The 5th ICST 2020
International Conference on Science and Technology

THEME:
"SCIENCE AND SMART INNOVATION TECHNOLOGY FOR NEW NORMAL CONDITION IN INDUSTRIAL ERA 4.0"

PROGRAM BOOK
DECEMBER 14TH, 2020
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Assalamu’alaykum Warahmatullahi Wabarakatuh,

On behalf of Organizing Committee, it is our great pleasure to welcome you to the 5th International Conference on Science and Technology (ICST 2020) which be held virtually in Universitas Mataram. This conference is an annual platform that brings scientists from academia and industry together to share and discuss current research in the theme of Science and Smart Innovation Technology for New Normal Condition in Industrial Era 4.0. The call for papers attracted abstract submissions from United Kingdom, Iraq, South Korea, Malaysia and Indonesia. The accepted papers cover a variety of topics including Applied Technology, Health, Natural Science, Agriculture and Environment, and also Socio-Technology and Education.

We encourage all the conference delegates to attend the keynote and invited talk presentations. These valuable and insightful talks can and will guide us to a better understanding of the Science and Smart Innovation Technology for New Normal Condition. We also encourage for all authors to actively participate in the parallel session which is relevant with the interest of coverage topic in this conference.

I would express my deep gratitude to all the authors who submitted their papers to the conference and all the participants who assisted in accomplishing the goals of the conference. We hope that you will find this conference interesting and that it will provides you with a valuable opportunity to share ideas with others.

I also would like to express sincere thanks to all committee members especially organizing committee for their tremendous teamwork effort in making the event a reality. My sincere gratitude also goes to Rector of Mataram University and Head of Research Institute and Community Services and for their continuous support throughout the preparation for this successful event.

Yours sincerely,

Dr. Buan Anshari
Chairman of the 5th of ICST 2020
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19. Dr. Ir. Siti Hilyana, M.Si. (Universitas Mataram)
20. Dr. Ir. Satrijo Saloko, MP. (Universitas Mataram)
21. I Wayan Sudiarta, Ph.D. (Universitas Mataram)
22. Dr. Saprizal Hadisaputra, S.Si., M.Sc. (Universitas Mataram)
23. Dr. Gunawan, M.Pd. (Universitas Mataram)
24. Dr. Sitti Latifah, S.Hut., M.Sc.F. (Universitas Mataram)
25. Dewi Satria Elmiana, S.Pd, M.Pd.,Ph.D. (Universitas Mataram)
    (Universitas Mataram)
27. Dr. apt. Agriana Rosmalina Hidayati, S.Farm., M.Farm.
    (Universitas Mataram)
## Schedule of The 5th International Conference on Science and Technology 2020 (The 5th ICST 2020)

<table>
<thead>
<tr>
<th>Time (WITA)</th>
<th>Programme</th>
<th>Zoom Link</th>
<th>Person in Charge</th>
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<td>07:30-08:00</td>
<td>Registration</td>
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<td>Report -Chairman</td>
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<td>Opening Remark-Rector</td>
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<td>09:00-09:40</td>
<td>Prof. Dr. Takaomi Arai</td>
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<td>09:40-10:10</td>
<td>Dr. M. Lutfi Firdaus</td>
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<td>Discussion</td>
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<td>10:20-11:00</td>
<td>Dr. Ali Sophian, C.Eng.</td>
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<td>11:00-11:40</td>
<td>Dr. Zulkifli Mohamed</td>
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<td>11:40-12:20</td>
<td>Prof. Dr. Eng. I Gede Pasek Suta Wijaya</td>
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<td><strong>Break</strong></td>
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<td><strong>13:30-17:00</strong></td>
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<td><strong>Break</strong></td>
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<td><strong>16:00-17:50</strong></td>
<td><strong>Parallel Session 2</strong></td>
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<td>17:50-18:00</td>
<td>Closing Ceremony and Best Presenter Award</td>
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<td>MC: Shinta D Fajarica, M.Si.</td>
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## Schedule of Parallel Session

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<th>Natural Science</th>
<th>Agriculture and Environment</th>
<th>Socio-Tech and Education</th>
<th>Miscellaneous</th>
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<td>Zoom Link NS</td>
<td>Zoom Link AE</td>
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<td>Zoom Link M</td>
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<td>IS: Assoc. Prof. Dr. Mohd RRMA Zainol</td>
<td>IS: Dr. Ir. Rini Puspitaningrum, M. Biomed.</td>
<td>IS: I Wayan Sudiarta, Ph.D.</td>
<td>IS: Fitrio Ashardiono, Ph.D.</td>
<td>IS: Dr. rer. pol. Eko Agus Prasetio, ST., MBA</td>
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**Break (15:30-16:00)***
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<td>13:00-13:15</td>
<td>Invited Speaker</td>
<td>Assoc. Prof. Dr. Mohd RRMA Zainol</td>
<td>Integrated Smart Trapper System: Way Forward</td>
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<td>13:55-14:05</td>
<td>AT4</td>
<td>Wini Lestari, Buan Anshari, Jauhar Fajrin, Pathurahman and Suparjo</td>
<td>Numerical Modelling of Double Shear Timber Connection Using Bamboo Dowel Fastener with Adhesive Coated</td>
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<td>14:05-14:15</td>
<td>AT5</td>
<td>Reno Siska Syafilina and Zaini Zaini</td>
<td>Communication Radio Utilization as Data Transmitter of Earthquake Victim's Condition on Evacuation Point</td>
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<td>14:15-14:25</td>
<td>AT6</td>
<td>Rahmad Hidayat, Buan Anshari, Aryani Rofaida, Pathurahman and Suparjo</td>
<td>Numerical Modelling of Double Shear Timber Connection Using Wood Dowel Fastener with Adhesive Coated</td>
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<td>AT7</td>
<td>Suryawan Murtiadi, Akmaluddin Akmaluddin and Ni Nyoman Kencanawati</td>
<td>Effect of Polypropylene Fibres on Unrestrained Early Age Shrinkage of Concrete and Long-Term Performance Subjected to Fire</td>
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<td>14:45-14:55</td>
<td>AT8</td>
<td>I Kade Wiratama, I Gusti Ngurah Yudhiadi and Chandra Hadinata</td>
<td>Aerodynamic Analysis NREL-Series Airfoil In Different Reynold Number Using Computer Fluid Dynamic (CFD)</td>
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<td>14:55-15:05</td>
<td>AT9</td>
<td>Galuh Zeindyningrat</td>
<td>Modelling of Glulam Beams with Finger Joint Toward Bending Strength</td>
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<td>15:05-15:15</td>
<td>AT10</td>
<td>Sukiman Nurdin, Irdhiani Irdhiani, Stephanus Alexander, Astrid Rahayu and Sriyati Ramadhany</td>
<td>The Effect of The Thermal Processing on The Changes of Physical and Mechanical Behavior of Peat Soil in West Donggala, Central Sulawesi</td>
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<td>15:30-16:00</td>
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<td><strong>Break</strong></td>
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<tr>
<td>16:00-16:15</td>
<td>Invited Speaker</td>
<td>Dr. rer. Nat Arifudin Idrus, ST. MY, IPU</td>
<td>Ore Mineral Resources in Indonesia: Potential Optimalisation to Achieve Sustainable Development Goals in the Mining Industrial Era 4.0</td>
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<td>Dr. Ir. Rini Puspitaningrum, M. Biomed</td>
<td>Blood gas analysis of Bajau tribe (Sea Nomade) divers in Kera Island, Kupang, Indonesia</td>
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<td>Mohammad Rizki, S.Ked. SpP.K</td>
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**Break**

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Abstracts of Keynote Speakers
Diverse migration and habitat use of tropical anguillid eels of genus Anguilla

Takaomi Arai

Environmental and Life Sciences Programme, Faculty of Science, Universiti Brunei Darussalam, Jalan Tungku Link, Godoing BE 1410, Brunei Darussalam, *takaomi.arai@ubd.edu.bn

ABSTRACT  Freshwater eels of the genus Anguilla, which have a unique catadromous life history, are widely distributed across many parts of the world. However, little research has been conducted on the behavioural mechanisms of habitat segregation between sympatric species in tropical anguillid eels. The diverse migratory patterns and habitat choice between marine and freshwater environments by the tropical anguillid eels were examined by analysing the otolith strontium (Sr) and calcium (Ca) concentrations collected in Southeast Asian waters. The wide range of otolith Sr:Ca ratios indicated that the habitat use of the tropical anguillid eels was opportunistic among fresh, brackish, and marine waters. The otolith Sr:Ca ratios recently revealed different habitat use between sympatric two species, A. bicolor bicolor and A. bengalensis bengalensis in Malaysia. The broad range of otolith Sr:Ca ratios and habitat shift found in A. bicolor bicolor suggested that its habitat utilization was opportunistic in environments of varying salinity. A. bicolor bicolor prefers to live in the midstream to downstream areas with tidal influences. A. bengalensis bengalensis, however, was found to only reside in freshwater environments throughout their continental growth. A. bengalensis bengalensis tends to live in upstream area with no tidal influence. Their habitat use, migratory history, and habitat distribution indicate that habitat segregation occurs between the two species, leading to the different habitat preferences in tropical river systems. Several tropical anguillids would have the same behavioural plasticity as temperate anguillid species regarding whether to enter freshwater or to remain in estuarine and marine environments. Anguillid eels migrate flexibly among freshwater, brackish water, and seawater environments and it is now evident that their movement into freshwater is not an obligate migratory pathway but should be defined as an opportunistic catadromy, with marine and estuarine residents as ecophenotypes.

(Keywords: anguillid eels, habitat use, migration, otolith micro chemistry, resources, tropical waters)
Digitalization of Aquaculture & Environment Smart

Zulkifli Mohamed

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ABSTRACT  Industrial Revolution 4.0 (IR 4.0) and Internet of Things (IoT) is accepted worldwide due to its benefits and advantages. Industries like automotive, manufacturing and health has already embraced the features available in IoT and integrates it with their current monitoring system. In Malaysia, aquaculture and agriculture’s technology advancement is still falling slightly behind its neighbouring countries due to a combination of external factors. But as of today, both aquaculture and agriculture industries have started to join the IoT bandwagon for remote monitoring purposes. The same goes for public sector organization, for instance Fire Department and Rescue. Positive outcomes are evident from IoT projects conducted in the industries and organization mentioned above. However, the journey towards full IoT implementation requires prudent consideration and endless commitment from all related parties mutually. It is hope that the implementation of IoT in these industries serve as a stepping-stone for IoT implementation in other sectors.

(Keywords: digitalization, internet of things, Industrial Revolution 4.0, aquaculture, smart monitoring)
IR 4.0 And Its Applications in Non-Destructive Testing (NDT)

Ali Sophian

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ABSTRACT The fourth industry revolution, or IR 4.0, has seeped into the national policy of many governments all over the world, thanks to its perceived importance and relevance for both economic growth and sustainable development. With the advancement of internet connectivity, big data and cloud computing, IR 4.0 has promised fresh improvement and innovation to bring the automation of manufacturing industry to the new level. It is also believed that the technologies supporting IR 4.0 will also enhance non-destructive testing (NDT) in many ways, which, in turn, will lead to increased product quality, better safety and improved sustainability. This presentation will highlight some of the state-of-the-art research on this subject and briefly discuss how it will project into the future.

(Keywords: non-destructive testing, NDT, IR 4.0)
The Emerging Digital-image Colorimetry for Chemical Compounds Analysis

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ABSTRACT  Recent decades have seen a dramatically accelerating pace in the development of science and technology. In analytical chemistry, the use of digital-image colorimetry is also increasing rapidly, as an alternative method for determining the concentration of chemical compounds. Digital-image can be obtained from various tools such as ubiquitous smartphone, digital cameras, scanners, etc. By utilizing the principle of colorimetry, the change of color intensity in the digital-image is linearly proportional to the change of chemical compounds concentration in the sample, so that we can determine the concentration of analyte in sample using the prepared calibration curve. Digital-image colorimetric analysis has several advantages over conventional methods. The advantages include economical in cost, simpler in operation, and portable. Furthermore, we have developed several smartphone applications to improve the portability of the detection system so that this analytical method can be used in remote areas with limited resources. In this presentation, we will provide several examples of the digital-image colorimetry application to analyze inorganic and organic compounds. Gold and silver nanoparticles have been used as the colorimetric agents that provide a selective color effect on the analyte of interest. In addition, chromogenic compounds can also be used as colorimetric agents for various analytes.

(Keywords: : digital image, colorimetry, gold nanoparticles, silver nanoparticles, smartphone application)
Artificial Intelligence and Its Application to Support Smart Society

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ABSTRACT Currently, the world is in the era of industrial 4.0 and society 5.0. Both of these conditions place artificial intelligence (AI) as the backbone for developing various automated products to support human works or needs. Moreover, Society 5.0, which was launched in Japan in 2017, emphasizes the aspects of a super-smart society that utilizes key technologies: the Internet of Things (IoT), Artificial Intelligence (AI), Big Data, and Robotic. For example, how the drones are utilized to help the elderly / people meet their needs and AI-based Health System to support the elderly or people's need. Therefore, research in the field of AI application in order to support Society 5.0 is a necessity. Several studies have been carried out, mainly based on the needs of Lombok Island people. Those studies include: firstly, the application of AI for diagnosing plant diseases to support a smart agricultural system; secondly, AI application for damage building assessment; and thirdly, the application of AI for Ear, Nose, and Throat (ENT) image analysis to support the ENT disease diagnosis system that can be applied to the public medical center (Puskesmas). The research's main objective is to support the needs of the community 5.0, especially in Lombok island. The types of AI being developed are expert systems, learning machines: Support Vector Machine (SVM), Artificial Neural Network (ANN), and Convolutional Neural Network (CNN). Based on the research results, several mobile applications with accuracy above 80% have been developed, such as Porn-Away, Crack Analyzer, and Smart ENT Tool. These results still have to be developed and synergized with various science fields to produce a tool/application that can be applied in society.

(Keywords: industry 4.0, society 5.0, artificial intelligence, machine learning, and mobile application)
Abstracts of Invited Speakers
Integrated Smart Trapper System: Way Forward

Mohd Remy Rozainy Mohd Arif Zainol1) 2) 3)*, Mahyun Ab Wahab4), Choong Wee Kang5)

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5) Department of Civil Engineering, University of Nottingham Malaysia Campus, 43500, Semenyih, Selangor, Malaysia

ABSTRACT   Rubbish in the storm water system includes human-derived rubbish such as paper, plastic, polystyrene, glass and metal. Besides that, organic materials such as leaves, branches and twigs are usually can be found in the storm water. This debris deteriorates the quality of storm water mainly because of illegally dumped into the drainage and waterway system. This will lead to flooding at the surrounding area. Although, the factor is a minor contribution towards flooding but if all the system is undergoing the same problem, it might become a major problem in the future. Furthermore, the existing trapper system has many weaknesses that can produce major problem for debris control in the river or drainage system. A good mitigation measures should be applied to overcome these problems so that all the debris can be handle more efficient. Many types of trappers are available in the market with different functionality for different situation and location. Without any proper management, the accumulation of rubbish will increase from time to time due to illegally dumping from industrial and commercial sites. New improvements and combinations have been made and new innovative product has been invented which known as Integrated Smart Trapper System or INSMARTS.

(Keywords: Clean water; smart trapper; hydraulic physical model; INSMARTS)
Towards Sustainable Rural Communities: Utilizing the Terroir Approach in Agroecology

Fitrio Ashardiono

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ABSTRACT  Contemporary agriculture production relies on both extensification and intensification approaches in the cultivation process to significantly increase the production yield and standardizing the quality of agriculture products. While these approaches might help farmers and producers to gain better economic conditions, these approaches require a lot of resources to sustain their production and to a certain extent, it is environmentally unsustainable and contributing to the disintegration of the local ecological system. As observed in several case studies, through the use of the terroir approach, farmers and producers will be able to utilize the available resources from the local ecological system more effective and optimal, thus incorporating the local characteristic to further improve the quality of their agricultural products. Using the terroir approach farmers and producers can shift their production focus to produce higher quality agriculture products that have additional values, opening new market possibilities, and further improving their economic conditions. A comprehensive understanding of the characteristics and influence of the local ecological system will further enhance the rural communities’ awareness of local climatic issues and global environmental changes.

(Keywords: Terroir, Sustainable Agriculture, Rural Communities, Agroecology, Climate Change)
A Proposed Framework for Sustainable Government Policy Implementation: Lessons-learned from Indonesian Industry 4.0 Case

Eko Agus Prasetio¹*, Dedy Sushandoyo¹, Alma Kenanga Attazahri¹, Hakiim Rachman Noor¹, Yoshiyuki Matsuura²

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¹) Graduate School of Innovation and Technology Management, Yamaguchi University, 2-16-1 Tokiwadai, Ube, Yamaguchi 755-8611, Japan

ABSTRACT Industry 4.0 is a global emerging concept to fast-track technological capabilities. In terms of setting a national strategy, the government has a major role that needs to be unfolded. In this study, we analyze Industry 4.0 from the government’s perspective using a case of the “Making Indonesia 4.0” program. As a form of policy implementation, the program involves several stages, including pilot projects with selected manufacturing companies and different stakeholders, which presents its own challenges. By employing a case study method, we analyze the Indonesian government step-by-step strategy, identify important factors, and eventually propose a sustainable government policy implementation to ensure the continuity of the program or policy. Several factors are found to be important during the implementation: the role of the government, condition and response of each company, incentives given to the company, and stakeholder engagement and collaboration. We propose that to sustain the policy, the government has to have a progressive mindset, design a strategy that has a feedback mechanism to ensure evaluation and learning, have a certain degree of generality and specificity to each company’s characteristics, as well as provide a staging mechanism to transfer the responsibility from the government to each company throughout the program. The findings can contribute to policy implementation context, government-related studies, and present practical knowledge in designing a sustainable policy implementation.

(Keywords: government intervention, policy implementation, Industry 4.0, Indonesia)
Ore Mineral Resources in Indonesia: Potential Optimalisation to Achieve Sustainable Development Goals in the Mining Industrial Era 4.0

Arifudin Idrus

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ABSTRACT It is widely known that Indonesia is one of the richest countries hosting various ore mineral resources. Several major deposits include nickel, bauxite, tin, copper and gold. Indonesian nickel ore is estimated to be 11.8 Bt resources and 4.6 Bt reserves, the biggest in the world. Nickel is mainly produced from Sulawesi and eastern Indonesian islands. Tin is mostly hosted by Bangka, Belitung and numerous small tin islands, with the total of resources and reserves is estimated to be 10.8 Bt and 2.3 Bt, respectively. Copper and gold endowment of Indonesia reveals the biggest in SE Asian countries and top ten in the world with a total of 64.8 Mt copper and 7.311 t gold which is distributed along 5 major magmatic arcs. To implement Paragraph 3, Article 33 of UUD 45 Constitution and the Law No. 3 2020 which coincides with the achievement of Sustainable Development Goals, three main programs in mineral sector are proposed including (a) mineral conservation, (b) development of derivative minerals/elements, and (c) mineral downstream policy. Implementation of those programs will lead the achievement of at least three SDGs mainly (1) affordable and clean energy (from mineral to be green energy, such as nickel, cobalt, lithium, REE and other CRMs), (2) industry innovation and infrastructure, and (3) responsible consumption and production. In line with the SDGs achievement, RPJMN (2020-2024) also supports this UN Agenda, to transform the mineral potential for economic growth and greatest prosperity of the people, and to support industrial revolution Era 4.0 particularly in mining industry.

(Keywords: Mineral, SDGs, Mining Industry 4.0, Indonesia)
Untapped Bioenergy Resources Around Us: Case Studies of West Sumatra

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ABSTRACT  The Government of Republic of Indonesia has set out to achieve 23% renewable energy utilization target from the total energy mix by 2025. However, up until the first semester of 2020, the use of renewable energy was still around 11%. Bioenergy is one among the renewable energy resources that increases significantly in its use, particularly due to biodiesel blending mandatory for public service obligation, i.e. subsidized petro-diesel fuel. At the moment all subsidized petro-diesel fuel sold in Indonesia has 30% biodiesel content, and will further increased to 40% in 2022 at the latest. Unfortunately, biodiesel in Indonesia is produced by using palm oil as its feedstock that could lead to the expansion of oil palm plantation areas in order to fulfil the increase demand of biodiesel due to higher biodiesel blending policy. In order to accelerate the increase of bioenergy use, some other bioenergy resources must be taken into consideration, namely, non-edible plant oil and waste cooking oil for alternative biodiesel feedstock, and agricultural waste for household cooking fuel. This paper will show the potential use of non-edible plant oil, waste cooking oil and agricultural waste that have already been investigated in West Sumatra Province.

(Keywords: bioenergy, West Sumatra, renewable energy, biodiesel, biopellet)
Blood gas analysis of Bajau tribe (Sea Nomad) divers in Kera Island, Kupang, Indonesia


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ABSTRACT  The Bajau (sea nomade) is a famous tribe in Indonesia. Bajau has physiological adaptation through extreme environmental condition. This study aimed to analyse the Bajau arterial blood gas. The method used in this research is the descriptive method. The 21 people of Bajau divers who live in Kera Island, Kupang District, East Nusa Tenggara, were selected randomly in aged 15-62 years old. The 5cc of blood samples was obtained from each respondent using heparin syringe. The blood sample was analyzed for arterial blood gas (ABG) analysis in Siloam Hospital, Kupang. The diving activity and health conditions data were obtained through in-depth interview. The data were analyzed by descriptive. It was found that the average ABG (pH, PCO2, HCO3, PO2, SatO2, and Hb) results still inside the range of normal human ABG, but several values need to be considered. Further study about molecular related adaptation in Bajau divers is needed to detect hemoglobin, HIF, and myoglobin protein expression in normoxic and hypoxic Bajau divers.

(Keywords: Bajau, Blood Gas, HIF, Hypoxic, Myoglobin)
Leucaena (*L. leucocephala*) – an environmentally friendly solution to the low cattle productivity in the dry land

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**ABSTRACT**  
Productivity of cattle has been generally lower in the the dry areas of the world due to lack of high quality feeds. Leucaena is the real magic tree that can survive and produce high quality cattle feed in the dry land. It has very high protein content (almost three times higher that the protein content of most grasses) that promotes high cattle growth rate. Bali cattle (*Bos javanicus*) can double their growth rate (from 0.2 kg/day to 0.4 – 0.6 kg/day) when the cattle are fed at least 60% leucaena in the diet. It also reduces the production of methane (due to binding more hydrogen into propionate, a glucogenic volatile fatty acid. In addition, Leucaena is good a sequester of carbon in the trunk even when the leaves are harvested for feed, so reducing the greenhouse gas emission to the environment. Since it’s introduction in Indonesia in 2011, Leucaena based feeding system has been adopted in Sumbawa island. A similar adoption rate also occurring in the West and East Timor. The high adoption rate has been due to its immediate impact on improving cattle condition and therefore improving selling price. Its additional positive impacts include the better meat quality due to faster growth so the cattle can be slaughtered at younger age. With appropriate post slaughter treatment, this special beef from the Leucaena based cattle fattening system has been a candidate of a unique premium local beef in Indonesia.

*(Keywords: cattle growth, dryland, environment)*
Implementing Open-Source Technology in Academic Hospital: Universitas Mataram Hospital Experience

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\textbf{ABSTRACT} Industrial era 4.0 poses both challenges and opportunities for academic hospitals. As we know, healthcare industry is an ever-evolving industry that savor advancement of science and technology. During this COVID-19 pandemic, our hospital implements more open-source technology compared to pre-pandemic time. We cross path with open-source technology in a good way as early as 2016 when we first implement open-source hospital information system. The operating system, database, and application are all open-source. During COVID-19 pandemic we implement open-source digital image storage and communication, 3D printing technology, and open-source electronic prototyping platform to support our work in maintaining patient care, laboratory testing, radiology, and laboratory management. Interestingly, we find out that the use of open-source technology in our hospital also opens a door for future collaboration beyond our hospital, and even beyond our university. We believe that in new normal condition there will be more innovations in our hospital due to open-source technology implementation.

\textbf{(Keywords:} open-source technology, healthcare industry, academic hospital, collaboration, innovation)
Finite Difference Time Domain (FDTD) Method for Solving the Schrodinger Equation

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ABSTRACT The finite difference time domain (FDTD) method is introduced and formulated. The FDTD method has been applied to solve the Schrodinger equation (SE) for various cases. There are two forms of FDTD method used depending on the temporal variable: (1) real time and (2) imaginary time. The real time FDTD method can be used to simulate evolutions of quantum systems or to solve the time-dependent SE. The imaginary time FDTD method is for solving the time-independent SE and also suitable for obtaining equilibrium thermodynamic properties of quantum systems. The FDTD method has advantages over other numerical methods such as ease and simplicity in computer programming and also applicable for problems with complex geometries or irregular potentials.

(Keywords: FDTD Method, Solution of Schrodinger Equation, Evolution of Quantum Systems, Thermodynamic Properties)
Abstracts of Participants
Phytochemical Screening and Antifungal Activity in Vitro of Sweet Potato (*Ipomoea batatas* (L.) Lamk) Leaves Against *Malassezia furfur*

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**ABSTRACT**  Malassezia furfur is a lipophilic fungus that is normally present in the skin, but under certain conditions can cause various types of clinical diseases, such as versicolor tinea, seborrheic dermatitis, dandruff, and other superficial fungal infections. The study aims to screening phytochemicals on purple sweet potato leaf extract and fractions and test antifungal activity against *Malassezia furfur*. Material and methods: 100 grams of dried powder purple sweet potato leaves macerated with 96% ethanol. The obtained macerate evaporates its solvent with rotavapor. Ethanolic extract obtained was further fractionated with aquadest, hexane, ethyl acetate and butanol successively. The fractions obtained were removed solvent by using rotavapor and freeze dryer (water fraction). Extract and fractions were analyzed phytochemically to determine secondary metabolite compounds using simple screening test and TLC methods. Extract and fraction of sweet potato leaves with various concentrations tested its antifungal activity against *Malassezia furfur* using well-diffusion agar method with medium test PDA-olive oil and incubated at 35°C for 3 days. Results showed that extract and fractions of sweet potato leaves contain secondary metabolites of alkaloids, flavonoids, tannins, phenols, saponins, steroids and glycosides. Ethanolic extract, ethyl acetate fraction and water fraction have strong antifungal activity depending on the concentration while the n-hexane and butanol fractions have weak antifungal activity. Conclusion : the results demonstrated that extract and fractions of purple sweet potato leaves contain various secondary metabolite compounds and have antifungal activity against *Malassezia furfur* depend on concentration.

(Keywords: extract, fraction, *Malassezia furfur*, phytochemical screening, purple sweet potato leaves)
Identification and Capacity Analysis Retention Pond for Flood Control With Environment-Friendly in Mataram City

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ABSTRACT  Flood control in the city of Mataram is still conventional by building drainage channels that drain water into the river and will increase river water discharge, while the cross-sectional capacity of the river tends to remain. The new paradigm in flood control is to make efforts to accommodate excess water in a place without causing disturbance, one of which is by building a retention pond. This is not only an effort to control flooding but also as water conservation. The purpose of this research is to determine the location of the appropriate retention pond construction based on technical considerations and to analyze the effectiveness of the retention pond in reducing the surface runoff discharge in Mataram City. This research was carried out in several ways, namely: data collection, determining the location of the retention pond, analyzing hydrology, planning the retention pond, and analyzing the effectiveness of the retention pond in reducing flood discharge. With technical considerations and survey results, three retention ponds were planned in the city of Mataram, namely: Retention Pond A1 on Jl. Ahmad Yani, Bertais, A2 Retention Pool on Selagalas, and the A3 Retention Pool on Jl. Transmigration, Pejanggik. The effectiveness of the retention pond plan in reducing flood discharge is as follows: A3 retention pool is 33.86%, retention pond A1 is 12.47%, while retention pool A2 is 7.29%. With the retention pond, it is hoped that the flood problems in the city of Mataram can be reduced and can utilize surface runoff for groundwater conservation, so that flood control is carried out with an environment-friendly.

(Keywords: flood, retention pond)
Etnhoscience Based Chemical Module Development by Raising The Habits of Salt Farmers

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**ABSTRACT** This study aims to obtain a valid and practical chemistry learning device based on ethnoscience emphasizing by raising the habits of salt farmers. This study refers to the 4D model from Tiahgrajan, S. Semmel & Semmel which was modified into three stages, namely define, design, and develop. The module development results, which were validated by a team of chemical education experts at University of Mataram, were then analyzed using the Aiken's V formula, which was adjusted to the table of validation results criteria. Practicality test using the student response questionnaire sheet. The validation results show that the ethnoscience-based chemistry module component is in a very suitable category for use with the acquisition of a content validity value of 0.91. The results of the limited trial showed the students' response was 3.00 was in a good category, and the implementation of learning by 3.10 was in the practical category. The result showed that the development of ethnoscience based chemistry modules were valid and practical for use in learning.

*(Keywords: Ethnoscience, Chemical module, Salt)*
Chemical Literacy on Competency Aspect Through Guided Inquiry Learning with An Etnosains Approach

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ABSTRACT This study aims to determine students' chemical literacy skills in the competency aspect through guided inquiry learning models with an ethnoscience approach. The quasi-experimental research with one group pretest-posttest design was conducted on 64 students of class XI MIA SMAN 3 Mataram who were divided into experimental classes using guided inquiry models with an ethnoscience approach, and control classes using inquiry models only. Chemical literacy data were collected through multiple choice tests and analyzed using the N-gain test. The results showed that the chemical literacy abilities of students were included in the moderate criteria, the chemical literacy in the experimental class was higher than the control class. The ability and scientific investigation of the two classes are included in the high category, while the ability to explain phenomena scientifically, interpret data and scientific evidence for the experimental class is included in the moderate category but in the control class is the low category. The conclusion of this study is that the guided inquiry learning model with the ethnocentric approach can improve students' chemical literacy.

(Keywords: Inquiry learning model, ethnoscience, chemical literacy)
The Ability of Elementary School Teachers to Algebra: The Impact of the Implementation of the Horizontal-Vertical Mathematical Approach in State Elementary School 72 in Bengkulu City (Community Service Activities)

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ABSTRACT This community service activity aims to improve the mathematics skills of SD Negeri 72 Bengkulu City teachers towards Algebra through a horizontal-vertical mathematical approach. The methods used are training and mentoring. Training of SDN 72 teachers on developing Algebraic abilities through the Horizontal-Vertical Mathematics approach which was held in odd semester 2020-2021. Training on the horizontal-vertical mathematics approach was held on October 6, 2020, while teacher mentoring was held on November 16, 2020. The training and mentoring participant were 23 teachers of SDN 72 Kota Bengkulu. The results of community service activities are as follows: a. The teacher’s ability to algebra is 84.375, b. The teacher’s ability to apply the horizontal-vertical mathematical approach in mathematics learning is in the good category.

(Keywords: Teacher ability, Horizontal-vertical approach)
The Role of Family Planning Field Assistants in The Implementation of The Family Planning Program During The Covid-19 Period

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ABSTRACT Based on the results of the 2017-2018 competency tests, the professional ability of family planning field assistants is more than the average in Mataram City of 84.62%. So that researchers are interested in researching one area of the city of Mataram, namely in Monjok Village, Selaparang District, Mataram City. This study aims to determine the role of family planning field assistants in the implementation of the family planning program during the Covid-19 period. The method used in this research is a descriptive qualitative method. The research approach used in this research is ex-post facto with the type of phenomenological research. The informants in this study were family planning field assistants. Data collection using interview sheets, and data analysis with four steps, namely data collection, reduction, display, and drawing. The results obtained are 1) The role of family planning field assistants in managing the implementation of family planning programs during the Covid-19 period 2) The role of family planning field assistants in empowering families and communities in family planning programs during the Covid-19 period, 3) The role of family planning field assistants in building partners for the implementation of family planning during the Covid-19 period. The part of family planning field assistants during the Covid-19 pandemic towards new-normal living habits is crucial. There is a need for socialization and training on information technology to be able to increase family planning acceptors actively.

(Keywords: family planning field assistant, family planning, covid-19)
The Differences of Satisfaction Between National Health Insurance and General Patients in Public Hospital, Wangaya Denpasar

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ABSTRACT   In the JKN era, hospitals were required to be able to provide quality services for patients. The continuity of JKN, which has been mainly in hospitals, still reaps pro and contra, related to the stigma on the quality and level of satisfaction of JKN participants. This study aim to determine the differences in the satisfaction level of JKN patients with general patients at Wangaya Hospital. This research is an analytic observational study using a cross sectional approach. The sample size from JKN patients was 81 respondents, while general patients were 19 respondents. The results of the analysis using Chi-Square, it was obtained p value of 0.153 (p> 0.05) which indicated that there was no difference between JKN patient satisfaction and general patient satisfaction. There is no difference in patient satisfaction between JKN participants and general patients because the services provided by health workers are fair and do not differentiate between patient status. This shows that JKN patients have the same rights as general patients, and vice versa, general patients have the same rights to obtain satisfactory health services from the hospital. Wangaya Denpasar Hospital needs to maintain the quality of service to patients so that patients will feel satisfied.

(Keywords: Satisfaction, Patient, JKN, Hospital)
Performance Evaluation of Amarsvati Condominium Hotel Building Structure Using Pushover Analysis Based on Indonesia Newest Seismic Code

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ABSTRACT  Earthquake is one of the natural disasters that are very dangerous for human survival, therefore it is necessary to mitigate disasters, one of them is by evaluating the performance of building structures, evaluating the performance of building structures is aim to minimize the risk caused by earthquakes. Based on the Performance-Based Evaluation Design, buildings are evaluated using pushover analysis. Pushover analysis is one method of building evaluation, in pushover analysis which is necessary to notice input data such as dead load, live load, and earthquake load. The result of pushover analysis is a capacity curve that connects the base shear force and roof displacement and describes the state of the structure. In this study, the evaluation was conducted on Amarsvati Condominium Hotel Lombok. The purpose of this evaluation is to determine the performance of building structures with SNI 1726: 2019 and to determine the mechanism for the occurrence of plastic hinges in building structures. The results of the pushover analysis are that the performance level of the building is Life Safety, wherein in this condition, there is damage to structural components, stiffness is reduced, but still has a sufficient threshold for collapse.

(Keywords: earthquake, pushover analysis, performance level)
Experimental Study on The Effect of Variations in The Mass of The Waste Exhaust Valve Ballast and The Distance of The Waste Exhaust Valve on The Performance of The Ram Hydraulic Pump

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ABSTRACT

One of the most appropriate technologies needed to supplying and distribute water is a ram hydraulic pump. The ram hydraulic pump is one type of pump where the driving energy comes from the pressure or impact of the water itself which enters the pump through the conduit pipe. The movement of water coming from the water source in the delivery pipe to the pump must continue to run continuously. The ram hydraulic pump has advantages over other types of water pumps: no lubrication, simple construction, simple manufacture and maintenance. In addition, the pump is able to work 24 hours per day. Two things can affect the efficiency of the ram hydraulic pump, namely the mass of the waste exhaust valve ballast and the distance of the waste exhaust valve. In this study the weight of the waste exhaust valve ballast used varied 61 grams, 71 grams, and 81 grams, at variations in the waste exhaust valve distance of 50 mm, 75 mm, and 100 mm, where the height of the fluid input was constant 1 m, the height of the fluid output was constant 4 m., 1 piece of waste exhaust valve, and 0.0027 m3 constant air tube volume. From the results of the test, the results of the calculation and the results of the discussion, the highest flow rate value of the hydraulic ram pump is 1.72 liter/minute and the highest efficiency value is 89.11% at the heaviest waste exhaust valve ballast mass 81 grams and at the shortest waste exhaust valve distance 50 mm.

(Keywords: ram hydraulic, mass, distance, performance)
OPTIMIZATION OF EPOXY SYNTHESIZED FROM NYAMPLUNG OIL

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ABSTRACT Epoxy has a wide range of applications, such as stabilizer, plasticizer, and lubricant. Generally, epoxy is synthesized from petroleum which is a nonrenewable resource. Epoxy is also synthesized from edible vegetable oil such as palm oil and corn oil, however the use of edible oil will cause a high demand for those oils. Therefore, in this study, non-edible vegetable oil (nyamplung oil/Calophyllum inophyllum) was used as raw materials to synthesize epoxy through chemical epoxidation reactions using formic acid and H₂O₂ with H₂SO₄ as a catalyst. The purpose of this study was to determine the optimum conditions for epoxy synthesized from nyamplung oil. The variables observed were temperature, reaction time, and molar ratio of formic acid and H₂O₂. The epoxy was characterized using FTIR, oxirane oxygen value, iodine value, and viscosity. The C=C epoxy was detected at 824,98 cm⁻¹. The optimum conditions to obtain the epoxy were 450°C of temperature, 6 hours of reaction time, and 1:3:6 (mole/mole) of molar ratio of nyamplung oil, formic acid and H₂O₂. Iodine value obtained was 13,32 mg iod/100 g, viscosity was 30,56 cP, and oxirane oxygen value was 3,74% with the relative conversion to oxirane 76,79%.

(Keywords: Epoxy, Epoxidation, Nyamplung Oil)
The Application of Online Learning in The Thematic Learning Development Course in The Elementary School Teacher Education Program of Bengkulu University

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ABSTRACT

The purpose of this study was to improve student pedagogical competence through the use of the Youtube application in the environmental theme integrative thematic learning development lecture in the PGSD study program, Bengkulu University. This type of research is classroom action research. The data collection technique used the learning device assessment sheet and the teaching simulation observation sheet. Data were analyzed descriptively qualitatively. The results showed that the students were able to design, implement and evaluate thematic learning with environmental themes. The conclusion is by using the youtube application in thematic learning development lectures, it can improve the pedagogical competence of elementary students in the PGSD Study Program, Bengkulu University. Students become more confident in learning practices. In addition, the student's ability to edit videos and utilize technology and information is getting better.

(Keyword: Youtube application, learning, pedagogic competence)
Identification of 13\textsuperscript{th} July 2019 Sumbawa Earthquake Source using Double Different Method

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**ABSTRACT** Sumbawa district is located in an area which is prone to earthquakes due to the existence of subduction, local fault, and back arc thrust. M 5.5 earthquake occurred in Southern Sumbawa in 13\textsuperscript{th} July of 2019 and followed by several aftershocks. In this study, we conducted hypocenter relocation using double difference method for understanding the source of the event. We used P and S arrival time data of local seismic station with azimuthal gap <210°. The dataset also limited by earthquakes which occurred in Southern Sumbawa between 13\textsuperscript{th} July 2019 to 13\textsuperscript{th} September 2019, because we assumed the aftershocks ended in 2 months. The method shows good result, because the histogram of travel time residual is mostly close to zero. The distribution of relocated earthquake also indicates better hypocenter location and seismicity. Then, we used relocated data to analyze earthquake source. Cross section of relocated earthquake shows that this sequence occurred next to subduction slab model. The result has good agreement with source mechanism of mainshock which indicate thrust fault.

(**Keywords:** earthquake relocation, double difference, source mechanism)
Bicycle Lanes Development Plan in Mataram City

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**ABSTRACT** Mataram City Government had established a bicycle lane at Udayana Street as an alternative for all community to change their motorized transport mode to bicycle as a mode of daily transport. and to support the NTB Cycling program from NTB Provincial Government. To support the changing mode of transportation from motorbikes or cars to bicycles, the development of bicycle lanes in Mataram City is needed especially in one network on the provincial road. To analyze the impact of the development planning of bicycle lanes on roads, intersections with Traffic Signal Signaling Tool (APILL) and the network was used PTV Visum and Vissim program. SWOT analysis is used to identify the strengths, weaknesses, opportunities, threats, and strategies of bicycle path development planning. Vissim software was used to forecast the impact of bicycle lane development at 9 provincial roads as the study area. The results of the simulation indicate that by the implementation of bicycle lane development; there is a decrease in the level of service based on Volume per Capacity Ratio of what?. In addition, signal intersections show an increase in queue length and vehicle delays. To minimize the impact of bicycle lane development, mitigation is carried out by rearranging the intersection cycle time. Based on SWOT analysis, the results reveal that the implementation of bicycle lane can affect respondent behavior to use bicycles is the existence of integrated route of bicycle lane with public transport service and supporting facilities (parking area, changing rooms) also regulations.

*(Keywords: bicycle lanes planning, non-motorized transport, vissim,vissum)*
The Ability of Elementary School Teachers to Algebra: The Impact of the Implementation of the Horizontal-Vertical Mathematical Approach in State Elementary School 67 in Bengkulu City (Community Service Activities)

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**ABSTRACT**

This community service activity aims to improve the mathematics skills of SD Negeri 67 Bengkulu City teachers towards Algebra through a horizontal-vertical mathematical approach. The methods used are training and mentoring. Training of SDN 67 teachers on developing Algebraic abilities through the Horizontal-Vertical Mathematics approach which was held in odd semester 2020-2021. Training on the horizontal-vertical mathematics approach was held on October 6, 2020, while teacher mentoring was held on November 16, 2020. The training and mentoring participants were 23 teachers of SDN 67 Kota Bengkulu. The results of community service activities are as follows: a. The teacher’s ability to algebra is 84.375, b. The teacher’s ability to apply the horizontal-vertical mathematical approach in mathematics learning is in the good category.

(Keywords: Teacher ability, Horizontal-vertical approach)
Numerical Modelling of Double Shear Timber Connection Using Bamboo Dowel Fastener with Adhesive Coated

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ABSTRACT Wood and Bamboo as building materials is very promising for now and future. As a renewable resources they have high mechanical properties, lightweight, environmentally friendly and economic. Utilization of bamboo as fastener in wood connection is rarely published. The double shear connection is an attempt to increase the stiffness of the wood member, especially in connection of truss connection, in general, the connection uses bolts or nails as a connector. However, the use of metal has an adverse impact such as in the manufacturing process could produce pollution and is a non-renewable material. With this condition, the use of connecting devices from natural materials such as bamboo coated with adhesive is an attractive choice. Modelling by numerical method becomes one way to get information other than doing experiments in the laboratory. One of the numerical modelling based finite element software is ABAQUS/CAE 2017 which uses to carry out modelling. Modeling the strength of the connection with angle variations including 0°, 30°, 45°, 60°, and 90° with a bamboo dowel fastener with a diameter of 14 mm and a hole diameter of 16 mm, the gap between the dowel and holes is filled by epoxy adhesive. Then the test results of connection strength from the numerical model will be compared with the result of the experiments test and theoretical calculations based on SNI 1793:2013. This study shows that numerical modelling results agree with the experiment work and theoretical calculations. The result of numerical modelling compare with experimental results and theoretical calculation were acceptable with about 5.79% and 7.82% difference respectively.

(Keywords: connection strength, double shear connection, bamboo dowel, adhesive, Abaqus)
Communication Radio Utilization as Data Transmitter of Earthquake Victim's Condition on Evacuation Point

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ABSTRACT One of earthquakes' effects is destruction of communications infrastructure which resulted interruption of communications. Communication radio is infrastructure that has the ability to survive in such conditions and can send the data to a long range distance. Based on the statement above radio communication can be main information exchange tool when a disaster occurs. Information on the disaster's location can be sent through radio to rescue team. Information exchange could be done with NRF24L01 module and LoRa (Long Range) to send the data remotely. Victims can activate the NRF24L01 Module to send information in the form of identity numbers and victim's condition when they arrived at the location of evacuation. Then LoRa will resume sending the data to rescue team headquarters. The Data received by rescue teams can be used as a decision-maker immediately to distribute first-aid and medical treatment. Based on the research that has been done, NRF24L01 can receive 4-6 data in one time with single-node communication and LoRa can send data in the range of 500 meters with Non-Line of Sight. But it takes multinode communication system for NRF24L01 and LoRa in order to delivery more information to further distance with stronger signal.

(Keywords: Communication Radio, NRF24L01, LoRa, Single-Node, Non-Line of Sight)
Mechanical Characterization of Powder Metallurgy Products with Aluminum Waste Materials Using Multi Stage Pressing Method

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ABSTRACT Products resulting from the powder metallurgy process are increasingly competitive because they have advantages in terms of their mechanical and physical properties. Material engineering by mixing several types of metal powders is possible. The composition of this powder metallurgy process material is a mixture of aluminum powder (80%), copper powder (15%) and silicon carbide powder (5%) by weight, and then the compaction is carried out with a pressure of 3, 4 and 5 metric tons gradually with heating temperature of 125°C. Sintering in the furnace at temperature variations of 450°C, 500°C and 550°C and the sintering time is 60 minutes. The tests carried out are the compressive strength test by the Universal Testing Machine (UTM) and the hardness test using the Rockwell method (HRF). The highest compressive strength of 120 MPa was obtained at sintering temperature of 450°C with one-stage compaction. In addition, the highest hardness of 80 HRF was obtained at sintering temperature of 450°C with one-stage compaction. Multi stage compaction provides lower compressive strength and hardness than single-stage compaction (compressive strength of 110 MPa and hardness of 77 HRF at sintering temperature of 450°C). The higher the sintering temperature, the lower the compressive strength and hardness of the specimen, both in single-stage and multi-stage compaction. Those, it can be concluded that the multi stage pressing method reduces mechanical properties and also requires a longer processing time.

(Keywords: aluminum, compressive strength, hardness, powder metallurgy)
Numerical Modelling of Double Shear Timber Connection using Wood Dowel Fastener with Adhesive Coated

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ABSTRACT

One of the methods to make a connection for timber member in tension or bending is double shear connection by using dowels. The previous work already has undertaken experimental work in this type of connections by using wood dowel fastener with adhesive coating. Numerical modelling based finite element method using software Abaqus/CAE 2017 is one way to get more parametric studies besides conducting experimental work. The purpose of this study was to find out the effect of angular variation on the connection strengths of modelling, and also to validate the result of experimental results compared with the predicted result based on modelling using finite element software Abaqus. In this modelling, data is collected to obtain material properties of Bajur and Bangkirai wood. The value of the connection capacity, the results of double shear timber connection modelling with angular variations of 0°, 30°, 45°, 60° and 90°, are 34.96, 28.02, 26.87, 22.89, and 17.34 (in kN) respectively. The result of numerical modelling were agree with the experimental result and the theoretical calculation. It was indicated that the average difference between Abaqus and theoretical results is 3.20% and the average difference between Abaqus and experimental results is 17.02%.

(Keywords: double shear connection, numerical modelling, wood dowel, Abaqus)
Effect of Polypropylene Fibres on Unrestrained Early Age Shrinkage of Concrete and Long-Term Performance Subjected to Fire

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ABSTRACT  
Micro cracks at early age concrete very difficult to avoid although treatments have always been managed. This study focuses on the role of polypropylene fibres of concrete mixtures during first 24 hours after casting. Further investigation has also been carried out to investigate long-term performance of concrete subjected to fire. Two size models of 60x100x1000 mm and 50x200x350 mm have been employed investigating the plastic shrinkage and concrete micro-cracks, respectively, with five polypropylene dosages variations of 0.1%, 0.2%, 0.3%, 0.4%, and 0.5% to the mortar volume. Whilst, cylindrical specimen of Ø150x300 mm was conducted with five variations of 0, 1.5, 2.0, 2.5, and 3 kg/m3 polypropylene dosages to investigate concrete performance under various temperatures. Test results indicate the addition of polypropylene fibres play significant role to reduce cracks and plastic shrinkage. The 0.3% of polypropylene fibres reduces shrinkage losses to 90%. Under elevated temperature, the addition of polypropylene has less significant effect on normal concrete but has very significant effect on high-strength concrete. The high-strength concrete with 2.0 kg/m3 polypropylene dosage under temperature of 300°C and 700°C has 90% and 35% residual strength, respectively. Therefore, minimum value of 2.0 kg/m³ polypropylene addition to the concrete mixture is recommended.

(Keywords: concrete, polypropylene, plastic shrinkage, elevated temperature)
Evaluation of Hair Growth Promoting Activity of *Sansevieria trifasciata* P. on Alopecia Androgenic Rabbit Male

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**ABSTRACT** This study aims to determine the potential and effectiveness of *Sansevieria trifasciata* P. in stimulating hair growth. This study was designed to study the hair growth activity of ethanol extract, n-hexane fraction, ethyl acetate and water fraction of *S. trifasciata* P. with topical administration. The modified Tanaka method was used to assess the hair growth length of male rabbits (n = 5), by shaving the rabbit's back by making 6 compartments. The modified Matias method was used to assess the microscopic image of rabbit skin tissue, hair follicle count and telogen anagen ratio (A/T) using male rabbits (n = 3) induced by dihydrotestosterone hormone (DHT) for 21 days. Minoxidil solution (2%) was applied topically as standard. The group that was given topical ethanol extract, n-hexane fraction, ethyl acetate, and distilled water fraction with 20% concentration each showed significant nutrition to hair and the same effectiveness as 2% minoxidil. The best hair growth length was the group given 20% ethyl acetate fraction, which was 2.07 cm ± 0.06. The test results in rabbits induced with alopecia with a duration of 21 days of therapy showed hair regrowth as reflected in the number of hair follicles, A/T ratio and microscopic appearance of skin tissue. Hair regrowth at the shaved site showed a proliferation of hair follicles with the amount of anagen (terminal hair) more than the amount of telogen (hair miniaturization) in the group given 20% ethyl acetate fraction. The conclusion of this study was the ethyl acetate fraction of *Sansevieria trifasciata* P. (20%) showed better activity in hair growth.

*(Keyword: Alopecia androgenic, Anagen telogen ratio, DHT, rabbit male, *Sansevieria trifasciata*)
The Spatial Potential of Sambori-Bima Traditional Society in Indonesia as A Natural Laboratory: An Etnoecological Review

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ABSTRACT  Sambori village is a highland area which has a distinctive topography and differentiates it from other areas on the island of Sumbawa. The shape of the surface of Sambori land is in a hilly area and is flanked by a range of Lambitu mountain. In 2006 Sambori village was designated as a part of Lambitu District along with the division of Wawo District into Lambitu District. The objective of the research is to identify the potential of Sambori indigenous in Indonesia as a natural laboratory viewed from the ethnoecological aspect. This identification study is a descriptive method using survey and observation techniques. The results showed that Sambori indigenous has 8 potential objects for developing the natural laboratories. The entire potential of Sambori indigenous deserves to be developed into a natural laboratory not only for Indonesia, but also for the world.

(Keywords: Natural Laboratory, Ethnoecology, Sambori indigenous)
As A Synergy of the Pemenang-Gili Indah Cruise Protection System, The Passengers Cognitive Chart for Accidents

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ABSTRACT
This study aims to chart the cognitive opinion of boat passengers about the accident from the port of Preening during the crossing to Gili Indah. The majority of passengers safety policies and focused on accident potential and statistic on the number of injuries in path on the accident fatality rate. It is a diagram that based on the past records. It is also important to map passengers’ level of experience and vulnerability to potential incidents, so that the risk management of accidents and the information system can be synergized better. The survey was performed using a questionnaire and then the processing of the collected data was carried out by description analysis to identify the respondents’ accident and safety equipments characteristic and expectations. The results of study show that 78% of the respondents have been passengers on Pemenang-Gili more than once. As many as 84% of the respondents, never learned information about safety instruments and facilities. Meanwhile, only 2% of the respondents said that they knew what to do when an accident occurred. 74 percents of respondents said that before a crossing, leaflets were an essential information system.

(Keywords: safety accident fatality risk safety)
Impact of Cold-Immersion Time to the Preservation of Galah Bamboo (*Gigantochloa atter* (Hassk.) Kurz ex Munro) in Extract of Gadung (Dioscorea hispida Dennst.) Tuber

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**ABSTRACT** Bamboo is one of the important non-timber products which is predominantly propagated in Nusa Tenggara. Besides its high potency to propagate, the ultimate considerations of propagating bamboo are easy to cultivate, high yield, straight stem, and relatively cheap. One of the bamboo found is West Nusa Tenggara is galah bamboo (*Gigantochloa atter* (Hassk.) Kurz ex Munro) which is suitable for light construction material, furniture, and craft. However, the bamboo is susceptible to attack by insect and fungi. In order to increase its durability, treatment should be applied. The treatment was a cold immersion method. The objective of this study was to identify the absorption capacity of the *G*. *atter*, theoretical and actual retention, and the impacts of immersion time to the bamboo durability. An experimental method was employed in this study. The experiment design was complete random design with two treatments of immersion time, 3 days (A1) and 5 days (A2). The results showed that the immersion times did not significantly affect the absorption capacity of the bamboo and the theoretical and actual retention. The study found that the absorption capacity of *G*. *atter* was 0.49-1.25 g/cm³, theoretical retention was 0.05 – 0.08 g/cm³, and actual retention was -0.007 – 0.001 g/cm³.

*(Keywords: galah bamboo, cold immersion, the extract of gadung tuber)*
Sago Business Development Scenario in North Luwu Regency, South Sulawesi

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ABSTRACT North Luwu Regency is one of the sago producing areas in South Sulawesi. Sago is used as alternative food, in the form of basic food such as Sinonggi, Kapurung or Papeda. Sago business management is carried out traditionally production in the form of raw sago (wet). The development of sago is very strategic to support and guarantee the food availability. Analysis of financial feasibility was used to determine the feasibility of business in the development of Sago business in North Luwu Regency in South Sulawesi. Data were obtained through interviews using a questionnaire on sago business's actors. To calculate this feasibility of this effort was made in 2 scenarios namely Scenario 1 (Sago Plantation Forest Development) and scenario 2 (purchase of sago trees). The results showed that NPV in scenario 1 was Rp. 81,149,632 with a BCR value of 8, IRR 64% in the interest rate of 7%, and Payback Period for 0.04 years. Meanwhile, NPV in Scenario 2 showed Rp17,510,704 with a BCR value of 2, IRR 20.9% in the interest rate of 7% and payback period for 0.3 years. The analysis of sensitivity in the two scenarios also has the value of the rate of sensitivity <1 so that the two efforts are worthy of continuing.

(Keywords: Financial Analysis, North Luwu, Sensitivity Analysis, Sago Business)
Aerodynamic Analysis NREL-Series Airfoil in Different Reynold Number Using Computer Fluid Dynamic (CFD)

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ABSTRACT  To design wind turbine blades, there are many airfoil options available, but not all types of airfoils can be used for various ranges scale power of design wind turbine blade. NREL has designed a series of airfoils for the needs of designing small-scale wind turbine blades by considering the aerodynamic side and the noise criteria. Currently, many researchers have been carried out in an effort to find an airfoil design that suits the various needs of the wind turbine operational conditions. The efforts made were not limited to experimental testing with wind tunnels test, but also mostly through computational fluid dynamics simulations. The purpose of this study was to determine the effect of variation Reynolds Number and angle of attack on the aerodynamic performance of various NREL Series airfoils. The research was conducted by simulating various NREL Series airfoils using ANSYS Computer Fluid Dynamic (CFD) so that the stall point, lift coefficient (CL) and drag coefficient (CD) were determined at various variations in low wind speed and changes in the angle of attack from -5° to with 20°. From the result simulation shown that the NREL S825 airfoil has a better performance by better generated of the lift coefficient and drag value was compared other airfoils NREL Series. At Re = 5 x 10^5 the critical point of the lift coefficient occurs in the airfoil with an angle of 13° with a CL value of 1.5569 where an indication of a stall condition will occur if the attack angle continues to be increased.

(Keywords: Airfoil, Aerodynamic Performance, Stall)
The Generative Traits and Genetic Parameters of Soybean Under Drought Stress at Various Growth Phases

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ABSTRACT The objective of the study was to know the generative traits and the genetic parameters (heritability and correlation) of soybean under drought stress at various growth phases. An experimental method was used in the study, conducted in the green house of the Faculty of Agriculture, the University of Mataram. The plastic pots were used as experimental units and were laid out based on Completely Randomized Design (CRD) in three replicates. There were two factors in this research: factor of soybean varieties (V): Lawit, Sibayak, Kaba, Pangrango, Seulawah, Nanti, and Burangrang; and drought factor (D): no drought stress, drought stress at vegetative phase, drought stress at generative stress, and full drought stress from vegetative to generative stresses. The generative traits were observed includes: flowering date, harvesting date, number of pods, number of emptied pods, number of filled pod, seed number per pod, 100 seeds weight, and seed weight per plant. Results of the study showed that: 1) The generative traits of soybean under drought stress varied depending on the variety and growth phase. 2) Heritability estimates of the generative traits under drought stress were relatively high except for the number of emptied pods. 3) Under drought stress, the yield (seed weight per plant) was strongly correlated with the number of pods, the number of filled pods, and the number of seeds per plant.

(Keywords: soybean, drought stress, generative traits, genetic parameter)
Teaching Material Development Educational Statistics with SPSS

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ABSTRACT This study aimed to get valid and practical educational statistics with SPSS teaching materials for English Education students. The type of research was research development with 4D development plans, namely Define, Design, Develop, and Disseminate. Limitations of this development only reached the Develop stage. The research subjects were students of English Study Program of the University of Pasir Pengaraian that consisted of 30 Students. Teaching materials were designed based on the syllabus of educational statistics courses and students needs in analyzing data on the research result in the scope of English research. Based on suggestions from the validator, the teaching material was revised in several parts, namely the cover page that was not based on the title, and the addition of the steps for presenting data with SPSS and adding practice questions in each discussion. The results of the validation of teaching materials were valid category. The results of the practicality questionnaire analysis of the student responses were practical category. It meant that teaching material educational statistic with SPSS was valid and practical. It was easy to understand and use by students.

(Keywords: Educational Statistics, SPSS, Teaching Material, 4D)
Modelling of Glulam Beams with Finger Joint Toward Bending Strength

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ABSTRACT  Finger joint is one of the options for laminated wood joints. Modeling with numerical methods can be one of ways to get information apart from conducting experiments in the laboratory. One of the modeling software based on numerical methods is Abaqus / CAE which uses the finite element method in its completion. The wood being modeled is Sengon wood with the lamina being modelled total 4 layers. The comparison of the slope of the finger joint that is modeled is 1: 8, 1:12, and 1:16 with a finger length of 29 mm. Loading modeling in bending testing using two point loading method based on SNI 03- 3960-1995 Modeling of laminated wood blocks with finger joints was carried out using FEM (Finite Element Method) shows the results in accordance with the experiment. From modeling ones done with the help of software Abaqus / CAE 6.14-3 obtained the percentage difference in the flexural strength values between the models was 10% -20% smaller than the experimental results and the strongest finger joint based on modeling is the 1:12 finger joint.

(Keywords: Laminated wood blocks, finger joints, Flexural strength, FEM (Finite Element Method), ABAQUS)
Antidiabetic Activity of *Phaseolus vulgaris* L. Extract on the Diabetic Rat: Fasting Blood Glucose Levels and Insulin Expression in Pancreatic β Cells

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**ABSTRACT** Diabetes Mellitus (DM) is a metabolic disorder characterized by hyperglycemia that occurs due to abnormalities in insulin secretion or insulin resistance. Various attempts can be created to treat and prevent complications of diabetic. One of such attempts is utilizing natural materials that are abundant in Indonesia. Previous research proved that *Phaseolus vulgaris* L. were able to increase glucose uptake in soleus muscle tissue and reduce blood glucose levels in alloxan-induced diabetic rats. Glucose uptake requires insulin which is produced by the β cells of the pancreas. The aim of this study were to assess the effectiveness of *Phaseolus vulgaris* L. extract on fasting blood glucose levels and to improve insulin expression in pancreatic β cells of streptozotocin and nicotinamide-induced diabetic rats. This research was an experimental study with posttest only control group design. The study involved 8 groups of subject. Diabetic rats induced with streptozotocin and nicotinamide. *Phaseolus vulgaris* L. extract (300 mg/kgBW) was given for 14 and 28 days. Rat treated 14 and 28 days were compared their mean insulin expression and fasting blood glucose levels were made among 8 groups on the appropriate days, as well as a correlation between insulin expression and fasting blood glucose levels. Insulin expression was analyzed using immunohistochemical examination in the pancreatic tissue, while fasting blood glucose levels was analyzed using glucometer. The results of this study indicated that fasting blood glucose levels and insulin expression in diabetic rats given 300 mg / kgBW *Phaseolus vulgaris* L. extract were not significantly different compared to diabetic, and normal rats given *Phaseolus vulgaris* L. extract. Fasting blood glucose levels were not significantly different among the study groups, both on the 14th and 28th day of observation, consistent with insulin expression which was also not significantly different. There were no difference in fasting blood glucose levels and insulin expression in pancreatic β of streptozotocin and nicotinamide-induced diabetic rats after administration of *Phaseolus vulgaris* L. extract.

(Keywords: *Phaseolus vulgaris* L., insulin expression, fasting blood glucose, streptozotocin, nicotinamide)
The Effect of The Thermal Processing on The Changes of Physical and Mechanical Behavior of Peat Soil in West Donggala, Central Sulawesi

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\textbf{ABSTRACT} Peat soils have specific characteristics, which one of the characteristics is enclose high moisture content that it can reach more less 400\%. This research would try to explore the characteristic of peat soils at West Donggala due to temperature and time consuming in thermal prose. Properties of peat soils had been measuring that those included moisture content analyses with different degree of thermal process and different of time cycle, the Organic and ash content, Atterberg limit and specific gravity have been measured. The shear strength test conducted with vane shear apparatus. In thermal process, which temperature had been increased gradually, the result show that moisture content decrease to minus 125,687\%. The loss of moisture content predicted because of water placed in micro and macro void of peat soils could be evaporating, and the moisture content in peat soils after thermal process decline to just only 0,23\%. The Shear strength of peats soils after the thermal processing were reach to 38 KPa at temperature of 100 Degree Celsius for 72 hours of thermal processing.

\textbf{(Keywords:} Peat Soils, Thermal Processing, Moisture Content, Shear Strength)
Combination of Automatic Microneedling Therapy with Human Dermal Fibroblast Conditioned Media (hDF-CM) for Atrophic Acne Scars

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ABSTRACT The management of atrophic acne scars on Asian skin types, especially Indonesians is a challenge. Automatic microneedling therapy is one of the modalities with various advantages compared to using conventional dermaroller, that can be done to overcome this problem with various advantages compared to conventional dermaroller. Human dermal fibroblast conditioned media (hDF-CM) is a substance containing various growth factors that provide benefits in accelerating the wound healing process. This is an experimental study with one group of pre and posttest respectively designed for 20 subjects with atrophy acne scars. This combination of therapy is done as many as three sessions with intervals of three weeks. Clinical evaluation was conducted using Goodman and Baron's Quantitative and Qualitative Global Scarring Grading System. A total of 18 out of 20 subjects completed this study. Obtained significant clinical improvements in statistics on the mean score of acne scar severity after treatment compared to before treatment (CI 95%; p=0.00). No post-inflammatory hyperpigmentation adverse effects. This combination can be considered as one of the options for atrophy acne scars therapy of Indonesians with Fitzpatrick III-V skin type.

(Keywords: atrophic acne scars, automatic microneedling therapy, human dermal fibroblast conditioned media, Indonesian)
Poverty Data Modelling in West Nusa Tenggara Province using Panel Data Regression Analysis

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ABSTRACT Nowadays, Indonesia is still facing poverty issues. One of which is in its province, West Nusa Tenggara. This study aimed to build a poverty model and determine the dominant factors affecting the number of poor people in West Nusa Tenggara Province using panel data regression analysis. The fixed-effect model, with different intercept values for each individual, was selected as the panel data regression model. Based on the research conducted, we derive the best model as follows. \( Y^* = \beta + 0.234908X^* - 2.112122X^* \). The values of each individual’s intercept were as follows: Bima Regency at 7.347; Dompu Regency at 7.101; West Lombok Regency at 7.508; Central Lombok Regency at 7.559, East Lombok Regency at 7.714; North Lombok Regency at 7.376; Sumbawa Regency at 7.346; West Sumbawa Regency at 7.020; Bima City at 6.905; and Mataram City at 7.310. The two most dominant factors affecting the number of poor people in West Nusa Tenggara Province were population \((X_1)\) and Human Development Index \((X_2)\), with a positive and negative effect, respectively. The model obtained can explain the diversity of the number of poor people in West Nusa Tenggara Province by 64.4%.

(Keywords: poverty, West Nusa Tenggara, panel data regression model)
Evaluation Of The Bpjs Primary Care (P-Care) Application On Health Services In Primary Health Care: Systematic Review

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ABSTRACT The role of the information system in health services is increasingly needed in the implementation of the National Health Insurance (JKN) organized by BPJS Kesehatan. BPJS Kesehatan has an application called P-Care (Primary Care) BPJS. There are still problems with the use of P-Care application at primary health care. This study aims to evaluation of the BPJS primary care (P-Care) application on health services in primary health care. This study uses a systematic review through: 1) search using an indexing site (google scholar) with the specified keyword, 2) the literature obtained through indexing site then limited with certain categories, 3) the literature then selected with certain inclusion and exclusion criteria. Based on the results, it is found that the P care application is very useful and makes work easier, efficient, fast, effective in providing services and can increase the productivity of officers' performance. In addition, the P care application has provided the menus needed by the user. There are also some obstacles in implementing P Care, such as the power fails and P Care errors when a patient needs to be referred. BPJS Kesehatan need to evaluate and monitoring regularly to ensure that the P care application is running well.

(Keywords: Evaluation, P Care, Primary Health Care)
The Prevalence of Attention Deficit and Its Risk Factors Among Hypertensive Ischemic Stroke Survivors in Mataram

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ABSTRACT  Cognitive decline is one of the important complication of ischemic stroke affecting more than 70% of stroke survivors. It may be found in acute, sub-acute, and chronic phase of stroke. Hypertension is one of the most vascular risk factors associated with stroke-related cognitive impairment. Function of attention is one of cognitive domains most commonly affected. Early detection and intervention, especially in sub-acute phase of stroke is important to improve their clinical outcomes. To investigate the prevalence of attention deficit and its risk factors among sub-acute phase of hypertensive ischemic stroke survivors living in Mataram. A cross-sectional study was conducted to 80 hypertensive outpatients of sub-acute phase of ischemic stroke who were hypertensive in three main referral hospitals in Mataram. The data collected were demographic (age, gender, educational level) and clinical characteristics (stroke onset, hemiparesis, infarct size, smoking, diabetes, dyslipidemia, and overweight) and status of attention function. Status of attention functions was assessed using Trail Making Test Part A (TMT-A). Infarct size was determined based on CT scan examination. The association between clinical and demographic characteristics and attention deficit in these patients was analyzed using binary logistic regression. This study revealed that the prevalence of cognitive decline in these subjects was 51.3%. Final model of multiple logistic regression showed that infarct size was the only characteristic associated with cognitive decline in the subjects (OR=4.62, 95%CI=1.17-18.30, p=0.029). There was a high prevalence of cognitive decline in hypertensive ischemic stroke survivors associated with infarct size.

(Keywords: Ischemic stroke, Hypertension, Cognitive decline, Attention deficit)
Residual Effects of Herbicide on The Growth and Yields of Shallot That Are Planted as Following Crops After Corn Plant

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ABSTRACT The application of herbicides adversely affects other crops grown as by-products. Because of that, a study aimed to determine the susceptibility of several types of herbicides to kill weeds in maize and the impact of their residues on shallots grown as secondary crops in rice fields. The experimental research method with experiments was designed with a randomized block design (RBD) with five herbicide treatments and one comparative treatment. The results showed that the herbicides Glyphosate and Atrazine were very effective against weeds in maize. While the herbicides Alachlor, Oxadiozon and 2,4-D Amine are very effective against broadleaf weeds and only work against nuts and grasses. The better efficacy of herbicides Atrazine and Glyphosate gave significantly higher yields of maize compared to other treatments, namely 10.63 tonnes ha⁻¹ and 10.92 tonnes ha⁻¹. The herbicide residues Oxadiozone, Alachlor and 2,4-D Amine had a positive effect on shallots, so that the growth and yield were significantly higher than those of the herbicides Glyphosate and Atrazine. The herbicide residues of Glyphosate and Atrazine which cause mild poisoning on shallots, are below the Minimum Residue Limit (BMR). Based on the Indonesian National Standard (SNI), the minimum residual limit (BMR) of herbicides is 1 mg kg⁻¹ of soil. In this study, the residues of Glyphosate and Atrazine were 0.086 and 0.088 mg kg⁻¹ of soil.

(Keywords: herbicide, weeds, corn, herbicide residue impact and shallots)
Implementation of Hurdle Techniques in Processing of Fisheries Products in East Lombok

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ABSTRACT In general, villages on the south coast of East Lombok have not been touched by proper fisheries processing. Fishermen's households have applied very minimum processing. The objective of this study was to determine the condition of fishing communities in accessibility to freshwater and to formulate appropriate and easy hurdle techniques in developing process of fishery products. The method used was an experimental method in the laboratory and field of studies. Research data were analyzed with Anova at 5% level. The results showed that the communities had very limited understanding on the application of hurdle technology in processing of fishery products. Fishermen Coastal areas prone to freshwater such as Sekaroh sell almost all of their catch in fresh form. While coastal fishermen who have easier access to fresh water, have started processing but with low quality and short shelf life. The use of sea water and sun drying are the main alternatives for processing coastal fisheries prone to fresh water while wet processed products / semi-wet and drying are alternatives to coastal areas which have easier access to fresh water. The hurdle technique in processing fishery products could be applied by fishermen / coastal communities in other regions in Indonesia.

(Keywords: fishermen, processing, fishery products, coastal)
Preparation of Activated Carbon from Wood Bark by Using H$_3$PO$_4$

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ABSTRACT  Activated carbon (AC) was produced from wood bark by chemical activation with phosphoric acid (H$_3$PO$_4$). In this study, the precursor used was Neobalanocarpus Heimii bark and directly activated with H$_3$PO$_4$ in oxygen free atmosphere at distinctive impregnation ratio of wood bark and H$_3$PO$_4$ (1:1-1:4), activation time (30-120 min) and activation temperature (400-700 °C). The produced AC at the optimum condition was then being characterized in term of ash content, moisture content, pH value, and the iodine number. The Fourier-infrared spectroscopy (FTIR) analysing was also carried out from the range of 4000 – 400 cm$^{-1}$ to examine the basic surface functional groups on surface of the prepared AC. The present results showed the ideal conditions to produce the AC was found at impregnation ratio of 1:4, activation temperature of 600 °C and 60 minutes activation time. The moisture content and iodine number of the AC was 8.24% and 819.03 mg/g respectively. This finding implies that H$_3$PO$_4$ as an activating reagent changed the thermal degradation of the Neobalanocarpus Heimii bark, stabilized the cellulose structure, leading to a subsequent change in the development of porosity. The FTIR analysis indicates that the produced AC has rich functional groups on the surface.

(Keywords: Activated carbons, wood bark, phosphoric acid, iodine number)
Adsorption Energy of Urea-kaolinite Systems using Supramolecular Method: A study on The Basis Set Effect

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ABSTRACT Kaolinite is a clay material that has SiO$_4$ tetrahedral and AlO$_6$ octahedral sheets on its surfaces. These surfaces act as flexible platforms for the adsorption of molecules, thus enabling applications in diverse fields, such as in paper industry and the drug delivery. Attention has been brought to us in the case of the adsorption of amide molecules on the Si-O and Al-O surfaces of kaolinite, where the relative strength of the adsorptions of a few of the amide molecules were contradictory. The conundrum maybe due to the factor of the inadequacy of the basis sets and the level of theories used. Hence, we performed theoretical investigations on the relative adsorption energy (AE) of the amide molecules on the SiO$_4$ surface with different basis sets, in the framework of B3LYP and TPSSTPSS. The purpose is to determine the effects due to the basis sets on AE. Two amide molecules, acetamide and N-methylacetamide, were considered in this study. It was found that the AE using triple zeta basis sets is more consistent than those from double zeta. This trend is the same for B3LYP and TPSSTPSS. The relative strength of the AE in the current study shows no contradictory trend.

(Keywords: Kaolinite, amide molecules, adsorption, electronic structure calculations)
The production of biochar by pyrolysis from *Jatropha curcas* L. husk: Optimization via Response Surface Methodology

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**ABSTRACT** In this study, the effect of temperature, heating rate and gas flow rate on the production of biochar from *Jatropha curcas* husk was investigated. Response surface methodology (RSM) based in the central composite rotatable design (CCRD) was applied to optimize the combination effect of three important parameters, i.e. temperature, heating rate and gas flow rate. The reaction was performed via high temperature from 400-600 °C, heating rate from 30-60 °C/min and gas flow rate 100-200 mL/min. A total of 20 individual experiments were conducted and the result showed that the RSM based on CCRD is very applicable to the biochar production yields studied in this system. The predicted optimum conditions for biochar yield was 400 °C final temperature, heating rate of 60 °C/min and the gas flow rate is 100 mL/min, resulting in biochar yield and high calorific value of 37.59% and 20.44 MJ/kg, respectively. The biochar obtained are carbon rich, with high heating value and relatively pollution-free solid biofuel.

*(Keywords: biochar; pyrolysis; response surface methodology, calorific value; jatropha curcas husk)*
Performance of Microgrid System of Photovoltaic and Small Wind Turbines with Automatic Transfer Switch: Case Studies in Laboratory

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ABSTRACT    A microgrid system based on renewable energy sources is a solution for generating electricity in the future. Renewable energy technology is widely available to generate electricity, but its utilization is still small. Renewable energy laboratory, University of Mataram has small scale power plants based on renewable energy such as solar photovoltaic and small wind turbines. The electrical energy produced by renewable energy power plants is not optimal because it is unintegrated into a microgrid system. The research method proposed is to integrate renewable energy power plants in the laboratory such as photovoltaic plants, small wind turbines, and grid-connected. So it is necessary to design an automatic transfer switch device. This research focuses on analyzing the performance of a microgrid system using an automatic transfer switch to maintain the continuity of the electricity supply. The results show that the integration of the microgrid system has been regulated an automatic transfer switch with a transfer time of fewer than 0.66 seconds. The testing conducted at a total load of 115 W. Microgrid system yields the voltage (ac) is 222 volts and the currents on the grid-tie inverter, grid-connected, and loads current is 0, 21A, 0, 48 A, and 0, 62 A.

(Keywords: Microgrid, photovoltaic, small wind turbines, grid-tie inverter, automatic transfer switch)
Cyclic Voltammetry of LSCF-Cathodes Formed using Combustion Method with Sucrose as Propellant

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ABSTRACT The electrochemical properties of La0.6 Sr0.4 Co0.2 Fe0.8 O3-α (LSCF) cathode materials ceramic oxide were studied. The LSCF oxide powders were prepared using various concentration of sucrose as propellant via combustion method. The concentration of propellant was fixed at 0.05 mol and 0.1 mol. Each sample was calcined at 750 °C for 10 hours. The samples were characterized with cyclic voltammetry (CV), Scanning Electron Microscopy (SEM) and Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Based on the voltammograms shown from CV, the current increased with increasing sweep rate and concentration of sucrose. The morphology of samples shows different surface characteristic for all samples. It was observed that with a higher concentration of sucrose, the grain particle become smaller due to the complete combustion occurred during the heating process. Furthermore, the LSCF oxide powders prepared with 0.1 mol sucrose exhibit increased chemical stability throughout the range of the potential given which has been proved by the formation of fine powders and improved electrochemical result.

(Keywords: LSCF, combustion, sucrose, cyclic voltammetry, electrochemical)
Implementation of SPA art.22 UN CRC on Children Displaced by Natural Disaster Victims in Lombok, NTB

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ABSTRACT Role of ALIT in handling EARTHQUAKE LOMBOK, In general, during times of earthquakes, the situation that occurs in children must stay in displacement. By looking at the conditions in refugee camps that are dense, hot, the difficulty of water supply and the absence of sanitation facilities, especially waterways and MCK, the conditions of children are increasingly difficult. During the earthquake in Lombok, ALIT and its volunteer team assisted in four posts including: Paok Rempek, Gangga sub-district, there were. In order to follow up on a number of previous programs, further forms of future activities need to be formulated which include: 1) Carry out monitoring related to social, economic and health developments in two the place of the main post located in the village of Paok Rempek, Gangga District and Lading-lading Village, Tanjung Subdistrict periodically; 2) Exploring other potential of existing commodities to be reprocessed so as to increase their economic value in the villages of Paok Rempek and Desa Lading-lading; 3) ALIT volunteers on duty in the field routinely provide assistance to two villages which will be prioritized, namely the villages of Paok Rempek and Desa Lading-lading involving 8 remaining volunteers focused on three fields, education, health and development of the creative economy; 4) Building and facilitating the formation of small teams in order to encourage policies that have a perspective on the protection of children during disasters; 5) Disseminate the results of discussions of academic texts to the empowerment ministry women, social ministries and BNPB; 6) Maintain harmonious communication with stakeholders in the region North Lombok.

(Keywords: SPA art.22 UN CRC, Children Displaced, Natural Disaster Victims)
Tsunami Inundation Maps in Mataram City Based on Tsunami Modeling

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ABSTRACT Tsunami inundation maps in the city of Mataram were created using ComMIT software with bathimetric data from the ETOPO (1 minute) and topography data from SRTM (90 meters). Tsunami modeling uses several tsunami scenarios derived from past tsunami history, namely the 19 August 1977 tsunami Mw = 8.0, the 02 June 1994 tsunami Mw = 7.4, and the source of the earthquake hazard that has the potential to generate a tsunami around West Nusa Tenggara Province, namely the Megathrust segment of Central Java - East Java Mw = 8.9, Bali megathrust segment Mw = 9.0, West Nusa Tenggara Megathrust segment Mw = 8.9, and Backarc Thrust segment Bali - Lombok Mw = 7.4. The results of data processing from each scenario are then combined to obtain a tsunami inundation map. The maximum tsunami was detected with a height of 9.5 meters and arrived at 32 minutes after the earthquake on the western coastline of the southern part of Mataram City with the farthest inundation in Sekarbel District as far as 1.5 km from the shoreline.

(Keywords: Tsunami, Inundation, ComMIT, Megathrust)
Miscellaneous of Direct Normal Solar Irradiation on Rinjani Mountain: It's Impact on Local Climate

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ABSTRACT  Orographic effect of Rinjani mountain is one of the most important factor affecting local climate. It plays a significant role in driving a hydrology cycle, as well as inducing orographic rain in Lombok. A Descriptive research was conducted to identify miscellaneous of direct normal irradiation, and its possible impact on local climate. Data of solar irradiation and air temperature were freely acquired from Global solar atlas, and simple linear regression was applied to mathematically describe a spacial variation of the solar insolation, as well as temperature lapse rate from various direction, namely: north, north east, east, south east, east, south west, west and north. The results show that, the intensity of daily direct normal irradiation (DNI) was 3.7 kwh/m2 on average. It successively decreased by 0.64 kwh/m2 as increasing altitude of 1000 m above sea level. The intensity of DNI reached a turning point at 1586 m asl where DNI was at a minimum level of 2.79 kwh/m2, before raising up. The maximum intensity of DNI was 4.98 kwh/m2, on average at flat low lands which were close to beaches. The air temperature lapse rate was -0.523°C/100 m on average. In conclusion, the DNI varied in accordance to an “aspect” factor, i.e. direction of the mountain slope relative to incoming solar rays path way.

(Keywords: irradiation, rinjani, orographic, rain)
Benzodiazepine Metabolism Analysis in The Resident Urine of Wisma Anggrek RSJ Mutiara Sukma, Province of West Nusa Tenggara

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ABSTRACT Benzodiazepines are part of central nervous system anti-depressants with hypnotic effects, sedation, muscle relaxation, anxiolytics, anticonvulsants, hypnotics and sedatives. Benzodiazepines is one of psychotropic group IV substances that are often abused. The identification of benzodiazepine metabolites in urine is used as a screening test for benzodiazepine drug abuse. One of factors that influence the accuracy of test results is the sampling time. Negative result can occur if urine sampling is done before drug metabolites are available in the urine. Clobazam is an benzodiazepine intermediate acting drug that is used at the Mutiaraka psychiatric hospital , NTB Province for therapy at Wisma Anggrek residents. This study was conducted to determine the appropriate sampling time to identify the benzodiazepine intermediate acting drugs used. Urine sampling was carried out after 6 hours, 9 hours, 12 hours, 15 hours and 18 hours after given clobazam therapy to residents of Wisma Anggrek, Mutiara Sukma psychiatric hospital, NTB Province. The results of this study indicate that the sampling time can be done after 9 hours after a person consuming clobazam.

(Keywords: Benzodiazepine, Sampling Time)
Analysis of Satisfaction in User Gojek Application: Systematic Review

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ABSTRACT The GOJEK is an application that can be operated through supporting facilities, namely smartphones. The existence of several quality applications that are perceived by these customers is expected to provide a satisfaction to customers, so that customers will remain loyal to use the GOJEK application. This study aims to analyze the satisfaction of GOJEK application users. This study uses a systematic review through: 1) search using an indexing site (google scholar) with the specified keyword, 2) the literature obtained through indexing site then limited with certain categories, 3) the literature then selected with certain inclusion and exclusion criteria. Based on the results of analysis, it was found that service quality and trust affect user satisfaction of the GOJEK application. Service quality includes ease of use of the application because it is easy to learn, easy to understand, simple and easy to operate. In addition, it is very quickly accessed, so this is very beneficial for customers. Besides, the price and the product also affects the satisfaction such as the ease in the transaction process and the fulfillment of consumer needs and desires. GOJEK application development companies need to pay attention to quality, trust, price and product factors in creating customer satisfaction.

(Keywords: Analysis, Satisfaction, GOJEK Application)
The Role of Porang Flour and Oyster Mushroom in Providing Quality Vegetarian Meatball

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ABSTRACT The demand for good quality vegetarian food is increasing nowadays. The aim of this paper is to discuss the role of porang flour on the characteristics of oyster mushrooms meatball to support the availability of good quality vegetarian foods. A trial was conducted to optimize the right concentration of porang flour that produced good quality of oyster mushroom meatballs. Several quality parameters were assessed including the protein content, fat content, texture, aroma, taste and color. The results of this study revealed that oyster mushroom produced nutritious meatballs, high protein and low fat content. The data also indicated that the use of porang flour as natural food additive for meatball processing resulted in good texture of the oyster mushroom meatballs and had no negative effect on the taste and aroma of the meatball products. Further research on the product shelf life and consumer preference is needed.

(Keywords: porang, meatball, oyster mushroom, quality)
Classification of Location Landslides Areas with Direct Measurement and Remote Sensing in Central Lombok

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ABSTRACT Conditions of climate change in the tropics makes disaster specialized in floods and landslides. This research is used to give consideration to the government. Governments can adopt policies to cope with the disaster. This paper is using remote sensing tools for creating maps (information systems), the classification of the disaster on the ground focusing per shear in Central Lombok. Tools to use GPS global positioning method test drive and remote sensing from google satellite. The measurement result incorporates eight parameter triggers for landslides. It can produce the highest percentage of classes in the classroom. The classes are divided into 4 classes grouping disaster-prone areas in Central Lombok District, the village of Karang Sidemen has the highest value of 4.5 the grade level of vulnerability is very vulnerable and at the level of the lowest grade in the village Jago with a value of 2.35 level of vulnerability.

(Keywords: disaster, classification, and landslides)
Experimental Study of The Induction Heater Application on Oscillatory Flow Reactor (OFR) in Biodiesel Production Process

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ABSTRACT The purpose of this study is focused on the effect of using an induction heater in the continuous process of biodiesel production using the oscillatory flow reactor (OFR) type. The transesterification method is used in the biodiesel formation process by maintaining the reaction temperature at ideal conditions, namely 65°C. The analysis of the reactor will begin by maintaining the ideal reaction temperature in the OFR unit by providing an induction heater that is in accordance with the capacity and construction of the reactor. The results of the experiment using induction heating in the OFR reactor showed that biodiesel production increased by 3% (from 87% to 90%) and by production (glycerol), fell from 13% to 10% compared to without induction heating. The residual time of the reactants while passing through OFR increases because the effect of the magnetic field on the induction heating coil affects the rate of the reactants.

(Keywords: Induction heater, biodiesel, transesterification, oscillatory flow reactor)
Prevalence and The Quality of Life of Leprosy Patients in Mataram City

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ABSTRACT  Leprosy is a chronic infectious disease which can cause not only medical but also social, economic and cultural problems. This disease is caused by Mycobacterium leprae which attacks the peripheral nerves and can cause permanent deformity or disability. Currently, there is no available data on the patient’s quality of life in Mataram City. This is a cross-sectional study aimed to determine leprosy prevalence and the patients’ quality of life. Data were obtained from all the public health centers in Mataram. Patients were interviewed using the WHOQoL-BREF questionnaire to assess the quality of life. During the period of 2019-2020, there were 25 leprosy cases or the equivalent of 0.5 case per 10,000 population. A total of 20 respondents were interviewed, with the average quality of life in the physical health domain of 57.32; psychology 59.79; social relations 59.58; and the environment 57.81. Using the cut-off points of 60, 11 respondents (55%) has poor quality of life in physical and psychological domain and 13 respondents (65%) has poor quality of life in social and environment domain. Factors affecting the quality of life score include the presence of chronic pain (p=0.01), thickening of the nerves (p=0.028), and a history of leprosy reactions (p=0.032).

(Keywords: leprosy, quality of life, WHOQoL-BREF)
Solving One-Dimensional Time-Independent Schrodinger Equation with Jacobi Polynomials

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ABSTRACT In this paper, we solve a one-dimensional time-independent Schrodinger equation on an interval [-1,1] with Dirichlet boundary conditions. This interval is chosen for easy evaluation of integral of wave functions and for computational purposes that use a finite domain. Other problems with different intervals can be transformed to the interval [-1,1] using a dimensional change of the spatial variable. Solutions of the Schrodinger equation are formed as a linear combination of basis functions. We use Jacobi polynomials as the basis functions because they are appropriate for the boundary conditions. By using the basis functions, the Schrodinger equation is then transformed into a matrix eigenvalue problem that can then be solved numerically using standard computational procedures. This paper gives a theoretical formulation for solving the Schrodinger equation and numerical results for various potential wells. It is found that solutions with Jacobi polynomials are in agreement with the exact solutions.

(Keywords: orthogonal polynomials, matrix eigenvalue problems, basis functions)
Design of Face Expressions Using Convolutional Neural Network

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ABSTRACT Facial expressions or expressions are the result of one or more movements or positions of muscles in the face. Facial expressions are a form of nonverbal communication, and can convey the emotional state of a person to the observer. Facial expression is one of the characteristics of behavior. The use of biometric technology systems with facial expression characteristics makes it possible to identify a person's mood or emotions. basic variables in facial expression design are face detection, facial data extraction, and facial expression recognition. In principle, the detected facial data is processed using deep learning using Convolutional Neural Network for facial expression recognition.

(Keywords: CNN, Image Recognition, Face Expressions)
The Developed Online Mathematics Learning Tools in The Phase of One to One Evaluation for Probability Topic in Vocational High School

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ABSTRACT This article discussed the development of online mathematics learning tools related to the ability of the students to solve the problem in probability. The study focused on the phase of one to one evaluation. In this phase, we interviewed one mathematics teacher and three students which divided into low, medium and high mathematics ability. The result of interview showed that our developed online learning tools were easy to study and it can be used to teach the students. On the other hand, there should be an additional explanation to student worksheet because the students with low and medium ability still need advice to solve the probability problem. Overall, our developed student worksheet was able to increase the ability of student to solve any given probability problem.

(Keyword: online mathematics learning tools, student worksheet, evaluation, probability)
Digital Image Processing using MATLAB and ImageJ

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ABSTRACT The human eye has extraordinary visual abilities. The visual system of the human eye is a combination of the recording process, object detection and color detection. Therefore, humans have the ability to recognize certain objects from a set of objects they see. In addition, humans also know the naming of each object, which will make it easier to detect an object. These human visual abilities are very different from the capabilities of a computer visual system. In a machine visual system, the results of optical instrument recordings cannot be directly translated, defined and recognized by a computer. Therefore, the machine visual system requires an initial image processing process. Low level image processing that can be used is segmentation. Further processing of the results of this color segmentation can use the MatLab software. However, using this application requires further processing to obtain red, green, and blue (RGB) intensity values. Therefore, a replacement program for matlab is needed, in this case ImageJ. Digital image processing with the ImageJ program will be applied to the determination of glucose concentration.

(Keywords: Digital imaging, segmentation, color intensity, ImageJ, glucose)
Electric and Magnetic Fields Around The Tower That Is Struck by Lightning with Simulation of Lighting Current

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ABSTRACT A lightning strike is a flow event of electric charge. The moving electric charge creates electric and magnetic fields around the strike point. Electric and magnetic fields can generate induced voltages. This electric field, magnetic field and induced voltage cause objects around the strike point to also have the potential to cause dangerous things and cause losses. Until now, there is no provision for the maximum and minimum electric field, magnetic field and overvoltage induced around the tower as the object of the strike point. WHO and INIRC already have a minimum standard for the amount of electric field exposure, magnetic field density and allowable overvoltage in living things. This unknown overvoltage value causes no official regulation from the related parties, what the minimum distance between the tower and residential settlements is. Therefore, it is necessary to conduct researches on the magnitude of the electric field, the density of the magnetic field and the induced voltage, that are around the tower as an object struck by lightning. By using a simulation of the characteristics of lightning in tropical, including the peak current of lightning, the frequency of the lightning current and the steepness of the lightning current, the calculation of the intensity of the electric field, magnetic field density and induced voltage around the tower is carried out. The simulation results show that at a distance of 50 M around the tower by using 10kA injection, 200 kHz each can get 11,472 V / m, 2,061 A.m, 1,249 kV. It is expected that these findings can be taken into consideration by related parties to determine the safe distance between residential areas and towers.

(Keywords: Electric Field, Magnetic Field, Induced Voltage)
ABSTRACT  
Business competition that is getting sluggish amidst the new life order of many companies requires that many employees be laid off, while the acceleration of technology use in companies during the pandemic has begun to be carried out quickly where the occupancy rate of using digital systems in companies to maintain company productivity and operations has begun to appear. This shows that digital transformation has been implemented. In order to revive the economy to normalcy, it is not enough that competitive advantage is carried out through price wars or product wars which are relatively easy to imitate and are temporary in nature. A company can be rated as good or bad from its own employees, therefore the company needs to take far more effective and sustainable steps, one of which is by transforming in the field of Human Resources. Human capital and personal branding can be used as tools to win this competition. This research was conducted to find out how companies increase their competitive advantage through human capital and employee personal branding in today's digital transformation era. Companies that are respondents in this study are companies that are affected by the pandemic with the criteria that they have laid off some of their employees and are about to resume normal operations.

(Keywords: digital transformation, human capital, personal branding, competitive advantage)
Development of Homemade Hybrid-RT-LAMP Lateral Flow Assay as an alternative kit for detection of SARS-CoV-2 under certain conditions

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ABSTRACT COVID-19 infection cases in Indonesia until early December 2020 are still increasing. In such conditions, the actions of testing, tracing, and treatment need to be done more intensively. The availability of practical tools is needed. In this study we succeeded in developing a kit to detect the SARS-CoV-2 virus using the reverse transcription loop mediated isothermal amplification (RT-LAMP) method combined with the lateral flow assay (LFA) technique. We developed this kit by modifying the results of published studies. This kit is designed to detect the E gene and the N gene from SARS-CoV-2. The advantage of this kit is that the reaction can be done using the isothermal method hence it can be used in certain conditions where thermocylers are not available such as in conventional RT-PCR operations. Hybridization with LFA makes it easy for users to read results, without using additional tools. Laboratory test results using synthetic E and N genes from SARS-CoV-2 show that this kit can detect gene E and gene N up to 10 and 20 copies per microlitter, respectively, within 40-60 minutes of testing. This kit still needs to be optimized, including testing using a swab sample of confirmed COVID-19 subjects based on the RT-PCR test.

(Keywords: RT-LAMP, SARS-CoV-2, lateral flow assay)
ABSTRACT  Fall army worm (FAW) is a new pest in Indonesia that has spread throughout Indonesia, including Lombok island. Since it has entered Indonesia until now, there are still no effective techniques to control it. For that reason, it is necessary to explore its natural enemies, especially the Parasitoids that associate with the larvae. The research method used was exploratory with survey techniques in the field. Exploration of Spodoptera larvae parasitoid carried out in four districts and one city. Thirty (30) research locations were determined by stratified random sampling according to the maize planted area. The insect sampling was determined diagonally with each plot size 5 x 5 m. The experiment results were shown as followed: (1) Three species of larvae of Spodoptera frugiperda parasitoid were found, namely Apanteles spp. (Hymenoptera: Braconidae), Eriborus spp. (Hymenoptera: Ichneumonidae) and Exorista spp. (Diptera: Tachinidae). (2) The level of parasitation was very low in percentage, namely 2.16% on average. (3) The levels of parasitoid dominance obtained were the families of Tachinidae (67%), Braconidae (22%) and Ichneumonidae (11%).

(Keyword: Parasitoid, FAW, Larvae, Mize, Lombok-Island)
ABSTRACT

Temperature and humidity are important things to be considered because they can be sensitive things to fulfill for certain conditions. To reach the certain conditions, both of them must be set in certain values to fulfill. Aim of research is to design a tool that can detect the temperature and humidity from a box of eggs hatching and send the data readings wireless using XBee. The results of temperature and humidity are transmitted from different place to another in different distances from 1 meter-50 meter. DHT22-Sensor is used to detect temperature and humidity of eggs hatching box. All data are processed of ATMega-328P send it through XBee-Transmitter and XBee-Receiver, before display it on a monitor. In data transmission, system uses 9600 kb/s baud rate. If temperature reading of DHT22-Sensor in range from 37.9°C-38.6°C and 50% upto 60% for range of humidity, so both of values are in set value. All of data detection are validated with Digital Sensor and Hygrometer. From results show that the range differences of temperature readings are 0.1°C-0.5°C, while humidity readings are 1%. All the results can be accepted because the different data is too small and has no affect when it is applied to hatching box.

(Keywords: Temperature Sensor, ATMega-328P Microcontroller, XBee Module, XBee S2 Transmitter-Receiver, Computer Monitor)
Effects of Ginger and Sumbawa Honey Drinks on Cough Frequency in Children with Respiratory Tract Infection

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ABSTRACT  Respiratory infections are among the most common diseases that affect humans. These illnesses can range from mild colds to serious lower respiratory tract infections such as bronchitis and pneumonia, Especially in this pandemic era. Cough is a very common presentation among sick children. Cough, more than other symptoms, is disruptive, prevents the sick child from sleeping, and might result in frustration. In the absence of effective antiviral treatment, parents try to find products that will relieve cough until the illness resolves. There is increasing evidence that a single dose of honey might reduce mucus secretion and reduce cough in children. A study offering 500 mL of water and combine with ginger extract showed good demulcent effect and antioxidant properties, and it increased cytokine release, which might have antimicrobial effects. This type of research is quantitative with a quasi-experimental approach of two-groups pretest-posttest. The population of respondents was 60 people and a sample of 24 people, the sampling technique used was the purposive sampling technique. Data analysis used the McNemar statistical test. The results showed that the average (mean) frequency of cough in children before being given ginger water and Sumbawa honey was 63.8 times. The mean (mean) frequency of cough decreased after consuming ginger water and honey from Sumbawa to 46.75 times. The results of statistical tests with the McNemar test obtained \( p\text{-value} = 0.018 \) (\( p\text{-value} < \alpha = 0.05 \)), which means that there is an effect of giving honey ginger drink on reducing the frequency of cough in children 3-5 years. Giving ginger water combined with Sumbawa honey can be used for cough treatment as well as prevention of the COVID 19 virus.

(Keywords: cough, prevention, effect, ginger, honey)
Limit Cycle in a Predator Prey-System

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ABSTRACT The emerging of a limit cycle in a system always gives some possibility of interesting behavior. In this article, a normalized predator-prey system depending on four parameters is studied. The study focuses on the bifurcation aspect of the system when one varying a parameter called the natural mortality of the predator. Using numerical continuation software, we detect the limit cycle (an isolated periodic solution) creating through Hopf bifurcation. Related to the predator-prey system, this type of solution ensures of coexistence both predator and prey as long their interaction.

(Keywords: predator-prey system, Hopf bifurcation, limit cycle)
The Effect of Short-Term Preservation on Rabbit Skin to Quality of Fur Tanned

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ABSTRACT Rabbit skin is a by-product of rabbit farming. Leather tanning has been able to increase added value while providing an alternative to the diversity of leather products. Rabbit skins are generally preserved in a conventional method which results in a deterioration in the quality of the skin, both raw and fur leather. Skin preservation is an essential part of the holistic skin tanning process. Research with a variety of methods and short-term preservation time of rabbit skin can determine the effect on the quality of fur leather. The treatment of preservation methods consists of 3 types, namely the salting, chilling, and freezing method, while the variation of the preservation time consists of 3 days and 7 days. After preservation, the rabbit skin is tanned until the post tanning process. Furthermore, the rabbit tanneries were tested for physical quality. The data analysis used in this study was a completely randomized design with a factorial pattern. Based on the results of the study, the physical characteristics of the skin, including tensile strength, giddiness, elongation and tear strength, were influenced by the preservation method, and were largely not affected by the preservation time. The freezing preservation method gives the best physical skin quality results.

(Keywords: Rabbit skin, preservation, tanning, fur quality)
True Drip Irrigation Performance on Discharge Variation and Distance of Lateral Pipes

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**ABSTRACT**

Agricultural activities must be carried out even in limited water conditions to ensure the availability of food reserves. Poor forest management has potentially reduced the availability of groundwater and surface water in fulfilling irrigation needs. In general, the irrigation water availability is limited during the dry season which causes Agricultural activities to be limited. Then it needs adequate water-saving irrigation techniques, such as drip irrigation systems. This study aims to determine the effect of lateral pipe distance on droplet uniformity, and the effect of lateral pipe length on usage discharge. The uniformity test was carried out for a duration of 5 minutes, while the lateral pipe distance variation test consisted of 0.3m; 0.5m, 0.7m and 1m. The results that the coefficient of uniformity (CU) at the variation of the lateral pipe distance and discharge was around 94% - 100% and was a good category. The highest CU was obtained at the distance between the lateral pipes of 0.3m and Qp 0.46l/s of 97.6%, while at the distance of lateral pipes of 1m and Qp of 0.30l/s, the CU was 94.6%. The conclusion of this study is the greater the lateral pipe distance, the greater the discharge is required to reach CU number of 95% and above.

**Keywords:** Uniformity (Cu), deviation, discharge, irrigation
Implementation of Blended Learning in Elementary Schools

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**ABSTRACT** This study aims to describe the implementation of the blended learning system applied to elementary schools in Southwest Sumba Regency. This research is a quantitative descriptive study. The subjects of this research are elementary school teachers who apply the Blended Learning system. In selecting research subjects, researchers used purposive sampling technique. The instruments used in this study were interviews and documentation. The results of this study are that not all primary schools in Southwest Sumba Regency apply the Blended learning system because it adjusts to the development of the number of patients who suspect the corona virus. Online learning is still limited to using the whatsapp application to receive and send assignments. Parents of students and teachers are not yet skilled in using other online learning applications such as zoom. Another problem is the unstable internet network and expensive internet packages. Offline learning is carried out with a schedule system where not all classes enter on the same day. Grade 1 and grade 2 study on Monday and Tuesday, grade 3 and grade 4 on Wednesday and Thursday and grade 5 and grade 6 study on Friday and Saturday. The impact is a simplification of the curriculum.

(Keywords: blended learning, online learning, offline learning)
Evaluating Free Cataract Surgery Services in Nusa Tenggara Barat

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ABSTRACT Cataract is an avoidable cause of blindness. According to the latest assessment, cataract is responsible for 51% of world blindness, which represents about 20 million people. In 2014, the blindness prevalence according to the Rapid Assessment of Avoidable Blindness at Nusa Tenggara Barat (NTB) was 4% with 78% of it caused by cataract. A massive cataract surgeries to reduce the cataract backlog were needed, therefore outreach free cataract surgery program was developed to boost the cataract surgical rate in NTB. This study was performed to evaluate the free cataract surgery numbers in districts of NTB province. It is a descriptive study using secondary data of free cataract surgery activities which were recorded at Perdami NTB in the period of 2014-2019. In the 2014-2019 periods there were 11,863 eyes underwent free cataract surgery. The highest number of was in 2015 for 2,917 eyes and the least was in 2017 for 1094 eyes. The district with the highest number of surgeries was Lombok Timur for 2404 eyes and the least was Lombok Utara for 232 eyes. In conclusion, the free cataract surgeries were implemented in all district of Nusa Tenggara Barat with various number of surgeries to combat cataract blindness in NTB.

(Keywords: cataract, blindness, free, surgery, NTB)
Communal Wastewater Treatment Plant Design with Upflow Anaerobic Filter Processing Technology in Rumak Village, Kediri Sub-district, West Lombok

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ABSTRACT

Low access to sanitation in Rumak Barat Selatan Village, Kediri Sub-district, West Lombok Regency has had detrimental effects, such as declining quality of the environment, including contamination of clean water sources and consequently increase the number of diseases. Preliminary survey results show that almost all people in this area have toilets but do not own septic tanks. Therefore, it is necessary to plan a communal wastewater treatment plant (WWTP), in which the waste produced will be flowed gravity through the piping network to the treatment plant by applying anaerobic filter processing technology. The research sample is a densely populated community which the population consists of 50 families. The design results obtained that the dimensions of the WWTP building are planned to have a length of 10.45 meters and a width of 3.10 meters. This building consists of several compartments including an inlet basin with dimension is 0.75 m long and 3.10 meters wide, a settling tank with dimension is 5.00 x 3.10 meters, a divider tub’s measuring 0.75 x 3.25 meters. 12 filter tanks with a length of 0.8 meters and a width of 0.8 meters and an outlet tube’s measuring 0.8 x 0.8 meters. In the filter tube, biofilters are utilized in the form of recycled plastic bottles with the aim of growing bacteria with an anaerobic system while reducing waste and saving material costs.

(Keywords: anaerobic filter, domestic wastewater, Wastewater Treatment Plant (WWTP))
Colorimetric Analysis of Citric Acid Using Silver Nanoparticles (AgNPs)

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ABSTRACT    Increased production of the industrial, food and pharmaceutical sectors in recent decades has resulted in increased use of additives. One of the most widely used food additive is citric acid. The goal of this study is to detect citric acid in food samples using silver nanoparticles as colorimetric agent and further colorimetric analysis using UV-Vis spectrophotometer and digital images. Colorimetry is a quantitative analysis technique for colored samples used to determine the concentration of a substance based on the light intensity of the color of the solution. The results showed that the limit of detection of UV-Vis spectrophotometer was 26 ppb, while those of digital image was 8.7 ppb. Therefore, digital image is more sensitive to analyze citric acid concentration colorimetrically.

(Keywords: Silver nanoparticles, colorimetry, citric acid, digital image)
Analysis of Nanomaterial-Based Colorimetric Sensors for Melamine and Polymers

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ABSTRACT The need for milk consumption in Indonesia ranges from 4.45 million tons or the equivalent of 17.2 kg per person per year with an average population of 230 million people. However, national milk production is only able to meet about 20 percent of the total consumption needs. Efforts made by the Indonesian government to meet the need for milk products are by issuing a policy of importing milk from abroad. Most of the milk in circulation or used as raw material for milk in Indonesia is about 80% imported and this milk import activity tends to increase from year to year. This indirectly in a food fraud incident in Indonesia in 2008. Food fraud on milk products and milk-based food products made in China was widely circulated. Several imported milk brands from China were declared contaminated with melamine. The addition of melamine (66% nitrogen) was illegally intended to make it appear as if milk had a high protein content. Apart from milk, the addition of melamine illegally is also found in animal feed. So that other factors, the presence of melamine in milk can be caused by the animal feed that is contaminated with melamine. The melamine content in circulating milk is very high, ranging from 8.51 mg/kg (ppm) to 945.86 mg/kg. Imports of milk are carried out to meet the demand for milk in Indonesia, indirectly resulting in food fraud. Food fraud on milk products and milk-based food processing made in China is widely circulating, and several imported milk brands from China have declared contaminated with melamine. The addition of melamine (66% nitrogen) was illegally intended to make it appear as if milk had a high protein content. Apart from melamine, other synthetic polymers are also found illegally in several other products or mediums such as clenbuterol, ractopamine, salbutamol, and formaldehyde. These compounds can endanger the health of body if consumed in excessive doses. Many studies have been conducted to overcome this problem, one of which is a nanoparticle-based colorimetric sensor. In this review, we summarize reports on gold and silver nanoparticle-based colorimetric sensors detecting melamine and these synthetic polymers which hopefully will lead to new designs in the future to be analyzed as efficiently as possible.

(Keywords: Gold nanoparticles, silver nanoparticles, melamine, colorimetric, green synthesis)
Developing Inquiry Lesson Plan to Improve Critical Thinking Skill of Students

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ABSTRACT Teachers are required to have a professional competency in arranging lesson plan in a complete and systematic way in order that the learning process becomes interactive, inspiring, and fun. Until now, either content or quality of a lesson plan developed by teachers is generally not tested the validity yet. This research was aimed at creating a valid physics lesson plan using inquiry learning model on work and energy materials. This research was a development research using model 4 D (Define, Design, Develop, and Disseminate) and limited to 3 D only (Define, Design and Develop). Dissemination was not carried out because of the limited time and energy in conducting this research. There were 4 (four) validators in this research among others: two experts, an education practitioner, and a colleague. The validity aspects consisted of lesson identity, indicator formulation and learning objective, learning material, learning model selection, learning activity, learning resources selection, and learning result evaluation. The validity result showed that inquiry-based lesson plan for learning physics on work and energy was of very good quality.

(Keywords: Lesson Plan, Inquiry, Work and Energy)
Literature Review Accuracy Code of Neoplasma Diagnosis Based on ICD-10

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ABSTRACT  A medical record officer as a health worker must be able to carry out coding activities (coder) and be able to be accountable for the results of the code he assigns. However, there are still many errors made by coding officers which are caused by several factors. The purpose of this study was to determine and increase the author's knowledge in the implementation of the coding of neoplasm diagnosis. This study was conducted by conducting a review literature. With the Literature Study method. The data sources in this study were 4 journals by looking at the inclusion and exclusion categories. Analyze Data in similarities, inequalities, views, compare and summaries. From 4 literature study journals, the accuracy of disease diagnosis coding in Indonesia is still not accurate. This is caused by unclear and incomplete diagnoses written by doctors, so that coder cannot read diagnoses written in medical records. The accuracy of coding is influenced by the doctor because the doctor wrote the diagnosis in the medical record. It is hoped that the next researchers for several related articles, need further research on other causes of inaccurate disease coding in terms of the quality of doctors and coders to clarify the problems experienced by coders and doctors in coding and writing diagnoses.

(Keywords: Coding, Disease Diagnosis, Accuracy)
Compression Behavior on Axial and Uni-Axial Forces of Pipe Composite Epoxy with Jute Fibers Reinforced

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ABSTRACT This experiment investigates behaviour of pipe constructed by the jute fiber reinforced epoxy composites. Laminate of jute fiber was constructed in three different direction variations i.e; [90o]s, [45o]s and [90o/45o]s. The composite pipe was tested in the axial and uni-axial loads using the ultimate tension (UTM) machine. The aim is developing a novel material for pipe structures that has competitiveness in compression loads. The experimental result shows that the composites pipe that has laminate structured [45o]s direction has the highest compression strength compared than other variation such [90o]s and [90o/45o]s. In addition, the composite pipe laminate mode [45o]s on axial compression testing has stress value are 58.64 [MPa] and strain of 0.0586 [MPa]. Then, it has the strength of 1.539[MPa] and strain of 0.1185[MPa] in uni-axial load direction that is compared with pipe composites in structures [90o]s and [90o/45o]s, respectively. The conclusion based on the result shown that composite laminate with [45o]s direction has potentiality for pipe construction due to their has a good behaviours on axial and uni-axial compression forces. Besides that, pipe based on the composite’s material is possible to applied in chemical plumbing and it is corrosion resistant.

(Keywords: Composite, Pipe, Jute fiber, Compression)
A Simple Model of The Influence of Gender on The Driving Behavior of Students Motorcycle Riders on Traffic Violations and Accidents in a Mataram City using a Structural Equation Model

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ABSTRACT Based on the accident data’s, which recorded that 2016 until 2019, there were average 225 traffic accidents involving students and college student riders. From these accident data’s, was found that the male rider dominated traffic accidents than female rider. This study aims to determine how a simple model can be done base on gender influences, economic and social aspect the driving behavior of student and college students on traffic accidents in Mataaram City. The Structural Equation Modeling (SEM) method, with the help of the AMOS program was used in this study. The number of respondents in this study were 792 people, consisting of 391 students and 391 college students. The model in this study consisted of 3 variables, namely behavior, violations and accidents. Driving behavior has a significant effect on traffic violations with a probability value (P) = 0.000 (<0.001), and a testing value of C.R> 1.64. The size of the estimated value in the student group shows that the effect of behavior on violations in male student rider is 30.08% stronger than that of female rider. And the effect of behavior on violations among female students is 0.8% stronger than college students. Traffic violations have a significant effect on traffic accidents with a probability value of 0.000 (<0.01), and a test value of C.R> 1.96. Traffic violations on male students have an effect on accidents by 0.992, 50.1% stronger than female students. The effect of traffic violations on student rider on accidents is 2.44% stronger than female student rider. Gender differences have a significant effect on driving behavior based on the probability value (P) = 0.000 (<0.001). On the otherhand, the results of the analysis show that the driving behavior model of the community on the Mataram City based on the review of the economic and social aspects shows a model with a variety of patterns where the GRDP review follows the Polynomial model, based on the number of cityzen population, the tendency of the Exponential model and the review of the gender probability aspect follows the Logarithmic model pattern.

(Keywords: student motorcycle rider, college student rider, gender, driving behavior model)
Application of Hybrid Solar Dryer for Supporting Community Business on The New Normal Era

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ABSTRACT The Covid-19 pandemic has an impact on people's economic activities, causing income difficulties. It takes technological innovation that can be applied at the community level to support its activities. This technology is intended to support the productivity of community groups. For the development of this dryer has been carried out in the laboratory using experimental methods. This type of dryer is a tray dryer, which uses solar energy and the stove as a source of heat. The experiment used 80 kg of cassava for drying. The results showed that the available energy for 8 hours was 5374.96 Joule, the evaporation energy was 24.67 J/kg, the temperature of the dry product increased by 3336 kJ, and the relative humidity was 34.29%. The drying thermal efficiency reaches an average of 82.36%, and the resulting moisture content is an average of 7.48%. Effective drying for 8 hours, starting at 08.00-15.00 WIB the average efficiency is 82.36%. The capacity of this dryer is 80 kg. This technology can be applied to increase people's business immunity in times of pandemics and the new normal era

(Keywords: Dryer, Community, Business)
The overview of Antibiotic Prophylaxis Usage in The Surgical Department of General Hospital of West Nusa Tenggara Province within 2018

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ABSTRACT  Surgical site infection (SSI) is one of the main complications in surgical procedures. The use of prophylactic antibiotics in surgery can significantly reduce the risk of SSI. This study aims to determine the number of SSI incidence rates, the percentage, and types of irrational use of prophylactic antibiotics in surgical patients of RSUD Provinsi NTB within 2018, and the relationship between those types of irrationality with the SSI incidence rate. This study was an observational study using patient medical record data which was taken retrospectively. Data analysis on the number of SSI and the use of antibiotics was given in a descriptive analysis based on the Gyssens and Van der Meer methods and bivariate analysis using the Chi-square method to determine the relationship between types of irrationality with SSI incidence rates. The results showed that the total prevalence of SSI was 5 patients (8.47%) out of 59. The rational use of antibiotics as much as 42.2% with the type of irrational use of antibiotics according to category IVA (effectiveness) as much as 87.5%, category IVC (price) as much as 28.12%, category IVD (spectrum) as much as 65.62%, category IIA (dose) as much as 15.62%, category IIB (interval) as much as 15.62% and category I (time of administration) 12.5%. There is no relationship between those types of irrational use of prophylactic antibiotics with surgical site infections.

(Keywords: surgical site infections, antibiotics, prophylaxis, surgery, Gyssens)
A Literature Study of the Quizizz Application to Increase Interest in Online Learning at the Elementary School Level

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ABSTRACT The Covid-19 period forced many agencies to make many changes, including educational institutions. Aiming to cut the chain of transmission, education from various levels is asked to do online learning. The conditions during the Covid-19 pandemic actually encouraged the optimization of the implementation of the independent learning program. Through the independent learning program, it opens opportunities for educators and students to continue to open their learning horizons. One of the solutions available for the success of the independent learning program during the Covid-19 pandemic is the blended learning model. Blended learning, which is a combination of online and face-to-face learning, gives students the freedom to seek as much information as possible through the internet network, of course, with a supervisory role. One of the interesting applications that can be used for online learning is Quizizz. Quizizz is very possible to be used as a means of online learning and learning evaluation. Based on the description above, the author is interested in conducting a literature study on the application of the Quizizz application to increase interest in online learning at the elementary school level. The method used in this research is literature review, namely by examining references related to the topic to be researched. Sources of information, in the form of news, books and articles that are relevant to the topic. The result of this research is that there is an opportunity to increase interest in online learning by implementing the Quizizz application for learning.

(Keywords: Literature Study, Quizizz Application, Independent Learning, Online Learning Interest, Blended Learning)
Analysis of The Relationship Between Comfort Level of Schoology Assisted Learning on The Understanding Physics Concepts

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ABSTRACT

Educators believe the learning process can be optimal because of the ease in the learning process. This study examines the guided inquiry learning model to increase the convenience of the student learning aims to determine the level of student comfort and to determine the effect of applying Schoology to the learning process. To get student response data related to the Schoology assisted learning model, use of Usability questionnaire. The scale used is a Likert scale (strongly disagrees, disagrees, strongly agrees, strongly agrees). The questionnaire sheet measuring the usefulness of the Schoology assisted learning model consists of 30 questions divided into four qualifications, eight questions about of the learning model, 11 questions about the ease of use android applications, four questions about the ease of learning, seven questions about convenience. The percentage of total benefits obtained is 70.54\%, ease of use is 71.75\%, ease of learning 75\%, and comfort is 80.61\%. The statistical test used in this study was Pearson's Conbrach Product Moment for item validity, using Cronbach's Alpha for item reliability, ANCOVA to analyze the effect of Schoology on the learning process which obtained high results. That is, we can apply the online learning process using certain Schoology to improve student understanding.

\textbf{(Keywords: Schoology, Guided inquiry, Comfort Level, Physics Concept)}
Ecotourism Suitability in the Use Zone of Teluk Bumbang Conservation Area

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ABSTRACT  Teluk Bumbang Tourism Park is a water area of 22,940.45 ha, has the potential for the development of capture fisheries, marine cultivation and tourism. However, its ecotourism has not been managed optimally. The purpose of this study was to analyze the suitability of the use zone of Teluk Bumbang for marine ecotourism. The study used a survey method with exploration and explanation of the relationship between ecological and socio-economic factors. Primary data were collected through direct observation. Secondary data were collected with the previous studies. The results showed that there were four types of substrates, namely algae (33.10%), hard corals (29.48%) and soft corals (26.92%), and sand substrates (10%). The area that suitable for ecotourism was 3,433.14 ha (13.00% of total area), but it was allocated for no take zone of 907.26 ha (3.95% of total area). Those area consisted of Batu Jangak area to Lekon Ujung, so that area can be used for diving and snorkeling tourism activities is 2,525.88 ha (9.05% of total area). With a coral cover condition of 56.4%, the carrying capacity for marine ecotourism is 141.45 hectares with 2,820 people/day for acceptable number of tourists. Activities that can be done consisted of surfing, sunbathing, swimming, diving, snorkeling and fishing tours.

(Keywords: ecotourism, use zone, conservation area)
ABSTRACT

A good service level value of a port was been measured if the time parameter required for loading and unloading of goods is shorter than the given schedule, so that it does not interfere with the other ships schedule for dock in berth. However, this condition was difficult to achieved at the port due to various operational problems at the port. To find out the service performance of a port, it is necessary to carry out a measurement of all port activities in order to obtain a service product measure of port operational performance components grouped by kind of service, consisting of service performance, productivity and port utility which as a whole includes nine indicators of service aspect. To measure the value of this indicator, primary data was needed such as data on the time the ship starts entering the port pool until the ship releases the mooring rope from the dock. Other supporting data is obtained from related technical agencies. Performance analysis was carried out in accordance with the guidelines for the Decree of the Director General of Sea Transportation of the Ministry of Transportation of the Republic of Indonesia, especially indicators of performance criteria for Lembar Sea Port. Based on this result of nine indicators analysis, it can be concluded that the performance of the Lembar Sea Port can be categorized as quite good in terms of service and productivity level. Meanwhile, from the port utilities, service operational performance level was not adequate.

(Keywords: Lembar Sea port, service and productivity, performance indicators, Port utility)
Assessment of Factors Influencing Adoption of DevOps Practices in Public Sector and their Impact on Organizational Culture

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ABSTRACT Governments work like a waterfall model in the way they deliver services. Bureaucracy and lack of coordination among departments often prevent organizations from providing a value at the right time. Moreover, the flow of knowledge and sharing experiences among hierarchical levels are out of reach because the government is a complex, legacy, and rigid system. This creates boundaries of knowledge flow and knowledge sharing among workers. As a result, these silos lead to different set of practices performed by every department which in turn, leads to invisible costs raised from not sharing such best knowledge not to mention delays in service delivery. Therefore, there is a need to adopt innovative practices in the public sector to enhance organizational culture and consequently enhance performance and productivity. While Development (Dev) and Operations (Ops) are well-known practices in the software industry, their main focus is changing organizational culture and make the flow of knowledge very smooth. They tend to boost productivity and efficiency of business activity and drive it towards leaner and outcome-oriented. This paper is work in progress aiming at assessing the factors that affect the adoption of DevOps practices in public sector. It also evaluates the extent to which the adoption of DevOps practices enhances organizational culture and lead to better productivity and performance.

(Keywords: DevOps, Public Sector, Organizational Culture, DOI, TOE)
Analysis of Entanglement Entropy in a Dicke Model Quantum System

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ABSTRACT A Dicke model quantum system is an open quantum system where N two-level atoms interact with a single mode electromagnetic cavity. Entanglement in this system is influenced by the number of atoms and coupling constants. This study aims to determine the effect of the coupling constants on the entanglement entropy and to analyse dynamics of the system. The entanglement entropies for N = 1, 2, 3, 4, 8, 16, 32 and a dynamical simulation for the system with eight atoms are computed using the Python program with the Quantum Toolbox in Python (QuTiP) module. Numerical results showed that the coupling constant has a significant effect on the value of entanglement entropy. The greater the value of the coupling constant used causes the value of entanglement entropy to increase and to reach a maximum value at a certain coupling constant. The entanglement entropy is found to be closely related to the dynamics of the system. The greater the entanglement entropy, the more quantum states of the atoms that can be accessed.

(Keywords: Entanglement entropy, Dicke model, quantum system, QuTiP)
Determining the Density Matrix of One-dimensional Single-particle Quantum Systems Using Discretized Path Integral Method

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ABSTRACT A mixed quantum system that consists of statistical ensembles can be represented by a density matrix. Other thermodynamics properties of the system can also be determined from the density matrix. Computation of the density matrix of a one-dimensional single-particle quantum system using the discretized path integral (DPI) method in a finite spatial domain is presented. The thermodynamic properties such as Helmholtz free energy and entropy were also computed. The results of the DPI method were validated using the finite difference time domain (FDTD) method for a particle in an infinite square well and an harmonic oscillator potentials. The DPI method uses smaller number of iterations but higher memory requirement compared to the FDTD method. The numerical results have shown that the DPI method produces correct numerical values compared to the FDTD results.

(Keywords: Density matrix, Helmholtz free energy, entropy, discretized path integral method, finite difference time domain method)
Application of the Variational Quantum Eigensolver (VQE) Quantum Algorithm to Determine the Ground State Energy of Helium Dimer

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ABSTRACT In line with the development of physics and information technology, quantum computation has recently been developed that uses the principles of quantum physics. Quantum computing is expected to give birth to quantum technology that is useful for realizing quantum computers as future computers. The application of the concept of quantum computers requires a quantum algorithm. This study has successfully applied the variational quantum eigensolver (VQE) quantum algorithm to determine the ground state energy of helium dimer. The atomic orbitals of helium atoms are approximated by the 6-31G basis sets. The ground state energy of helium dimer is found to be $-5.74032590 \text{ E}_\text{h}$ at an equilibrium distance of 2.3 angstrom.

(Keywords: VQE quantum algorithm, helium dimer, ground state energy)
Adding Current Density of Particle in a box Using the Complex Mass Method

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ABSTRACT In a simulation of a quantum system with current particle densities, a source and a sink of currents must be added to the system. Previous studies have shown that imaginary potentials can be used for the source and sink of currents in a one dimensional system. In this paper, we propose an alternative method, namely a complex mass method. In this method, the particle mass is expressed in terms of a complex numbers, consisting of real and imaginary parts. The complex mass causes the wave number of the system to be complex so that the solution of the wave function becomes complex. This method is based on the use of complex coordinate scaling which can provide a simple and square-integrable solution. The quantum systems used in this paper are square well potential, stair potential, and barrier potential. For each system, we determine its energy and probability current densities.

(Keywords: Schrödinger equation, current density, complex mass, square well potential)
Comparing the Performance of Ant Colony System and FireFly Algorithm for Traveling Salesman Problem

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ABSTRACT Many algorithm are applied for optimization of logistic and scheduling problem and one of the most known technique is swarm intelligence. In years, number of swarm base optimization is increased such as Ant Colony System (ACS) and FireFly algorithm (FL). This paper presents a performance comparison ACS and FL. these both algorithm are applied to the traveling salesman problem (TSP). in ACS and FL, a set of particle cooperate to find the best solution to TSP. in TSP, given a set of vertex and distance between each pair of vertex. furthermore, the problem is to find the shortest route that visits each vertex precisely once and return to the starting point. the result shows that ACS gives better performances in terms of optimal solution and fast convergence rather than FL.

(Keywords: Swarm Intelligence, Ant Colony System, FireFly Algorithm)
How Zoom Dominate Market Share on Video Conferencing Platform

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ABSTRACT Covid-19 was first discovered and spread in Wuhan China (Seo Jin-woo 2020), which then spread throughout the world. Developing countries and even developed countries are also enjoying the impact of this outbreak. The economies of countries were made to stop because people had to shut themselves off to avoid the spread of this virus, until finally the new normal (Buheji 2020) was introduced, so that activities could continue but real face to face meetings were replaced with virtual face to face meetings. In these conditions, a lot of companies go bankrupt because they do not have workers and market share, the tourism industry is dying because there are no guests (lock down policy), however there are several companies that have made big profits because of these conditions, one of them is Zoom(Iqbal 2020). Zoom is a company that produces software for video conferencing which is growing very rapidly in this pandemic. Zoom is not the only company in the business, even It is a new be in this business. It establishes in 2011 and launches the first product in 2013. if we compared with skype, it establishes in 2003, Cisco WebEx in 1995, etc. How could it possibly grab more than half of the world market share in the field of video conferencing? How is it maximizing his profit? In this study, we observe the strategy that was used by Zoom to win the competition. The results of this study show that zoom use a lot of strategies, ranging from product differentiation, bundling, price discrimination, etc., in order to dominate market share in the field of video conferencing.

(Keywords: Zoom, Strategy, Bundling, Price Discrimination, Profit Maximizing)
Modelling Ultra High Performance Fibre Reinforced Concrete UHPFRC Slabs Using Concrete Damage Plasticity Model

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ABSTRACT A comprehensive study was undertaken on 26 slab specimens to investigate the structural behaviour of Ultra High Performance Fibre Reinforced Concrete (UHPFRC) slabs under bending. The experimental study was conducted on various thickness slabs with two different boundary conditions: fully fixed (FF) and simply supported (SS). The effects of boundary conditions on the failure modes, load-displacement behaviour (first cracking load and ultimate load) and crack propagation were investigated using an innovative experimental test setup. The results showed that the appearance of microcracks (hairline cracks) occur at a displacement of around 0.25 to 0.40 mm with the pseudo strain-hardening stage ranging between 0.40 to 5 mm. The experimental test results were used to validate a nonlinear Finite Element (FE) model Using Concrete Damage Plasticity (CDP) Model in ABAQUS/Standard. The numerical simulation and experimental test results were found to be in close agreement for the load-displacement behaviour at first cracking load, ultimate load carrying capacity and crack locations.

(Keywords: Ultra High Performance Fibre Reinforced Concrete (UHPFRC), bending test, two-way slabs, finite element analysis, concrete damaged plasticity model)
Suitability of Ultra-high-performance fibre reinforced concrete, UHPPFRC, for cast-in-situ applications

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ABSTRACT Ultra-high-performance fibre reinforced concrete UHPFRC specimens were cast and cured at different temperatures of 10, 20, 30, and 90°C for periods of up to 360 days to investigate the long-term strength development. The influence of the three lower curing temperatures on the compressive and flexural tensile strengths and behaviour of UHPFRC were studied and compared to the results of 90°C cured specimens. The results indicated compressive and flexural tensile strengths development at an early age were highly dependent on the curing temperature. The 90°C cured specimens reached maximum compressive and flexural strengths within 7 days of casting. Specimens from the lower curing temperatures reached feasible striking compressive strengths (< 45MPa) within 3 days of casting and achieved similar strengths to the 90°C specimens after 90 days. The results showed that UHPFRC is suitable for cast-in-situ applications and can be made financially more affordable in the construction industry.

(Keywords: UHPFRC; Curing temperature; Compressive strength; Flexural strength)
Growth and Yield Of Peanuts (*Arachis hypogaea* L.) on Intercropping with Sorghum (*Sorghum bicolor* L.)

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**ABSTRACT** Sorghum (*Sorghum bicolor* L.) is a cereal crop with high adaptability, more resistant to drought, and has the potential to be developed as an alternative crop for food, feed and industrial needs. However, planting sorghum is rarely done because of its lower economic value than other crops. In this experiment, we intercrop sorghum with peanuts. This study aims to determine the growth and yield of three varieties of peanuts planted in intercropping with sorghum and to observe the land equivalent ratio (LER) of peanuts and sorghum intercropping. A randomized block design (RBD) was used in this experiment with 7 treatments: peanut varieties Hypoma, Takar and Tuban on intercrop with Samurai sorghum, monocrop Hypoma, Takar, Tuban and Samurai. Each treatment was repeated 3 times, there were 21 plot treatment. The results showed that the peanuts grown in monocrop had higher growth and yields compared to peanuts on intercropped with sorghum, while sorghum planted in intercropping with peanuts gave higher growth and yield than its monocrop. Peanut variety showed best growth and yield was Takar, both in monocrop and intercrop and based on the LER, intercropping peanuts with sorghum is beneficial, giving LER value of more than 1.

**Keywords:** Peanuts, Sorghum, LER
Growth and Yield Response of Shallots Applied with Growth Regulators Benzyl Amino Purine (GR BAP) and Liquid Bioactivator of Trichoderma harzianum Fungus

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ABSTRACT    Shallots are one of the leading vegetable commodities that have been cultivated by farmers for a long time, but their productivity is still low. One of the causes of the low productivity of shallots is due to the less than optimal cultivation techniques used by farmers. One of the efforts to increase the productivity of shallots is the addition of GR BAP and the liquid bioactivator of T. harzianum fungus. This study aims to determine the effect GR BAP and liquid bioactivator of T. harzianum fungus on the growth and yield of shallots. The research used an experimental method which was carried out on land owned by farmers in Senteluk Village, Batu Layar District, West Lombok Regency. The study used a Randomized Block Design with a factorial experiment consisting of 2 factors. The first factor is GR BAP which consists of two levels, namely without GR BAP (0 ppm), and with GR BAP (50 ppm). The second factor was the dose liquid bioactivator of T. harzianum fungus at 5 levels, namely: 0 g / plant; 2.5 ml / plant; 5.0 ml / plant; 7.5 ml / plant; 10.0 ml / plant. The treatment was a combination of GR BAP and liquid bioactivator of T. harzianum fungus, each of which was repeated three times so that there were 30 experimental units. The results showed that shallot plants given GR BAP could boost plant height, number of leaves, number of tillers, weight of harvested dry shallot and dry storage compared without giving GR BAP. The liquid bioactivator of T. harzianum fungus can boost plant height, number of leaves, number of tillers, weight of harvested dry shallot and dry storage. The dose liquid bioactivator of T. harzianum fungus starting from 2.5 ml / plant to 10 ml / plant has the same effect in spurring the growth and yield of shallots. The giving of GR ZPT has the same role as the liquid bioactivator of T. harzianum fungus in terms of stimulating growth and increasing yield of shallots. In other words, the shallot plants have the same response to the giving of GR ZPT and the liquid bioactivator of T. harzianum fungus.

(Keywords: Shallot, Growth Regulators, Benzyl Amino Purine, Trichoderma harzianum, bioactivator)
Determining Subsidence and Water Intrusion Zone on the LUSI Embankment using GPR and Self-Potential Method

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ABSTRACT The activity of the LUSI (Lumpur Sidoarjo) mud volcano which occurred since May 2006 has continued until now. As a result of the continuous bursting, the embankment became unstable. This research was conducted with the aim of monitoring the stability of the embankment and the direction of water intrusion on the embankment. Monitoring has been carried out at points P.67 - P.75 using the Ground Penetrating Radar (GPR) method and the Self Potential (SP) method. The results of the GPR measurement show that there are cracks at a distance of 70 m and 120 m from the starting point of measurement with a depth of 3 - 4 m. There is an intrusion zone wide enough to a depth of 4 m at a distance of 270 m which can lead to subsidence. The SP measurement results show intrusion in several parts of the embankment and dominated by water intrusion from the inside of the embankment. Correlation of GPR and SP data shows an accurate relationship in determining the subsidence zone and water intrusion on the embankment.

(Keywords: Ground Penetrating Radar, Self-Potential, Embankment Monitoring, Sidoarjo Mud Volcano)
Conversion of Bamboo Waste from Chopstick Industry to Activated Charcoal

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ABSTRACT  Bamboo has great potential to be used as industrial raw materials due to its fast growing and high mechanical properties. Utilization of bamboo for chopsticks manufacturing industry remained abundant of waste which is not yet properly utilized. The main purpose of this study is to convert those bamboo waste material to Activated Charcoal. The raw material used in this study was Ampel bamboo waste (Bambusa vulgaris Schrad. Ex J.C. Wendl.) obtained from the chopsticks manufacturing factory CV. Jaya Abadi, Tasikmalaya, west Java, Indonesia. Activation process is carried out by heating the charcoal with temperature variations of 850˚C, 900˚C, and 950˚C respectively. In addition to temperature the activation period used in this study were 30 minutes, 60 minutes, and 90 minutes respectively. Quality parameters evaluated in this study were moisture content, volatile matter content, ash content, fixed carbon content, absorption of benzene, absorption of iodine, and absorption of methylene blue. The result showed that ampel bamboo waste can be used as a good raw material for activated charcoal. Ampel bamboo activated charcoal produced meets the SNI 06-3730-95 quality standard for the essential parameters. The best activated charcoal is obtained from the activation process of 90 minutes with temperature of 900˚C.

(Key words: activated charcoal, chopstick, bamboo, waste)
Marketing Strategy Of Roti X Product During The Covid-19 Pandemic

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ABSTRACT The development of a bakery business is a great opportunity for business people during this Covid-19 epidemic. Competition is getting tighter from competitors resulting in companies being demanded to be able to make the best strategy to outperform the market. At one of the producers Roti X, a product marketing strategy was formulated using the Quantitative Strategic Planning Matrix (QSPM). This method can objectively establish a prioritized alternative strategy. This method consists of three stages in which the first stage produces 12 key internal factors with a weight score of 2.875 on the IFE matrix, 11 key external factors with a weight score of 2.827 on the EFE matrix, and 11 critical success factors according to consumer point of view with a score of 3.238 on the CPM Matrix. In the second stage, an IE matrix is used which states that the company is in cell V (guard and maintain) and uses a SWOT matrix that produces 6 alternative strategies. In the third stage, the highest Sum Total Attractiveness Score (STAS) was produced at 6.164 for the alternative strategy, namely product development (adding filling variants).

(Keywords: IFE Matrix, EFE Matrix, CPM, SWOT Matrix, QSPM)
Does Access to Formal Credit Scheme Matter to Small and Micro Entrepreneurship: When a Guaranteed Loan is Available

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ABSTRACT The study aims to identify the ability of small and micro-entrepreneurship (SME) to access credit from formal financial institutions when the guaranteed loan is available, and the loan’s impact on their business performance. Primary data were obtained from 100 respondents who are SMEs in Lombok. The logistic regression method was employed to analyze the impact of the ability to access loans on business performance. The survey result shows that SMEs have minimal access to banking, where most of the SMEs who were respondents in this study, namely 57.5%, used informal financial institutions as their primary source of financing. Further, the analysis results show that the amount of savings and sales influence the ability of SMEs to access loans, then the ability of SMEs to access loan has a positive and significant impact on the development of SMEs.

(Keywords: loan access, banking financing, guaranteed loan, informal financial institution, business performance)
Bond Strength of Anchor Bolt with Various Bending Length of Embedded Reinforcement on the Normal Concrete

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ABSTRACT The bond stress between steel reinforcement and concrete will be affected by reinforcing bars depth, and it may increase when the end of the reinforcement was bend. In this research, the compressive strength, shear strength and adhesion strength were tested for normal concrete. Bond strength was examined by embedding plain steel reinforcement with a diameter of 10 mm on cylindrical specimens of normal concrete with bending length variations of 0, 20, 40, 60 and 80 mm. The bond strength test is carried out by measuring the maximum load, the elongation deformation of the steel reinforcement, and the type of failure. The results showed a correlation between bond strength and bending length. The maximum bond strength was obtained at a bending of 60 mm, that is 6,515 MPa. The bond strength decreased when the bending reinforcement length is more than 60 mm with the smallest is 5,586 MPa at a bend length of 80 mm. Based on the correlation between the bond strength and the shear strength, it was found that the development length of bond strength is longer than the shear strength of concrete. Moreover, failure analysis showed that all of the specimens experienced bonding failure, it was caused by losing the bonding of steel reinforcement to the concrete.

(Keywords: normal concrete, anchor bolt, bending length, bond strength)
The Effect of Laterite Substitution on Marshall Stability in Asphalt Mixtures

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**ABSTRACT** Until now, the use of laterite as a coarse aggregate material in the asphalt mixture has not been optimally utilized. The purpose of this study was to determine the characteristics of Marshall and determine the optimum asphalt content from the use of laterite as a substitute for coarse aggregate so that laterite can be used as a highway construction material. In this study, Marshall specimens were made with variations of laterite as a substitute for coarse aggregate at levels 0%, 25%, 50%, 75% and 100% and the asphalt content of the plan was 4.5%, 5%, 5.5%, 6%, and 6.5% which will then determine the optimum bitumen content, stability, flow, VIM, VMA, VFA and MQ in the Asphalt Concrete – Wearing Coarse (AC-WC). Based on the results of the study, it was found that the use of laterite stone as a substitute for coarse aggregate in AC-WC was a maximum of 75% and the optimum asphalt content value was 6.22% with Marshall characteristics including the stability value of 1480 kg, flow 3.85%, VIM 4.20%, VMA 16.40%, VFA 74.00% and MQ 390.00 kg/mm. The results showed that the use of laterite stone met the requirements for asphalt concrete pavement AC-WC.

(**Keywords:** Laterite, Asphalt Concrete – Wearing Coarse (AC-WC), Marshall, Optimum Asphalt Content)
Yield Performance of Irrigated Aerobic Red Rice Intercropped with Peanut under Long-term Application of Organic Wastes

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ABSTRACT Intercropping with legume crops has been reported be able to improve soil fertility, nutrient uptake, growth and yield of cereal crops. This study aimed to examine the effects of intercropping red rice with peanut grown on permanent raised-beds in aerobic irrigation systems and long-term application of several organic wastes. The experiment was conducted in a rice field in Beleke village of West Lombok, Indonesia, which was designed with Split Plot design, testing two treatment factors, namely intercropping with peanut as the main plots (T1: monocropped red rice, T2: red rice intercropped with peanut, T3: red rice intercropped with peanut and thin-covered with rice straw mulch) and application of organic wastes as the subplots (L0: without wastes, L1: application of rice husks, L2: rice husk ash, L3: rice husk ash + cattle manure). In the intercropping treatments, one row of peanut was dibbled between triple rows of red rice. Each combination was replicated three times. Results indicated that long-term application of organic wastes had a significant effect on all observation variables while intercropping had a significant effect only on tiller number, filled grain number, and grain yield per clump. However, there were significant interaction effects on plant height, leaf number, filled grain number and grain yield per clump. Based on this interaction, average grain yield was highest in the intercropped red rice (T2) supplied with rice husk ash and cattle manure (L3) (52.76 g/clump or 10.24 ton/ha) or in the intercropped red rice thin-covered with rice straw mulch (3) supplied with rice husk ash and cattle manure (L3) (50.33 g/clump or 9.92 ton/ha), and the lowest in the monocropped red rice (T1) without application of organic wastes.

(Keywords: red rice, organic wastes, irrigated aerobic rice system, permanent raised-beds, peanut)
Hybrid Vigor in F1 hybrids of Okra (Abelmoschus esculentus (L) Moench.)

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ABSTRACT  Okra is a vegetable crop, belongs to the family of Malvaceae. Okra fruits are rich in nutrition for health recovery from some disease such as dysentery, gastric irritation and diabetes. Hybrid vigor or heterosis is a value describes as an improvement in genotype appearance of the hybrid progenies compared to the parents. Heterosis has been utilized by plant growers to increase the productivity of various plants. Two Okra genotypes, red fruit genotypes - improved variety and green fruit genotypes - Bima local variety, have been cross breed to obtain F1 and F1-reciprocal (F1r) hybrid progenies. This research aims to estimate the value of Mid Parent Heterosis and High Parent Heterosis (heterobeltiosis) in some quantitative characters of F1 and F1r progenies. The field experiment is designed in Randomized Completed Block Design with 4 genotypes as treatments and 4 replicates for each treatment. The results of this research reveal that there are positive heterosis and heterobeltiosis for some quantitative characters in F1 and F1r hybrid progenies of Okra tested.

(Keywords: heterosis, F1 hybrid progenies, reciprocal)
Kampung Sehat Program as The Implementation of One Health in The Response to The Covid-19 Pandemic

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ABSTRACT The increase in daily Covid-19 cases had put West Nusa Tenggara province in the top ten provinces with the most daily cases. The mortality rate due to Covid-19 also exceeds the national mortality rate. Countermeasures have been made by the NTB provincial government, however highlighting the need for the implementation of one health measures and practices to improve human health and reduce the emergence and lessen the social and economic impact of the COVID-19 pandemic. Kampung sehat is an effort while One Health became its principle. An exploratory study in 30 nominated villages for Kampung Sehat competitions in West Nusa Tenggara was conducted to find out how cross-sector cooperation between health, social and economy, security, and institutions can enact a synergy in tackling Covid-19 pandemic. From the indicators used as benchmarks for Kampung Sehat, it was found that there was resource mobilization which assisted in the implementation of the One Health activities such as resources on surveillance and monitoring of the COVID-19 pandemic, on assurance of Covid-19 prevention education to the lowest elements of society. These tasks were well distributed at the village level through existing communities in the community and newly formed groups (task force Covid-19). However, it is necessary to conduct an in-depth study regarding the correlation of this program on the number of daily cases. Kampung Sehat program triggers cross-sectoral prevention efforts in deal with the Covid-19 pandemic.

(Keywords: kampung sehat, one health, pandemic covid-19)
Survey On Knowledge, Attitude, And Behavior Related To The Covid-19 Pandemic In West Nusa Tenggara

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ABSTRACT

The increase in daily cases of Covid-19 in West Nusa Tenggara and its mortality rate exceed the national death rate, underlie the launch of the Kampung Sehat program. Two months after the release in June, basic information is needed on knowledge, attitudes and behavior of the people of NTB towards this pandemic. The population was all NTB people who lived in villages participating in the Healthy Village Competition. The sample size was selected by random stratified sampling method until 60 villages were selected from the 2 selected sub-districts. The purposive sampling method in sampling was carried out to collect 1838 respondents who met the requirements. Survey data were collected using an online questionnaire where the data was sent in real time to the data processing center. From the knowledge component, there were still respondents who did not know that Covid-19 sufferers may asymptomatic, thought that Covid-19 only exists in Indonesia and Covid-19 cannot be controlled. Few respondents comprehend that the symptoms of Covid-19 vary widely, do not understand how to prevent it, self-isolate, and self-quarantine. From the attitude component, it was found that respondents admitted that they would not reprimand people who did not use masks in public places and would not help neighbors / relatives if someone was affected by Covid-19. From the behavioral component, most respondents admitted that they still had to go out of the house during the pandemic, even half of the total respondents still traveled outside the city. Half of them admitted that they still took their children and families to go to public places. Generally, the knowledge, attitudes and behavior of the people of NTB towards Covid-19 are quite good, except for a few components. However, this becomes an obstacle in overcoming it if the proper education is not immediately given.

(Keywords: survey, knowledge, attitude, behavior, covid-19 pandemic, west nusa tenggara)
Patient Satisfaction of National Health Assurance (BPJS) Toward Health Services at Mataram University Hospital in 2020

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ABSTRACT Health efforts are an important element in society so the government provides the JKN program organized by BPJS Kesehatan. Hospital is one of the BPJS Kesehatan provider facilities which has a minimum service standard that must be met because it has implications for the level of satisfaction felt by patients. The purpose of this study is to describe the level of satisfaction of outpatients and inpatients of JKN participants towards health services at Mataram University Hospital. It is descriptive quantitative with cross sectional method and data was collected using online questionnaire. 91 outpatients with JKN participants and 43 inpatients according to the sampling criteria were involved. Importance-Performance Analysis (IPA) and Cartesian diagram used for analysis supported by SPSS version 26.0. Satisfaction level of both outpatient and inpatient BPJS Kesehatan participants in general reached very satisfied in all variables reviewed. Mataram Hospital has to pay attention to several variables that require increased performance.

(Keywords: Satisfaction, BPJS, Outpatient, Inpatient)
New Atrial Fibrillation in Patient with Suspect Pulmonary Embolism Due to COVID-19 Virus

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ABSTRACT Among COVID-19 patients, atrial fibrillation (AF) was detected in 19% to 21% of all cases. Several studies have demonstrated increased prevalence of AF in patients with acute pulmonary embolism (PE). We reported a 55-year old man with shortness of breath and confirmed COVID-19. His blood pressure was 122/84 mmHg, heart rate 100 bpm, respiratory rate 19 times per minute, SpO2 97% with non rebreathing mask 15 lpm. Electrocardiogram performed sinus tachycardia 100 bpm, chest X-ray showed bilateral pneumonia with normal cardiac. Laboratory showed haemoglobin 16.5 mg/dL, leucocyte 7700 /uL, thrombocyte 123000/uL, CRP 91 mg/L. On the 4th day, his blood pressure was 84/60 bpm, SpO2 90% with high flow nasal canule. ECG showed new atrial fibrillation with rapid ventricular response, SGOT 268 U/l, SGPT 294 U/l, CKMB 113 U/l, HS-troponin 15.4 ng/L (high). This patient was suspected pulmonary embolism. He was planned to undergo CT Scan cardiac but he was not in stable condition. He was treated with norepinephrine 0.1 ug/kg/minute to manage septic shock, enoxaparin 0.6 cc for 8 days, followed by edoxaban as anticoagulant. Afterwards, ECG converted to normal sinus rhytm. The patient was discharged on the 20th day hospitalization with a good condition.

(Keywords: Pulmonary embolism, shortness of breath, covid-19, atrial fibrillation)
Bioengineering of Transcription in an Open World: Incubation Time and mRNA Generation in Cell-free Technology Platform

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**ABSTRACT** Cell-free expression is simple, rapid, and flexible technology to produce functional proteins. Since the reactions occur outside the cell, various modifications can be optimized to increase protein production. In this study, transcription of the 6D\textsuperscript{9} antibody-encoding gene was carried out at several time intervals. The results showed that the transcription time of 1, 2, 3, 9 h generated 240, 418, 600, and 1,180 µg/ml of mRNA respectively. However, the transcription time of 16 h only produced 1,220 µg/ml mRNA. The results of this study indicate that the transcription time of 9 hours is the most cost-effective time to produce mRNA.

*(Key words: Cell-free, mRNA, transcription time, 6D\textsuperscript{9}, antibody)*
Bioactivity of Seaweed Extracts Collected from Barranglompo Island as Antibacterial and Cytotoxic Agents

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ABSTRACT The objectives of this study was to investigate antibacterial and cytotoxic activities of crude extracts of the three seaweeds Sargassum sp, Codium sp, and Caulerpa sp, collected from Barranglompo Island, South Sulawesi. By using snorkeling equipment, seaweeds were taken at a depth of 0.5 to 2 meters by cutting them from substrate where they grew up. Samples were washed to remove derbies attached then freeze-dried, powdered and extracted with methanol and ethyl acetate individually to obtain two crude extracts for each sample. Antibacterial activity of all extracts was performed with agar diffusion method against five Gram negative pathogenic bacteria Escherichia coli, Salmonella thypi, Pseudomonas aeruginosa, A. hydrophila, and V.harveyi. Cytotoxicity of crude extracts were conducted on the animal test the Brine Shrimp Artemia salina larvae. The results showed that all extracts revealed inhibitory activity against S. thypi and A. hydrophila but no activity against P. aeruginosa. The inhibition activity against E. coli and V. harveyi was shown only by the extracts of Sargassum sp. The highest antibacterial activity was expressed by the methanol extract of Caulerpa sp with an inhibition zone of 32 mm which approached the commercial antibiotic cyprofloxine as a positive control. In general, all extracts showed cytotoxic activity against A.salina larvae. Ethyl acetate extract of Sargassum sp indicated the most toxic extract with an IC₅₀ value of 35.2 µg/mg while the lowest activity was by methanol extract of Caulerpa sp. In summary, thyl acetate extracts showed higher potency compared to methanol extracts for all samples. Methanol extract of Caulerpa sp exhibits strong antibacterial activity but is weak as a cytotoxic.

(Keywords: antibacterial activity, cytotoxicity, seaweed extract)
Nutrient Conversion and Growth of Nile Tilapia (*Oreochromis niloticus*) Reared in Aquaponic systems and conventional aquaculture system

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Abstract  Environmental pollution has become a major issue faced in aquaculture industries, and aquaponics system has been considered as a solution to the issue. This study aimed to compare nutrient efficiency and growth of Nile tilapia reared in an aquaponic system and a conventional aquaculture system. The result showed that the growth of Nile Tilapia in the aquaponic system was double the growth of reared in the conventional aquaculture systems, 3%BW/day and 6.8 % BW/day for aquaponic systems. In addition, total biomass conversion harvested from the aquaponic system was nearly four times total biomass harvested from the conventional aquaculture system.

(Keywords: Aquaponic system, Growth, Total biomass, Nile tilapia)
The Effectiveness of Online Practicum in Agriculture During the Pandemic in Indonesian Higher Education

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ABSTRACT The government encourages distance learning policy to cut the spread of Covid-19, including lectures and practicum activities at universities. Agriculture faculty students conducted practicum independently in their respective residences. Practicum in agriculture includes land preparation, cultivation, post-harvest and processing, social experiments. In the implementation, this online practicum has weaknesses and strengths. The purpose of this study is to evaluate the effectiveness of practicum in agriculture. An online questionnaire was distributed to students registered in the faculty of agriculture in Indonesia. The data will be analyzed using qualitative descriptive analysis. The preliminary results of the study indicated that practicum in agriculture was ineffective. The main challenges were difficulties in understanding the instruction, practicum material, as well as poor internet connection networks. This study opens challenges for the feasibility study of face to face practicum during the pandemic.

(Keywords: effectiveness, practicum, agriculture, pandemic)
Optimization Production Capacity by Improving Transfer Chute to Control Material Flow and Prevent Belt Conveyor Off Center Line in Mining Plant

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ABSTRACT Transfer chute are widely used in mining processing plants to transfer between belt conveyors from one to other. The proper chute design is influence onto belt conveyor run in stable position, maximal load capacity and resulting high production throughput with minimal operation disruptions. The chute can be a straight, curved, spiral, open topped or enclosed depending on the transfer point structure and conveyor incline. Evaluating performance is important role to see the reliability the conveyor system entirely in order to optimizing plant utilization. Current application in real operation of XYZ Coal mine company, the chute is not really feed uniformly onto the receiving conveyor. Due to this issue, erratic capacity is occur against the conveyor. Pareto chart is a tool for viewing the occurrences on belt conveyor failure that caused by the chute problem. Photographs that is provided in the table and trending of load tones per hours (Tph), those are a visual validation. Review existing feed chute through previous design and analyze for dimensional, cross sectional, model and various deviations are found. Mechanical modelling is presented to solving by referring to related literature. Precise dimensions, models, and flow patterns obtained. Control the materials flow that appropriate to prevent belt off center line and optimizing the production throughput.

(Keywords: Transfer Chute, Reliability Conveyor, Analyze and Redesign, Control Materials Flow, Optimization Capacity)
Analysis of Katon Weir Water Availability to Planting Patterns and Regional Water Supply Systems of Katon Irrigation, Janapria District, Central Lombok

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ABSTRACT The objective of the study was to determine the condition of the irrigation area and water balance of the Katon Weir and how to use water more efficiently as an evaluation material to obtain optimal results in managing the irrigation water network with a ‘rice-rice-secondary’ cropping system. The analysis of continuous water supply is carried out continuously in K1, tertiary rotation in K2, secondary rotation in K3, and primary rotation in K4. The results show that by rotating the four systems of the group, according to the K factor for Q80%, K1 is obtained 2 times, K2 and K3 do not exist, and K4 is 22 times. The availability of water is Q50%, K1 is 3 times, then K2 is not available, K3 is 2 times, K4 is 19 times. Meanwhile, water availability of Q20%, K1 as much as 5 times, then K2 once, K3 4 times, K4 as much as 14 times. It can be suggested that the need of water balance in Katon area for irrigation is still experiencing a lot of water shortages.

(Keywords: water needs, water availability, water balance)
Intervention of Government in Reducing Disparity Grain and Rice Price in Domestic Market Lombok West District

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**ABSTRACT**

The debate about the necessity of government intervention in the market of domestic rice has been a discussion that was not resolved until the present time. This is because there are arguments of price stabilization including reducing the disparity between the grain price at farmers and retail level. So, to answer these arguments it requires in-depth research on whether it is needed or not the intervention the domestic grain and rice markets. The objectives of this study are first, to measure the level of price stability for grain and rice, second, to analyze the price disparity of grain and rice, and third, to analyze the role of government in stabilizing prices for grain and rice in the domestic market. This research used descriptive method by choosing the West Lombok District as the research area. The data collected were the secondary data from the West Nusa Tenggara Agriculture Office at provincial level. Data were analyzed using coefficient of variation, price transmission flexibility, and simple regression and correlation analysis. The results of the study showed that first, the stability of grain prices and rice prices is less stable in the period of 2018-2020. Second, the disparity between the price of grain and the price of rice is quite wide, namely around 42% to 54%. The flexibility of the transmission of grain prices and rice prices is not proportional, where the change in the price of rice at the retailer level is transmitted very low to the price of grain at the farmer level, which is less than 10% or as much as 0.9154. Third, the role of the government in the stability of prices for unhulled rice and rice in the domestic market is quite good but its role is still low.

**(Keywords: intervention, disparity, market, grain, rice, domestic)**
Analysis of The Causes and Prevention of Runway Excursions

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ABSTRACT The incidence of flight accidents 96% occurred on the runway. Where, 80% of accidents due to excursions result in death. Excursion is the improper exit of the aircraft from the runway. The plane got out because it couldn't stop after it reached the end of the runway. Data for the last 16 years, in Indonesia there have been 3 accidents due to excursions which claimed many lives and materials. So it is necessary to study with the aim of knowing the dominant factors that cause excursions and finding recommendations for handling them. This paper is a literature review. The analysis uses secondary data taken from several articles in journals and other sources. Based on the discussion of the results of the data analysis, it was found the dominant factors that caused the excursion. Furthermore, based on the impact, a discussion was conducted with several references to obtain recommendations for appropriate treatment. The study results show that the dominant factor causing the excursion is the runway which is wet or inundated by water, in addition to the condition of the aircraft components. The recommendation to reduce incidence is to make good drainage, so that there is no stagnant water on the runway surface. In addition, inspection of aircraft components must be carried out carefully and strictly so that they can.

(Keywords: runway excursions, flight accidents, drainage factors, aircraft condition)
Level of Application of Health Protocols for Agricultural Students Syiah Kuala University

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ABSTRACT Health protocols are rules and regulations that all parties need to comply with during the Covid 19 pandemic in order to be able to do activities safely and not to endanger the safety or health of themselves and others. The application of health protocols is expected to minimize the transmission of Covid 19 in the community. Health protocols consist of several types, such as wearing a mask when leaving the house, keeping your distance, and washing your hands before and after leaving the house. The purpose of this study was to determine the level of application of health protocols by agricultural students at Syiah Kuala University during the Covid 19 pandemic. The method used in this study is a descriptive method with a qualitative approach, namely a research method that emphasizes qualitative data carried out by survey using a questionnaire aimed at individuals by Syiah Kuala University agriculture student. This research was conducted from December 2, 2020 to December 7, 2020, which was conducted online by every student of Syiah Kuala University. The results showed that students who implemented health regulations well were 55.2%. The survey results showed that 48.3% always wore masks and 48.3% always washed their hands after leaving the house and 34.5% students kept their distance when leaving the house.

(Keywords: Health protocols, Covid-19, unsyiah agriculture students, Protocol implementation)
The Effect of Using LEDs (Light-Emitting Diodes) as a Lighting System in a Greenhouse on Lettuce *(Lettuce Sativa L.)*

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ABSTRACT Lettuce (*Lactuca sativa L.*) is a leaf vegetable plant that has high economic value. Lettuce is commonly consumed raw, therefore lettuce production must be clean and free from the use of pesticides. In a controlled environment, the lighting system is one of the most expensive components. Solid-state lighting technology based on light-emitting diodes (LEDs) offers a huge possibility in horticultural lighting. The aim of this study was to examine the effect of LED color on phytochemicals and morphology in lettuce plants. The method used in this research is literature review. Based on the results and discussion, it can be concluded that using red LEDs (610 nm - 720 nm) and blue (435 - 480 nm) can increase the phytochemical content of lettuce such as 2% β-carotene content, increasing the absorption of chlorophyll a and b by 1.57 mg / gr, phenolic 6%, and so on. The morphological properties of various types of LED lighting indicate that on average using red LEDs (610 nm - 720 nm) can improve morphology in lettuce such as biomass, height growth of 11 cm, leaf growth of 689.9 cm2, and so on.

(Keywords: Lettuce, LED, phytochemicals, morphology)
PHYSICAL CHARACTERISTICS OF MANGGIS FRUIT
(Garcinia mangostana L)

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ABSTRACT The physical characteristics of the mangosteen fruit are very necessary in the process of designing various mangosteen fruit processing machines and equipment. This study aims to determine the physical characteristics of the mangosteen fruit. The results of this study indicate that the average diameter of intercept A (length) is 57.11, intercept B (width) is 55.15, and intercept C (thickness) is 51.07. The average value of roundness of mangosteen is 0.954 and the average value of mangosteen is 0.906. The maximum roundness value of the mangosteen is 0.999 and the maximum roundness value that the mangosteen has is 0.998. This shows that the shape of the mangosteen fruit is round and round with a value close to 1.

(Keywords: physical characteristics, mangosteen, roundness, sphericity)
The Development Strategies of Vegetable and Seasonal Fruit for Sustainable Economic Restoration of Smallholder Farmer Households After The 2018 Earthquakes and Pandemic Covid-19 in Upland of North Lombok

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ABSTRACT This research brings to reality restoration of smallholder households economy through developing agribusiness of high economic value of upland horticulture commodities. The general objective of the research is to analyse the acceleration of economic recovery of smallholder farmer households after the 2018 earthquake through empowering farmer groups of dry land horticulture agribusiness based. The specific objective is to determining and analysing the effect of the sinergy among Higher Education Institution, Local Government, Agricultural Extension officer and private enterprise with the mission of Better Farming, Better Business and Better Living. It was the longitudinal action research by implementing Participatory Action Research with society participatory approach. The first stage of sequential on the farmer’s land was Focused Group Discussion to socialize the program. It was followed by pioneering work of partnership with actors of tourism business as being output market of vegetables and fruits that farmers grown. The data was not only recoded from farmers target groups, but it was also gathered from 60 household surveys in three villages nearby the pilot project village. The cross classification between food expenditure and sufficiency of energy consumption was used to measure the degree of food security of household. Meanwhile, the regression analysis of Multinomial Logistic was used to analyse the factors affecting food security degree of households. It is concluded that developing agribusiness of upland horticulture has high potential for reinforcement of economic recovery of smallholder farmer’s household after the 2018 earthquakes and pandemic COVID-19. Implementing Tripartiete approach for developing agribusiness of dryland horticulture base has a positive impact to economic recovery of smallholders farmers households. They were in enough food category that depicted by 85.50% of energy consumtion degree. Food security based on distribution of household food need was in the category of low expenditure of food (less than 60%). Food security of household based on cross combination between the degree of energy consumption and the proportion of food expenditure were 61% of them were resistance to food scurity, 30.85% of household were vulnerable of food scurity, and 6.20% of households were troubled of food scurity and 61.25% of them were lack of food. The dryland household farmers have high inistrinsik motivation fo growing crop of horticulture. It is indicated that they realize that North Lombok region is a tourism destination that needs to be supported by supplying high economic value, quality insurance and friendly environment of vegetables and fruits. Therefore, the tripartiete approach should be expanded and completed by involving local business actor for output markering.

(Keywords: economic restoration, agribusines, upland vegetables and fruits)