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# PROGRAM BOOK 13<sup>th</sup> ISIEM 2021

INTERNATIONAL SEMINAR ON INDUSTRIAL ENGINEERING AND MANAGEMENT

[Production and Service System in The New Normal Era]

Bandung, West Java, Indonesia

July 28, 2021



Organized by:  
INDUSTRIAL ENGINEERING DEPT.



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## PREFACE

*Bismillahirrahmanirrahim,  
Assalamu'alaikum Warrahmatullah Wabarrakatuh,*



First of all, we apologize for the inconvenience in the 13th ISIEM 2021 event, due to current condition and situation of COVID 19. The situation made us have to make some critical modification in the event, including: online presentation of keynote speaker, online presentation for all candidates that cannot attend the seminar. But we hope we all remain excited to continue to contribute to research publications. Nonetheless, we are trying to prepare this seminar as best we can.

This issue is published in line with the Thirteen International Seminar on Industrial Engineering and Management (13<sup>th</sup> ISIEM) 2021. The articles cover a broad spectrum of topics in Industrial Engineering and Management, which are Quality Engineering Management, Decision Support System and Artificial Intelligent, Ergonomics, Supply Chain Management, Production System, Operation Research, and Industrial Management. These articles provide an overview of critical research issues reflecting on past achievements and future challenges. Those papers were selected from 137 abstracts, and we send these papers to AIP to be published there as an Open Access Proceeding Scopus. This statistic shows the high competition to get published on this proceeding. This issue and seminar become special as more delegates come and join from various country as well as universities. We host 90 delegates both from abroad and local.

The 13<sup>th</sup> ISIEM is hosted by eight universities, which are Universitas Pasundan, Universitas Esa Unggul, Universitas Trisakti, Universitas Tarumanagara, Universitas Al-Azhar Indonesia, Atma Jaya Catholic University of Indonesia, Universitas Pancasila and Universitas Mercu Buana. This is the thirteenth years of the collaboration of those universities, and the first time we had MOU with AIP in America to publishing the papers that is indexed by Scopus. This is also the second years of our international partnership join committee with Chung Yuan Christian University – Taiwan, Yuan Ze University – Taiwan, Kasetsart University – Thailand and Bright Star University – Libya.

In this occasion, let us give special thanks to Prof. Yung-Tsan Jou, PhD (Professor and Chair Department of Industrial and Systems Engineering, Chung Yuan Christian University – Taiwan), Prof. Yun-Chia Liang, PhD (Professor and Chair, Department of Industrial Engineering and Management, Yuan Ze University – Taiwan), Elisa Lumbantoruan (President Director & CEO at ISS Indonesia, Independent Commissioner at PT Indosat Tbk, and Independent Commissioner at Garuda Indonesia) and Naraphorn Paoprasert, Ph.D (Researcher, Department of Industrial Engineering, Faculty of Engineering, Kasetsart University – Thailand), for their contribution as keynote speakers, to Prof. Abdelnaser Omran from Brightstar University, and supported by Indonesian Association of Industrial Engineering Higher Education (BKSTI) and the Institution of Engineer Indonesia – Industrial Engineering Chapter (BKTI-PII). We are also grateful to all reviewers and editors, for their commitment, effort and dedication in undertaking the task of reviewing all of the abstracts and full papers. Without their help and dedication, it would not be possible to produce this proceeding in such a short time frame. I highly appreciate all members of committees (advisory, steering, and organizing committees) for mutual efforts and invaluable contribution for the success of seminar.

*Wassalamu'alaikum Warrahmatullah Wabarrakatuh.*

Dr. Winnie Septiani, ST, MSI, CIQaR  
Chairman

## The Conference Program

**0830**

Zoom Meeting Open,  
Welcoming, Informations,  
by the Committee



**0900**

Welcoming Remarks,  
Code of Silence, National Anthem  
by MC: Dr. Ir. Yogi Yogaswara, MT.



**0915**

Greeting Speech by Chairman  
Dr. Winnie Septiani, ST, MSI, CIQaR



**0920**

Opening Speech by  
Prof. Dr. Ir. H. Eddy Jusuf, SP, MSI., MKom.  
Rector of Universitas Pasundan



**0925**

Partnership Ceremony by  
Representation of University Committee  
and Partner University



## The Keynote Session



Modertator,  
Riana Magdalena, SSI., MBA.



**0930**

Prof. Yung-Tsan Jou, Ph.D.,  
Chung Yuan Christian University  
Taiwan



**1000**

Naraphorn Paoprasert, Ph.D  
Kasetsart University  
Thailand



**1030**

Prof. Yun-Chia Liang, Ph.D.  
Yuan Ze University  
Taiwan



**1100**

Elisa Lumbantoruan,  
Independent Commissioner  
at Garuda Indonesia

Question and Answer 1130-1200

**Lunch Break 1200-1300**

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Atma Jaya Catholic University of Indonesia || Al Azhar Indonesia University  
Universitas Pajadjaran || Institut Teknologi Sepuluh Nopember || Universitas Mercu Buana

**PARALLEL SESSION 1300-1700**



\*All time in WIB (Western Indonesian Zone - GMT+7)

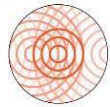


## Join the 13th ISIEM Seminar Guideline



Dress appropriately. This is an international event with huge number of participants coming from many countries.

Please be aware of your surroundings. Adjust your work setup so that you face a window or are exposed to plenty of light, and make sure you use the virtual background given by the committee. It is recommended to put on the earpiece or headset equipped with microphone.



Leave the keyboard alone. It will prevent you from devoting your full attention to the meeting

Check your connection. Make sure your network adapter, Wi-Fi or internet connection is in a working condition to avoid zoom meeting problems during the plenary and parallel sessions



Mute the microphone. The honorable speakers will deliver great speeches. So please mute your microphone when you are not speaking to give other participants the ability to chime in and share their thoughts without any distraction



The participant may turn off the webcam. During your presentation and or make a question, it is compulsory to turn on the webcam

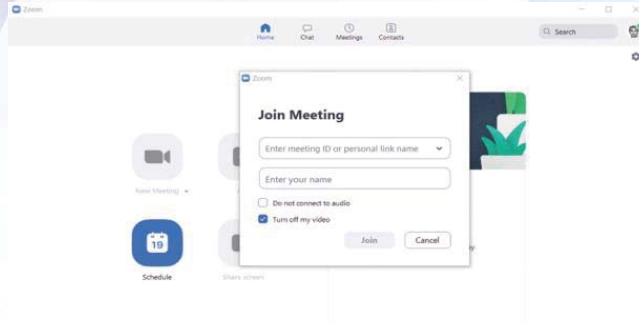
Stay seated and stay present. This conference will take around 8 hours of your day. It may be tempting to do other things during the meeting, but please refrain in doing so. Because you might miss out on key information or an opportunity to give input.



## JOIN 13<sup>th</sup> ISIEM ZOOM MEETING

You can download Zoom at <https://www.zoom.us/>

Once the Zoom apps is being installed, you have to make a registration to have a Zoom account



To join Zoom meeting, you can click on the Zoom link we gave, or in Zoom apps click on [Join], type in the meeting ID (as shown in the Zoom invitation we gave), type in your name with this format: **session#\_paper#\_yourname**. **Example: S1.1\_001\_John Wick**, click [Join], then type in the passcode (as shown in the Zoom invitation we gave), and Zoom meeting will begin. Make sure you have a stable internet connection



If your PC/Laptop is able to put a background, please set your Zoom background to 13th ISIEM official background. You can download the background from this link:

<https://drive.google.com/drive/folders/1ujOHat9cvOKLXXNOvK7IsJAdWuzSpZZ?usp=sharing>

Remember to mute the microphone and webcam for necessary speak. When you have a question, click on [Reactions] icon and choose [Raise Hand] icon and wait until the moderator let you to speak.

The morning session is a Keynote Speeches session. During this session there will be no breakout room in Zoom platform. The noon session is a parallel session. Breakout room will be applied.

The Author may enter the room as shown on the schedule of parallel session in the Program Book by click on [Breakout Rooms], then choose the room that you will make a presentation

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## KEYNOTE SPEAKERS



**Prof. Yung-Tsan Jou, Ph.D.**, received his Ph.D. degree in Integrated (ME, ISE) engineering from Ohio University, Athens, OH, in 2003. He is the Chair and Associate Professor of Industrial and Systems Engineering at Chung Yuan Christian University, Taiwan. His research has made contributions in green design, human–system interface design, senior assistive devices, and usability or quality evaluation by using virtual reality tools, smart manufacturing, machine learning, and data analysis.

**Naraphorn Paoprasert, Ph.D.**, is an associated professor at the Department of Industrial Engineering, Kasetsart University, Thailand. She received her Ph.D. from the Department of Industrial Engineering, University of Wisconsin-Madison, USA. Currently, she is a director of the International Graduate Program under the Department of Industrial Engineering. Her past research studies have been focusing on decision analysis and game theory, risk analysis, system simulation, process improvement, and economics analysis. The first research exposures were focusing on decision making to protect the system against natural disasters and terrorism. Later on, the focuses were on decision making in various fields such as agriculture, research fund allocation, education, etc.



**Prof. Yun-Chia Liang, Ph.D.**, received his Ph.D. from Industrial and Systems Engineering, Auburn University – Alabama USA. He acts as Professor and Chair, Department of Industrial Engineering and Management, Yuan Ze University, Taiwan. Vice Director, the Smart Production and Innovation Management Research Center (SPIM), Yuan Ze University, Associate Editor, Journal of Industrial and Production Engineering (JIPE), Planning Committee, IEM Division, Ministry of Science and Technology (MOST), Taiwan, and many more academic activities.

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**Elisa Lumbantoruan**, received Bachelor degree in Institut Teknologi Bandung on Mathematics. He has skill in Business Strategy, Strategic Planning, Business Planning, Business Development, Business Analysis, Risk Management, Management Telecommunications, Business Intelligence, Negotiation. He experiences in many enterprises and until now is the President Director & CEO at ISS Indonesia, Independent Commissioner at PT Indosat Tbk, and Independent Commissioner at Garuda Indonesia





## GLOSSARY



QM	= Quality Management
SCM	= Supply Chain Management
IECS	= Industrial Engineering, Computer Science
EPD	= Ergonomic, Product Design
PS	= Production System
DAIS	= Decision Analysis and Information System
OR	= Operation Research
IS	= Industrial System

13<sup>th</sup> INTERNATIONAL SEMINAR ON  
INDUSTRIAL ENGINEERING AND MANAGEMENT

**INDUSTRIAL ENGINEERING DEPARTMENT**

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risk assessment and cost benefit analysis is discussed. Each waste has a root cause that has the impact and potential of events that vary and affect the goal so that it can be called as a risk. This study aims to get a strategy to reduce waste in order to get an effective and efficient production activity. The research begins by identifying waste in value stream mapping, followed by risk assessment and identification of the root cause of waste. There are 10 potential wastes are found with the wet material is root cause of the highest risk: the production stoppage. The proposed strategy from this research is a proposed design for the warehouse and develop a new standard operation procedure for burning raw materials and make a form for recording the submission of change of load and flow of the submission process. The outcome of this proposed strategy potentially can reduce the cost of loss approximately Rp 39.067.221,38.

**Keywords:** Lean manufacturing, risk analysis, benefit cost analysis, asset management, waste, sugar factory

### 13th-ISIEM-Paper 040 – DAIS

#### E-Commerce Application of Oil Palm Fresh Fruit Bunches Supply Chain

Harison<sup>1,1.a)</sup>, Marimin<sup>2,2.b)</sup>, Sukardi<sup>3,2.c)</sup>, Faqih Udin<sup>4,2.d)</sup> and Yani Nurhadryani<sup>5,3.e)</sup>

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<sup>2</sup>Department of Agro-industrial Engineering, IPB University (Dramaga Highway, Bogor, Indonesia),

<sup>3</sup>Department of Computer Science, IPB University (Dramaga Highway, Bogor, Indonesia).

**Abstract.** The use of smartphone technology for social activities has a good effect on e-commerce activities, and many Indonesians have taken advantage of this technology. With this opportunity, the authors designed an e-commerce application for buying and selling oil palm fresh fruit bunches used by independent smallholders, traders, factories, and transportation. This application is intended to use a unified modeling language and the programming language Javascript MySQLit database. This application can provide information on the availability of oil palm harvests advertised by farmers in this application. The application is also able to facilitate transactions, whether done by Cash Only Delivery or via transfer. This application is also enabled with the provider of selected or recommended palm fresh fruit bunches. There are recommendations for the availability of oil palm fresh fruit bunches by entering the value of needs for traders and mills. Then the system will display a map of the location points of the suppliers of oil palm fresh fruit bunches. Visual information on providers is also shown. The results of system testing have been able to carry out the design plan.

**Keywords:** E-commerce 1, Application 2, Fresh Fruit bunches 3, Palm oil 4.

### 13th-ISIEM-Paper 041 – PS

#### Design Model Forecasting and Delivery Requirement Planning for Fast Food Product

Paduloh Paduloh<sup>1,a)</sup>, Nicky Yuhan<sup>1</sup>, Achmad Muhazir<sup>1</sup>, Iskandar Zulkarnaen<sup>1</sup>, Murwan Widyantoro<sup>1</sup>, And Rifda Ilahy Rosihan<sup>1,b)</sup>

<sup>1</sup>Industrial Engineering, Bhayangkara Jakarta Raya University, Bekasi, Indonesia

**Abstract.** PT. IKI is a company engaged in the culinary field with its main product being fried chicken, has a problem in its logistics activities, the first problem is the overstock in the stock of its chicken products which causes large storage costs, and the second problem is scheduling the distribution of its products that are not orderly so as to cause the delivery process to be less effective. See the problems that have occurred, this research was carried out to get the best forecasting model, then applied the Distribution Requirements Planning (DRP) method to distribute chicken products as optimally as possible. The research was conducted by doing forecasting by combining Multiple Neural Networks (MNN), Seasonal Naive Bayes (SNB), and ARIMA to obtain a forecasting model that is close to actual conditions in the field. The forecast results are used to determine Safety Stock, ROP, and lot sizing with FOQ for the distribution schedule with the DRP method. The results showed determination of forecasting by combining MNN, SNB, and ARIMA can balance the level of product inventory at the optimal amount and DRP method positively impacted a 25% reduction in distribution costs. **Keywords:** Logistic, MNN, SNB, ARIMA, DRP

### 13th-ISIEM-Paper 042 – EPD

#### Comparative Analysis of Mental Workloads For Disruption Technicians And New Installation Technicians Using The NASA-TLX Method (Case Study: PT Telkom Akses Kandatel Sleman)

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