The TraFAG software is applied in the programming language environment of Borland Delphi Version 7.0 one that is developed from Pascal for Window based programming environment.

The solution of multiple criteria transportation problem can be solved by heuristic approach using genetic algorithm. The analysis of programme value shows that the process on evaluation case will straight proportional with the result of the multiplication of the source of depot total and the destination depot with the correlation coefisien 0.93. The analysis also shows that the amount of population is straight proportional/linear to each of the case evaluation towards the process time with correlation coefisien 0.96. Parameter  $\alpha$  shows the optimism degree will influence the result of the integral value linearly. The higher of the  $\alpha$  value, so the cost of transportation is the bigger. It is better to choose the  $\alpha$  with has value 0.5, which has moderate value in order that it will be in safe condition. The  $\alpha$  which produces minimum cost for the evaluation case 2 up to 6 is 0.1. The bigger of the population amount has inclination smaller of its fitness function. The bigger amount of the generation so the transportation cost will be smaller. The value which is gotten is in relative average stable in the generation over 500. The crossover probability influences to the fitness function. In case 15 and 17 the crossover probsbility causes the value of the fitness function minimum 0.1. Transfer transportation has more influence to the fitness function. In case 2 causes the trasfer transportation stable with the fitness value 47.65.

**Keywords:** *Genetic Algorithm, Fuzzy Logic, Transportation Problem, Waterfall, Multiple Criteria.*

ID no. 013

## Hybrid approach to corporate sustainability performance in Indonesia's cement industry

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### Abstract:

The objective of this study is to create a solid framework for decision-making in Indonesia's cement industry, emphasizing those factors which bring about the most impactful results. The framework was developed using the fuzzy Delphi method, the fuzzy decision-making trial and evaluation laboratory, and a fuzzy Kano model. This study builds a hierarchical structure to approach the impact of corporate sustainability performance. We classify important factors into causes or effects and further identify those factors which are critical to improving the performance of Indonesia's cement industry. Although corporate sustainability performance is a crucial topic in today's business environment, sustainability strategies remain underrated in Indonesia. We confirm the validity of 19 factors within the following dimensions: environmental impact, social sustainability, economic gain, technological feasibility, and institutional compliance. The sub-dimensions of community interest, risk-taking ability, and regulatory compliance were identified as causes of perceived risks and benefits. In contrast, the following factors were identified as critical to improving corporate sustainability performance: renewable energy resources, contributions to charity, the perception of management regarding technology as a differentiator, and firm readiness to collaborate with high-tech companies.

**Keywords:** *corporate sustainability performance; technological feasibility; cement industry; fuzzy Kano model; fuzzy decision-making trial and evaluation laboratory*

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ID no. 014

## Analysis of Sharia Banking Management Strategies in The Digital Era

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### Abstract

The purpose of this study is to analyze the management strategy of Islamic banking in Indonesia in the face of the Digital Era 4.0. This research method uses mix method namely quantitative analysis using bibliometric methods by evaluating previous research. While the qualitative analysis uses a content analysis approach. The research data is secondary data obtained from the emerald journal, google scholar and electronic data on social media. The results of the study prove that not many researchers have conducted research on Islamic banking management strategies to face the digital era. Most of the research found on service quality, financial technology and mobile banking. This means that the research was conducted partially on Islamic banking management. Based on the qualitative analysis, it is proven that Islamic Banks in Indonesia do Changes to external services based on Digital technology in order to adopt the needs of the community or customers who are starting to change from manual to digital services. Making internal and external changes to the information system that refers to the Digital-based internal service system in order to achieve operational efficiency and effectiveness and meet the needs of the millennial community. Changing organizational culture, namely making fundamental changes to the work culture from manual to digital systems, thus requiring massive and structured socialization, education and training. Recruiting Millennial Generation who are competent, creative and innovative in order to adopt future needs which are expected to continue to change.

**Keywords:** *Digital Era, Management Strategy, Financial technology*

ID no. 015

## Internet of Things Technology for Operational Efficiency Strategies in Freshwater Fish Cultivation Business in Indonesia

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### Abstract

Indonesia has great potential for the freshwater aquaculture industry, as seen in a case study of freshwater aquaculture in Gresik, East Java. Freshwater aquaculture is dominated by pond media technology. The activities of the freshwater aquaculture industry are dominated by four things: water temperature monitoring, medium acid quality, fish feeding, and aerator activation. Regarding observational studies, it was found that operational data was manually performed manually and was not widely used due to automated technology. Through this research, monitoring and automation systems based on the measurement of the Internet of Things (IoT) have been developed. The IoT system in this study was used to monitor water temperature, automatically feed fish, and activate aerators. The results comparison method is used to determine the impact of installing an IoT on cultivated land in a pond. The measurement of the comparison results is based on two data parameters: power consumption, internet data cost, and operating cost of wages. From the results of the measurement activities, it can be calculated that the efficiency of power consumption is about 40% when using the IoT system. Looking at the pre-introduction costs of IoT technology, we found that the reduction in operating costs for labor costs was about 37%. Physical analysis of measurement results is known to reduce the cost of power waste caused by human negligence due to the presence of IoT and automation technologies. Internet technology support provides benefits for monitoring work processes, allowing quality control to be determined as the freshwater aquaculture industry achieves its goals. The conclusions drawn from this study show that the implementation of IoT and automated instrumentation systems can contribute to the energy efficiency and operational maintenance of Indonesia's freshwater aquaculture.

**Keywords:** *Automation; Internet of things; the freshwater aquaculture; efficiency; monitoring system.*

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ID no. 016

## Trend Issue Artificial Intelligence for Industrial Engineering in Post Pandemic Covid-19 Era

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### Abstract

The Covid-19 pandemic has changed the way everyone works. Within the existing limitations, the business must continue to run. The use of Artificial Intelligence is one of the main solutions in industrial engineering. For those who struggle and win in using Artificial Intelligence, those who rule the industry. This paper describes the application of Artificial Intelligence in the engineering industry adapted to the COVID-19 pandemic. First, briefly explain the position of the engineering industry in this era. Second, the trend issue of Artificial Intelligence which is widely used by the engineering industry today. Lastly, the trend issue in the era of the covid-19 pandemic and in the post-covid-19 era.

**Keyword:** *trend issue, Artificial Intelligence, Industrial Engineering, Pandemic Covid-19*

ID no. 017

### 3 Dimensional Object Marketplace Application Design For Building Information Modeling

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#### Abstract

Building Information Modeling (BIM) is the process of creating a 3D digital model or virtual building. BIM contains useful information for planning, designing, implementing, and maintaining the building and its infrastructure. The BIM application in a project is a combination of the results of several conventional software, which can be broken down into several parts so that they can be reused. Therefore, the BIM object becomes a commodity in designing BIM. Indonesian building developers haven't provided BIM objects and there are difficulties in finding objects in a BIM design. The BIM 3-dimensional object marketplace application is developed to meet these needs. This application is designed using the waterfall method. The software is built using MySQL, PHP, and the Laravel framework. This application helps simplify the distribution process of BIM objects needed in the process of creating BIM from designer vendors to prospective buyers.

**Keywords:** *Information System, Marketplace, Building Information Modeling.*

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ID no. 018

## Low Carbon Warehousing Practices and Its Challenges: Insights from Emerging Country

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### Abstract

This study aims to identify the issues and challenges for the manufacturing industry to adopt low carbon warehousing. This paper has utilized the cross-case analysis, and data were collected from various manufacturing industries operating in Malaysia, such as aerospace, automotive, and electrical and electronic. Face-to-face semi-structured interviews and telephone calls were used to collect the data. The findings reveal that all companies have shown proactive action on low carbon warehousing. Even though the low carbon warehouse practices are only partially involved, the company has put more effort into considering low carbon warehouses in their company. The study contributed to the practical understanding of the issues and challenges in adopting low carbon warehouses in Malaysian manufacturing; hence, it provides useful insights for the industry on low carbon warehousing practices. This study investigated the low carbon warehouse (LCW) practices and its challenges in adopting it from emerging country perspective. The result will fill in the gaps in the literature because previous studies focus on wide-ranging area of low carbon process in supply chain from a multidisciplinary approach.

**Keywords:** *Low carbon warehousing, Sustainability, Cross Case Analysis, manufacturing, qualitative research*

ID no. 019

## Interplay between Supply Chain Visibility and Cyber Security Performance

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### Abstract

Manufacturing industry is highly targeted and susceptible to cyberattacks given its interconnected and global supply chain that is rich with design, customer, and financial data. Hence, this study was undertaken to examine if the cyber supply chain risk management (CSCRM) practices adopted by firms can protect their supply chain from intrusions and how effective their practices are in securing their CSC. In addition, the role of CSC visibility as a mediator in achieving CSC performance was also tested. A survey method was used to gather data from E&E manufacturing firms that were registered with Federation of Malaysian Manufacturers (FMM). A total of 130 respondents' data was analyzed using IBM SPSS 24 and PLS SEM 3.3.3 tools to answer the research objectives stipulated. This study managed to prove empirically the integral role a dedicated governance team can bring into setting the security tone within its CSC. The result from the study also confirms the significant role that CSC visibility plays in achieving CSC performance. Moreover, there is also a strong direct relationship between CSC visibility and CSC performance as theorized, giving affirmations to manufacturing firms that investments and policies devised to improve CSC visibility will fare well in a secure supply chain. Thus, manufacturing firms need to fully evaluate its network perimeter and prioritize integration effort and governance of standards and policies that would improve its visibility among its supply chain partners, both internally and externally. Inherently, this implies assessing the cybersecurity maturity level of its supply chain partners, beyond first tier suppliers, in their ability to protect integrated devices and remote-access connections from being exploited

**Keywords:** *Cybersecurity, Supply chain visibility, Supply chain risk management, Cyber supply chain, CSCRM*

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ID no. 020

## Green Technopreneurship: A Content analysis review using social network analysis

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### Abstract

Aware the important of the success of new start-up business which not only able to manage the business properly, the experience and technical knowhow also equality plays important role. Unfortunately, the technical based entrepreneurs and they intention are not well discussed in the literature. The aim of this paper is to explore the concept of green technopreneurship and its past, current, and future direction. The debate on technopreneurship intention has expanded, however, a systematic review of lessons learned, and future research opportunities is not cover widely. This study has conceptualized the technopreneurship based on a review of the literature and social network analysis. The data has processed English articles published by multiple databases found through the Web of Science and Scopus. We reviewed, collected, and sorted articles from 2755 publications and then identified 669 as being relevant to the research scope. The implication of this study is the young green technopreneurs could be comprehends talents and skills in larger sector with their expertise and subsidies from the authority of policymaker or investor from big companies. The entrepreneurs should have proper retirement planning to ensure their interest achieved and their decision to manufacture the green products not wasted by hanging it in laboratory. The high risky investment needs more resilient. Paradoxically, we find the engineers find limited ways to implement the green business without the government aid.

**Keywords:** *Green Technopreneurs, Green Business Green Technological business, Green Technology, Technopreneurship*

ID no. 021

## AI-Improved in Identifying Chained Virus Transmissions for COVID-19

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### Abstract:

COVID-19 became a global pandemic; In my country, Indonesia, there are 3 types of test in identifying our body whether get infected or not from the virus, which are Polymerase Chain Reaction (PCR), Rapid Test, and Molecular Rapid Test (MRT). Since coronavirus has been starting to infect many people, some big organizations here try to start developing a tool how to identify our body get infected or not accurately and also quickly. Indeed, the Rapid Test, and also the TCM are enough faster than the PCR tool, but the accuracy of those tests is not much well because the most results of the test show as “false negative”. It means the negative result shown because our antibody is still not fully formed. Is it allowed to be used if I make some changes to that “Rapid Test” tool combine with technology, especially using AI-improved to process each data from the blood samples taken from patients? AI-improved tool would be used for many hospitals when need it, and it would be the more accurate quicker than others. With algorithm, all unpredictable samples can be diagnosed in detail also more quickly. First of all, for the prototype, I’ll be using a scanning tool integrated with AI processing. Images which have been analyzed with the improvement AI looking for many differences accurately will be delivered to my device give the result quicker automatically. The development of this tool will always be on progress to make it.

**Keywords:** *AI-improved, COVID-19, scanning tool, algorithm*

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ID no. 022

## Scared of the Coronavirus Disease Covid-19 Risk? Avoid by Using an Online Fiqh Learning Management System

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### Abstract

The application of the learning management information system can be used in managing materials, assignments, and assessments properly. So it is expected that the material, assignments, and lesson assessments from students are not easily lost and can be read by students anywhere and anytime. However, this complexity in the learning process can be overcome by using a computer-based online learning management system. The purpose of this research is that teachers and students can carry out the online learning process. It can also be used in implementing health protocols, thereby reducing the rate of transmission of the COVID-19 coronavirus disease. This research is field research with the population of the academic community of Madrasah Ibtidaiyah Darul Ulum Jakarta, namely a principal, five teachers, thirty homeroom teachers, thirty students, and two administrative staff. The approach used in this research is to use descriptive analytic by conducting interviews and survey results in the form of a questionnaire. The Fiqh learning management system model provides convenience for the academic community. This model is used to implement health protocols to reduce the transmission rate of the COVID-19 coronavirus.

**Keywords:** *Information Communication Technology, Management Information Systems, Online Fiqh Learning, Viruscorona Disease COVID-19*

ID no. 023

## “The Business Process of Domain Architecture Design on Electronic-Based Governance System in Bogor City”

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### Abstract

The purpose of the business process of domain architecture design is to assist the regional units in the Bogor City environment to improve the quality of Electronic-Based Governance System (Indonesia SPBE) implementation in their work environment. The governance will encompass an efficient, effective, transparent, and accountable work processes, as well as improving the quality of public services in the integrated Indonesia SPBE implementation. The used methodology is the enterprise architecture, especially Indonesia SPBE architecture framework that based on Presidential Decree of Indonesia No. 95 year 2018 and the obtained findings are the results of the Indonesia SPBE evaluation year 2019 of the Bogor City, namely the policy is still not good. Therefore, the limitation of the discussion is only on mapping the substance of the business process policy of Bogor City. The contribution of the paper is the initial reference for defining an Indonesia SPBE governance that ensures the implementation of regulation, direction, and control in the integrated implementation of Indonesia SPBE.

**Keywords:** *SPBE, business process, e-government, enterprise architecture.*

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ID no. 024

Evaluation and Monitoring of Electronic-Based Government System Using  
Maturity Model E-Government  
(Case in Banten Regional Government)

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**Abstract**

Utilization of information and communication technology in the implementation of the current government process is a priority scale that needs to be continuously developed by the government. In 2019, the ministry of PANRB carried out SPBE evaluation activities through the SPBE independent evaluation method carried out by the internal evaluators of ministries, institutions and local governments, and the document evaluation method conducted by external evaluators. The purpose of the 2019 SPBE evaluation is to find out the progress of SPBE implementation in central and regional government agencies and improve the quality of the implementation of the electronic-based government System. In its implementation there is a problem that is the lack of an evaluation process carried out, especially at the level of local government towards the use of information and communication technology. The purpose of this research is to evaluated of an electronics-based governance system by measuring the maturity level. Measuring the maturity level on the technical function capability using e-government maturity models and assessing 3 domains, 7 aspects and 35 indicators contained in an electronic based governance system. The research method used is survey method, in the environment of regional government of Banten. The results of this research showed that the implementation of an electronic based government system in the regional government of Banten achieve enough predicate with a total index value of 1.83. Some indicators that have the lowest indeks value from the measurement and assessment results are informed in this study to further become recommendations for improvement the utilization of information and communication technology by the regional government of Banten.

**Keywords:** *evaluation, information technology, public service, maturity level.*

ID no. 025

## Augmented Reality Technology Development in Indonesia

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### Abstract:

Two of the world's leading IT companies, Apple and Google, decided to seriously maximize the potential of making Augmented Reality (AR). The main reason these two companies made this decision because AR becomes a technology that continues to develop in the future. Apple has put AR as a core technology in developing its products to develop. Not only Google and Apple, but also Facebook which has officially changed its name to Meta, is also serious about maximizing the potential of AR. Meta will focus on a platform with Virtual Reality (VR) and Augmented Reality (AR) technologies that help connect all users and grow businesses. In addition to the three leading IT companies, AR technology has also been applied by other companies such as social media Instagram, Dulux, IKEA, GAP, Amazon, Sephora and others. The above cases indicated that currently the world is entering the fourth century in the era of the industrial revolution. In Indonesia, President Joko Widodo represented the country has committed to implementing Industry 4.0 which was marked by the launch of "Making Indonesia 4.0" in April 2018. Then how is the development of AR technology in Indonesia? How has it been implemented? In this study, the development of special AR technology in Indonesia will be discussed. A literature study will be carried out so the data can be presented.

**Keywords:** *Augmented Reality, Technological developments in Indonesia.*

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ID no. 026

## Corporate Sustainability Transition in Indonesia Banking Industry: economic-environmental transition drives the socio-economy and socio-environment transition

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### Abstract

This study contributes to develop a valid set of corporate sustainability transition and finds the cause-and-effect interrelationships among the proposed attributes in qualitative information. Corporate sustainability transition in Indonesia is a complex and long-term process involving multiple dimensions, institutions, and multi-interactions. Prior studies lack of addressing the technology dimension which is considered as a catalyst for corporates to arrive at corporate sustainability. The technology is needed to be coordinated with triple bottom line dimensions in assessing the corporate sustainability transition as this coordinated triple bottom line and technology provides an impact in attaining the corporate sustainability transition. This study applies the fuzzy set theory and decision-making trial and evaluation laboratory to handle the linguistic preference and interrelationships among attributes. A sensitivity analysis is performed. The sensitivity is performed using alpha-cut method. The results show the economic-environmental and techno-environmental transition are the cause aspects affecting the socio-environmental transition, while the techno-economic transition slightly influences the socio-technological transition, socio-economic transition, and socio-environmental transition.

**Keywords:** *Corporate sustainability transition; coordinated triple bottom line; fuzzy set theory; decision-making trial and evaluation laboratory; sensitivity analysis*

ID no. 027

Economic status grouping system using naive bayes algorithm in citizens of RT.  
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#### Abstract

Decision support system is a system that can assist users in choosing the best decision solution. This study discusses the feasibility of citizens in getting assistance from the government during a pandemic like this. In collecting data on residents who deserve or do not get assistance, the naive Bayes method uses the naive Bayes method with 3 criteria, namely dependents, home status and type of work. With this application, it is hoped that it will make it easier for Wisma data officers to collect data on residents who are entitled or not to receive assistance in the area of RT.06 RW.05 Pejaten Barat Village, Pasar Minggu District. The purpose of this study is to design a data collection system for residents who deserve or do not receive assistance by using the naive Baiyes method using the Hypertext Preprocessor (PHP) programming language and MySQL as the database. In this study, using the naive Baiyes method can help speed up data collection from before which still uses manual data collection.

**Keywords:** *Decision Support System, Help, Naïve Baiyes, Hypertext Preprocessor (PHP), MySQL.*

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ID no. 028

## Classification system of palawija plant potential using K-means method

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### Abstract

The palawija plant is one type of plant that is very much needed, because its nutritional content is very beneficial for humans and livestock. Therefore, palawija plants are one of the main targets for business people or investors in the agricultural sector, especially knowing how much potential the various types of crops will be used as a consideration for their management, apart from that it also affects the government's strategy in improving the regional economy. . The amount of data from each palawija plant that must be reviewed annually becomes difficult when it is only obtained and calculated manually. Therefore, this study applies a classification system to easily determine the potential of each secondary crop. The method used in this classification system is K-Means which will group the data into three predetermined clusterings. Among them are clustering 1 (High), clustering 2 (Medium), clustering 3 (Low).

**Keywords:** *Potential of Palawija Plants, Classification System, K-Means Clustering*

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