ACISE 2021
Annual Conference on Industrial and System Engineering

ICESH 2021
International Conference on Ergonomics, Safety, and Health

PROGRAM BOOK & ABSTRACT BOOK

The 8th Annual Conference on Industrial and System Engineering (ACISE) 2021 and 1st International Conference on Ergonomics, Safety, and Health (ICESH) 2021

July 13-15th, 2021, Semarang

Organized by :

Industrial Engineering Department

Sponsored by :

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WELCOME MESSAGE

From Conference Chair of 8th ACISE and 1st ICESH 2021

Welcome to Joint Conference 8th Annual Conference of Industrial and System Engineering (8th ACISE) and 1st International Conference on Ergonomics, Safety and Health (1st ICESH) 2021. The conference is organized by the INDUSTRIAL ENGINEERING DEPARTMENT, DIPONEGORO UNIVERSITY and Perhimpunan Ergonomi Indonesia (PEI).

The conference is aimed on providing a discussion, for exchanging of knowledge, researches and of recent solutions for many researchers and experts in the field of human factor and ergonomics, information system, as well as industrial and system engineering. The theme of this joint conference is "The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life". As may all of us realize, in the last two years, industries stakeholders experienced different roles towards pandemic situation and rapid digitalization. Pandemic makes us work with a different system where work from home and implementation of information systems are very dominant in all aspects of life. Various complaints and benefits were achieved with the new work system. This has become an interesting discussion topic for future lessons. This event will strengthen the collaboration and provide a forum for industry professionals, academics, researchers, and scientists to discuss and exchange their research results, innovative ideas, and experiences in all aspects of HFE and technologies, as well as to identify emerging research topics and define the future directions to survive and gain some benefits in this era. This fascinating forum is dedicated to discussing the role and issues of HFE, information systems and industrial system engineering in every significant aspect of the system during this era.

This year, the 8th ACISE and 1st ICESH received 128 papers' submissions from different countries such as Indonesia, Malaysia, Taiwan, Italy and Philippines. We are very grateful for the extensive efforts of the Committees and many individuals who worked diligently to ensure a successful and high-quality conference. After the double-blind review process, 116 papers are accepted and scheduled to be presented and discussed in the parallel session, then submitted to be published in IEOM Publication, a Scopus-indexed proceeding or national accredited journals. For the willingness to share their valuable knowledge and experience, we thank our keynote speakers: Prof. José Orlando Gomes, PhD, CPE (Federal University of Rio de Janeiro), Prof. Juliana Sutanto, Ph.D (Lancaster University), Prof. Paul HP Yeow (RMIT University Vietnam), Richard J. Hanowski, Ph.D (Director-Division of Freight, Transit, and Heavy Vehicle Safety, Virginia Tech Transportation Institute), Dr. Ir. Heru Prastawa, DEA (Diponegoro University) as well as Anton Doddy Susanto, S.T., M.M. (National Channel Development Manager of Coca-Cola Europacific Partners Indonesia).

We also send our gratitude to all the invited speakers, Ferry Jie, PhD., Prof. Aries Susanty, , Dr. Rifky Ismail, and Dr. Ratna Purwaningsih. Besides, we thank the Rector of Diponegoro University for their supports and encouragement. Of course, we would also like to thank the review board members who have played fundamental roles in ensuring the accepted papers are of high quality.

As we know, due to the COVID-19 pandemic, this joint conference is being held in an online system. Therefore, the organizing committee has been trying to create a virtual environment where the attendees can present their research and participate in all the sessions seamlessly. However, we hope that you could be more forgiving and could tolerate whatever hiccups that we may encounter along the way. Finally, we wish you have a fruitful and enjoyable time at the conference. Thank you.

ACISE-ICESH 2021 Conference Chairs
Dr. -Ing. Novie Susanto

WELCOME MESSAGE

From President of PEI

Assalamu'alaykum (May peace be upon you),

I am very grateful that PEI (Perhimpunan Ergonomi Indonesia or Indonesian Ergonomics Society), finally has its own international conference on Ergonomics, Safety and Health. In the future, I hope that this conference will continue that substitute our yearly national ergonomics conference. As PEI has grown significantly, it is the time for PEI to exist internationally. This is in line with our needs to have world-wide research collaborations to shape the quality and impact of our research.

The theme of this conference is "The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life". As we see, the pandemic has disrupted implications on our life. Though under uncertainty, people are looking for adopting a new way of work which is more connected and digital.

No doubt that ergonomics provides a unique approach of a human-centric way towards well-being, resilient and sustainable systems. It is interesting to see how our keynotes, speakers and presenters explore this issue from difference perspectives. The breadth of approaches addressed will suggests a need for research collaborations to enable real contributions for a better world in the future.

I always encourage all ergoers to think about research contributions and your success story of implementing ergonomics, as ergonomics is the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance. We

just had an International Ergonomics Congress last month, and the concept of Industry 5.0 has been highlighted with the goals of resiliency and sustainability for both humans and our planet, as we see the trend of Industry 4.0 seems to put human aspect left behind. The concept needs further elaboration. A long way to go.

Finally, I thank to the Department of Industrial Engineering, Diponegoro University for this great collaboration to have a joint virtual conference. Last but not least, I would like to congratulate all organizing committees for making this a wonderful conference. I hope all participants will benefit from this conference. I wish you good health, happiness and success.

More information about PEI and our programs can be obtained from our website (www.pei.or.id).

President of PEI
Prof. Yassierli, PhD., CPE

INTRODUCTION

ACISE is an international conference which has been conducted annually since 2014 by the Industrial Engineering Department of Diponegoro University. 8th ACISE 2021 is aimed on providing a discussion, for exchanging of knowledge, researches and of recent solutions for many researchers and experts in the field of human factor and ergonomics, information system, as well as industrial and system engineering.

The theme of this joint conference is "The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life". As may all of us realize, in the last two years, industries stakeholders experienced different roles towards pandemic situation and rapid digitalization. Pandemic makes us work with a different system where work from home and implementation of information systems are very dominant in all aspects of life. Various complaints and benefits were achieved with the new work system. This has become an interesting discussion topic for future lessons.

This event will strengthen the collaboration and provide a forum for industry professionals, academics, researchers, and scientists to discuss and exchange their research results, innovative ideas, and experiences in all aspects of HFE and technologies, as well as to identify emerging research topics and define the future directions to survive and gain some benefits in this era.

This fascinating forum is dedicated to discussing the role and issues of HFE, information systems and industrial system engineering in every significant aspect of the system during this era. After the double-blind review process, the papers are accepted and scheduled to be presented and discussed in the parallel session, then published in a Scopus-indexed proceeding or international proceeding with ISBN.

ACISE 2021 & ICESH 2021
Committee Member

Advisory Committee

- Dr. Ratna Purwaningsih, S.T., M.T. (Head of Industrial Engineering Dept., Diponegoro University)
- Prof. Yassierli, Ph.D. (PEI President – ITB)

ACISE 2021 Chair

- Dr. -Ing, Novie Susanto, S.T., M.Eng

Secretary

- Yusuf Widharto, S.T., M.Eng
- Yuyun Abdiyah, S.E.

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- Dr. Ir. Heru Prastawa, DEA

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- Dr. Manik Mahachandra
- Dr. Sri Hartini

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- Prof. Yassierli, PhD.(ITB, Indonesia)
- Prof. José Orlando Gomez, (Federal University of Rio de Janeiro)
- Prof. Benny Tjahjono, Ph.D. (Coventry University, United Kingdom).
- Prof. Takashi Toriizuka (Nihon University, Japan)
- Prof. Shamsul Bahri Mohd Tamrin (Universiti Putra Malaysia)
- Prof. Xingda Qu (Shenzhen University, China)
- Prof. Dr. -Ing. Hendro W. (Jacobs University, Germany)
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- Dr. Ezrin Hani Sukadarin (Universiti Malaysia Pahang, Malaysia)
- Ferry Jie,Ph.D. (Edith Cowan University, Australia)
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- Dr. Ir. Heru Prastawa, DEA (Diponegoro University, Indonesia)
- Dr. Manik Mahachandra (Diponegoro University, Indonesia)
- Muhammad Ragil Suryoputro, S.T., M.Sc. (UII, Indonesia)
- Markus Hartono, PhD. (UBAYA, Indonesia)

KEYNOTE SPEAKERS

Prof. Paul HP Yeow

(RMIT University Vietnam)

(Using Sustainable System-of Systems (SSoS) Framework for Post Pandemic Design of Systems)

About The Speaker

Paul H.P. Yeow, Professor and Head of Business Innovation Department, RMIT University Vietnam, has 24 years' experience in the fields of human factors/ergonomics, information systems, quality and operations management, and marketing. Previously, he was an Associate Professor in Monash University Malaysia for 11 years. He was a research scholar from National University of Singapore. Paul's research interests include Human Factors for Sustainable Future, Workstation Design, Tool Design, Safety Design, Safety Program, Technology Acceptance, E-Government and Responsible/Sustainable Consumption. He has published more than 50 journal articles, 23 of them are Q1 articles in journals such as Applied Ergonomics, Ergonomics, Government Information Quarterly, Safety Science, Journal of Urban Technology, Journal of Industrial Ergonomics, Human Factors and Ergonomics and Manufacturing and Services, Electronic Commerce Research, and Marketing Intelligence and Planning. He is in the editorial board member of Applied Ergonomics and Journal of Urban Technology. His articles have been cited 2,000 times with a H-Index of 25. He received 16 research and innovation awards, including the prestigious Monash University's Pro-Vice Chancellor (PVC) Research Award and Gold Medal in the Belgian and International Trade Fair for Technological Innovation. He has completed 15 national and internal research grants including Fundamental Research Grant Scheme and E-Science grants and supervised 6 PhD students. He held major posts such as Head of Discipline, Head of Human Factor Research Centre, and Head of Service Embodied Technology and Application Research Programme. He was in the panel of evaluators for top national grants such as Fundamental Research Grant Scheme, Prototype Research Grant Scheme and Newton Researcher Link – Academy of Sciences Malaysia. He has engaged and collaborated with industries in many research projects and education authentic and transformative assessments.

Abstract

SSoS framework is methodological approach to assist in the design of complex systems such as Covid-19 pandemic preparedness system. Such a system is complex because the consequences for design failure are serious and life threatening, and the system must take into consideration the many other related systems that can prevent or support effective design interventions. A linear design approach, i.e. analyzing a single system's lifecycle in the design of system is not sufficient. The SSoS framework takes into consideration the lifecycles of the higher and lower-level systems in a nested hierarchy of systems. It was adapted from Gunderson and Holling' (2009) natural complex adaptive cycles where higher-level systems provide the context/requirement for a change and lower-level systems provide the need/reason for change. The framework was first presented in a special issue in the Ergonomics journal in 2016 as a new ergonomics paradigm to address sustainability issues. Since then, nine articles have been published on SSoS including an article in the Applied Ergonomics journal. This keynote address is about how we can use the SSoS framework to design a post-pandemic system. It answers the three questions: (1) Why do we need the SSoS framework? (2) How we apply SSoS in the design of system? (3) How to apply SSoS in designing a post-pandemic system? Example will be given on how to apply SSoS in designing a post-pandemic preparedness to work-from-home system (WFHS) considering the nested hierarchy of systems.

Dr. Ir. Heru Prastawa, DEA

(Diponegoro University)

Ergonomic During and After SARS-COV-2 (COVID 19): Indoors activity and Ergonomic approach

About The Speaker

Heru Prastawa is an Associate Professor in Industrial Engineering Department, Faculty of Engineering, Diponegoro University. He obtained a bachelor degree from Department of Mechanical Engineering, Specializing in Production Management, Institut Teknologi Sepuluh Nopember, Surabaya, in 1986. Master's Degree (DEA) in Technology Assessment at Universite d'Aix Marseille III France was completed in 1992. Doctoral degree (Doctoral) in Industrial Engineering was obtained from Institut Sepuluh Nopember (ITS) Surabaya in 2019. His research interests include: Human Factor, Ergonomics, User Experience and Affective Design. Currently the author serves as Deputy Chair of the Perhimpunan Ergonomi Indonesia (PEI) in Education Division and a member of International Ergonomics Association (IEA).

Abstract

In January 2020 the World Health Organization (WHO) declared the outbreak of a new coronavirus disease in Hubei Province, China to be a Public Health Emergency of International Concern. Two months later, on the 11th March 2020, the WHO declared the coronavirus COVID-19 outbreak as a pandemic. Lockdowns and related business disruptions, travel restrictions, school closures and other containment measures have had sudden and drastic impacts on workers and enterprises (ILO, 2021). The workers were asked to do work from home and there was a drastic change in the work system during the pandemic. Activities are carried out indoors with limited conditions and safety and health conditions are not monitored. Several complaints arise due to limited facilities, increased stress and workloads that are different from previous working conditions and performance achievements that must be adjusted.This discussion will discuss guidelines for workers while working indoors, especially during the pandemic and after the pandemic ends.

Anton Doddy Susanto, S.T., M.M.

(National Channel Development Manager of Coca Cola Europacific Partners Indonesia)

About The Speaker

Anton Doddy Susanto, S.T., M.M. is an National Channel Development Manager in PT. Coca-Cola Distribution Indonesia. From 2018 untill 2021 he is officiate as a national category manager in PT. Coca-Cola Distribution Indonesia. He has finished his bachelor degree in Bandung Institute of Technology and he obtained his master degree in Gadjah Mada University, Indonesia. Until now, healso a member of Indonesia Marketing Association (IMA) Jakarta Chapter, Member of Asosiasi Produktivitas National Indonesia (APNI), and also Member of Asian Productivity Organization (APO). He has been joining several learning and development program such as Marketing Competitiveness : Asia to the world in the age of digital consumers by Asian Marketing Federation in Kuala Lumpur, Malaysia. In 2021 he also a lecturer in Trisakti School of Management.

Abstract

People all over the world have been impacted by the COVID-19 pandemic. It has forced us all to adapt to a very different world with many new challenges. Human is one of Most Important Factor in productivity, so Organization must play their part in supporting People, Customers, and Communities through this crisis, by utilizing Human Factors Engineering & Information System that have very important role in helping them to Stay Safe, Stay Healthy, and Stay Connected during this unprecedented time and facing the new normal life.

Prof. Juliana Sutanto, Ph.D

(Lancaster University)

(POST-PANDEMIC) Hype OF INDUSTRY 4.0

About The Speaker

Juliana Sutanto is now an PhD. Director of Department of Management Science, Lancaster University Management School, Lancaster University and also a Professor in Information Systems, Department of Management Science, Lancaster University Management School, Lancaster University. She has completed her bachelor degree in B. Comp (Honors) in Information Systems, National University of Singapore with full scholarship. She has completed her doctoral degree in Information Systems, National University of Singapore with full scholarship. For the last 10 years, she obtained 23 selected awards and recognitions from several instance, such as Invited as Senior Editor in Journal of the Association for Information Systems in 2021, Internal Reviewer of the Economic Department at Lancaster University Management School in 2020, Best Associate Editor Award – MIS Quarterly in 2019, and much more. To date, she has published more 43 research publications. She also got several master and doctoral students' awards and recognitions such as Abdullah Rashed. Runner-up of PhD Poster Competition at Lancaster University Management School in 2018, Andreas Guggenbühl and Michael Berli. Golden Creativity Award in May 2014, Palme, Elia. ETH Medal in 10 January 2014, and so on.

Abstract

The term Industry 4.0 has been around for some years. However, many people are still unaware of what exactly is Industry 4.0. They are more familiar with Platform Economy, such as Tokopedia, Sophee, and Blibli, due to their rising popularity and how they redefine the way of life during the pandemic. In this presentation, I will talk about the connections between Platform Economy and Industry 4.0, and the effects of the pandemic on the hype of Industry 4.0.

Prof. José Orlando Gomes, PhD, CPE

(Federal University of Rio de Janeiro)

Activity Analysis and Systemic Approach in Developing Countries: Examples in Brazilian industry

About The Speaker

Jose Orlando Gomez is a full Professor at the Federal University of Rio de Janeiro (UFRJ) in the Department of Industrial Engineering and in the Graduate Program in Informatics, he is also an Associate Director of International Relations for the BRICS, at the Escola Politecnica. He was a visiting researcher from 2002 to 2004 at the Cognitive Systems Engineering Lab (CSEL), coordinated by Prof. David Woods of the Institute for Ergonomics at The Ohio State University. He was a researcher at ICE (Interaction, Collaboration and Ergonomics Research Group) and Certified Ergonomist by Abergo (Brazilian Ergonomics Association). He also a president of the International Ergonomics Association (IEA), and former Vice-President & Treasurer. He has graduated in Industrial Engineering from the University of São Paulo, completed his master degree as M.Sc. in Industrial Engineering in UFRJ, and has completed his doctoral degree as D.Sc. in Industrial Engineering; Ergonomics by UFRJ in partnership with the Conservatoire National des Arts et Métiers of Paris. His area of teaching include research and extension cover human factors engineering and ergonomics, work safety, cognitive and resilience engineering in complex systems such as emergency, aviation, the oil industry, in addition to being the author of several publications in journals, books and conferences.

Abstract

Activity analysis and systemic approach has been consolidated as one of the main approaches to Brazilian ergonomics in recent decades, considering that HFE was introduced in the Brazilian university in the 1960s. In the 70's, 80's and 90's, training of trainers in HFE took place in several countries to supply the different scientific areas such as engineering, health sciences and human sciences. This allowed not only to insert HFE in undergraduate courses, but also in postgraduate courses, as well as guaranteeing the sustainability of research and applications of HFE. The dissemination of the systematic and the activity analysis' approach allowed it to

develop a relationship with the world of industry, where it became the laboratory for research, training and implementation of solutions. Some case studies will be presented and commented on, showing that this interaction brings benefits to all stakeholders involved, which certainly can be a path to be followed with regard to disruptive technologies, particularly the 4.0/5.0 industry.

Dr. Richard J. Hanowski

(Director-Division of Freight, Transit, and Heavy Vehicle Safety, Virginia Tech Transportation Institute)

Transportation Human Factors Research in the Age of COVID-19: New Opportunities and Research Program Pivots

About The Speaker

Dr. Richard Hanowski is a Senior Research Scientist at Virginia Tech and serves as the Director of the Division of Freight, Transit, & Heavy Vehicle Safety at the Virginia Tech Transportation Institute (VTTI). Dr. Hanowski has been involved in transportation human factors research since 1991, when he was a graduate student working at the National Center for Advanced Transportation Technology at the University of Idaho. His career has included an internship at General Motors and three years as a Research Scientist at Battelle in Seattle. His experience includes transportation human factors with both heavy & light vehicles, laboratory & field testing, simulation, advanced system development & testing, naturalistic driving, design guideline development, and human performance evaluation. He is skilled in all phases of research, including conceptual framing, research design, data collection/synthesis/analysis, assessment of results, and presentation of findings. Dr. Hanowski has served as the Principal Investigator or Co-PI over $81 million of contract research, resulting in over 300 publications, including journal articles, conference papers, book chapters, and technical reports. His research has impacted national transportation policy, including truck driver fatigue/hours-of-service and driver distraction/texting. He has received several awards for his research including the 2011 SAE International's *L. Ray Buckendale Lecture* award. Dr. Hanowski received his Ph.D. in Industrial and Systems Engineering in 2000 from Virginia Tech.

Abstract

COVID-19 had a profound worldwide impact on nearly all aspects of society. With mass closures of public facilities and establishment of a “work-from-home” paradigm, research programs were significantly impacted and required scientists to re-think their research initiatives and adapt to rapidly changing public policies. As a Division Director at the Virginia Tech Transportation Institute, Dr. Rich Hanowski worked closely with his research staff to (i) identify new opportunities that could be rapidly initiated to support COVID-19 mitigation and prevention efforts, and (ii) re-think ongoing research initiatives that required in-person interaction in order to develop complementary approaches to ensure research continuity. Dr. Hanowski is pleased to address conference attendees and outline a new research initiative and a program pivot that was undertaken in response to COVID-19.

Post COVID-19, as the economies of countries re-open, an increase in transport crashes might be expected as roadways return to high traffic volumes. An ongoing research initiative, conducted in collaboration with the Malaysian Institute of Road Safety Research (MIROS), is looking at motorcycle-heavy vehicle rear-end crashes, taking into consideration their frequency and severity, and in terms of evaluating an enhanced rear-signaling system for tractor-trailers. As part of Dr. Hanowski's presentation, he will provide an overview of this topic, as countries like Indonesia, with a dominant motorcycle fleet, may face similar issues and benefit from implementing a similar countermeasure.

GENERAL GUIDELINES

for The Joint Conference of ACISE-ICESH 2021

First, **dress appropriately**. This is an international event with huge number of participants coming from many countries. Please take a few minutes to throw on a formal attire. Put yourself in the right headspace to be productive.

Second, **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.**

Third, **leave the keyboard alone.** Since your laptop's internal microphone is inches away from the keyboard, the sound of your typing will be distracting. It is not only distracting for everyone else in the meeting, but also preventing you from devoting your full attention to the meeting.

Fourth, **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

Fifth, **set your zoom meeting ID.** Please use "**PAPER ID_FIRST NAME**" as your zoom meeting ID. If you are a non-presenter participant, please set your zoom meeting ID as "PARTICIPANT_FIRST NAME". Example: " NON PRESENTER _ANDERSON".

Sixth, **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

Seventh, **use headsets or earphones.** Your computer's default audio output and input may produce a background noise or create feedback in your video. You may use a headset, earphone or Bluetooth earpieces that connect to your computer during the sessions, as all participants will be able to hear clearly.

And lastly, **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.

GENERAL GUIDELINES

Dress appropriately

Be aware of your surroundings

Leave the keyboard alone

Check your connection

Set your zoom meeting ID

Mute your microphone

Use your headsets or headphones

Stay seated and present

SAFETY INDUCTION

This event will be conducted on:

Tuesday, July 13 2021- Thursday, July 15 2021
07.30-16.45 GMT+7 on Tuesday
07.30-17.15 GMT+7 on Wednesday
08.30-15.35 GMT+7 on Thursday

Please make sure if there is a safety drill or inspection in your area

Pay attention to warning signal in your area

If there is a **disaster**,

Immediately find emergency exit and gathering point nearby

If an **Earthquake** happened, please take cover under your table

Pay attention to any electrical hazards around you

Adjust your screen brightness to your comfort

Do 5M if you are not in your house

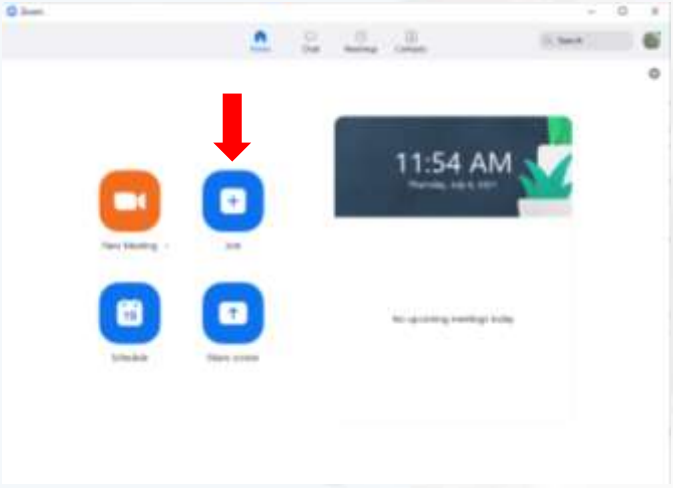
Do stretching every 20 minutes

Adjust your desk for a comfortable position

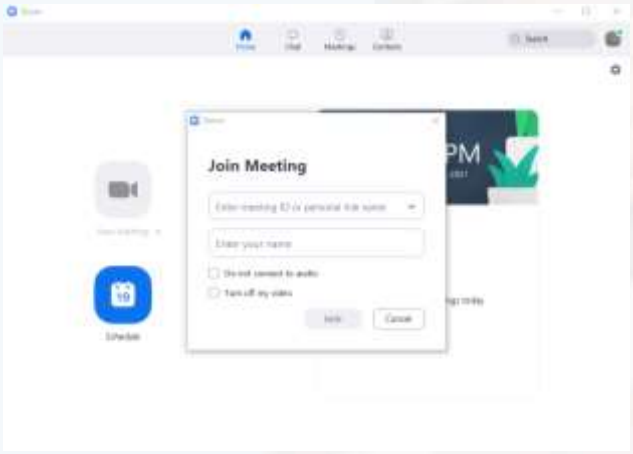
Don't do any driving activities during the event

HOW TO USE ZOOM PLATFORM

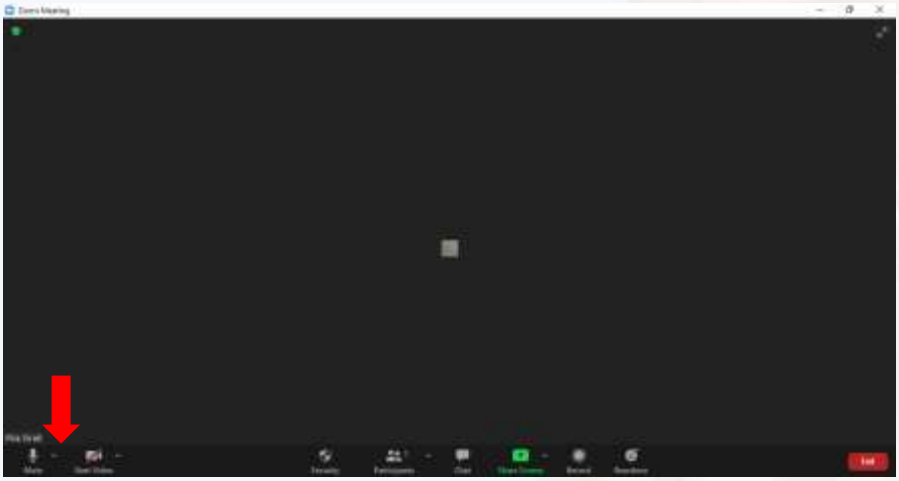
1. You can download "Zoom" from this URL: https://www.zoom.us/
2. To join online conference in zoom, click "join"



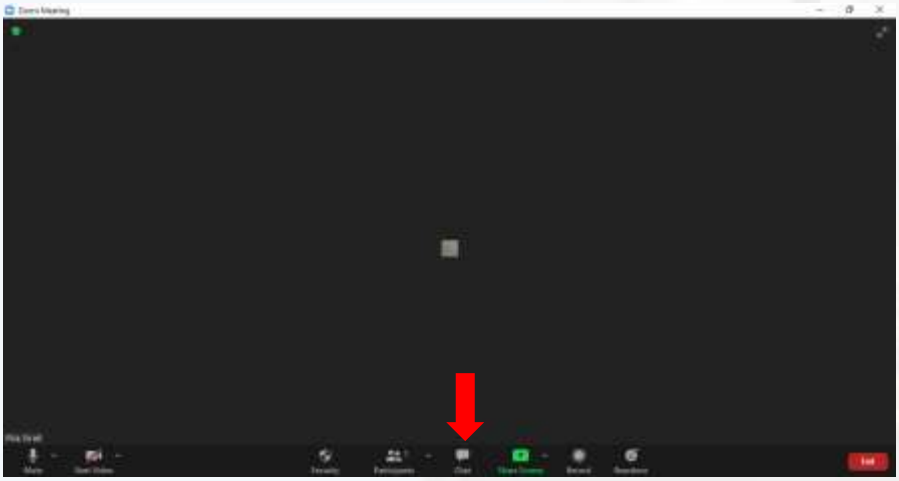
3. Enter the meeting ID and set your name.



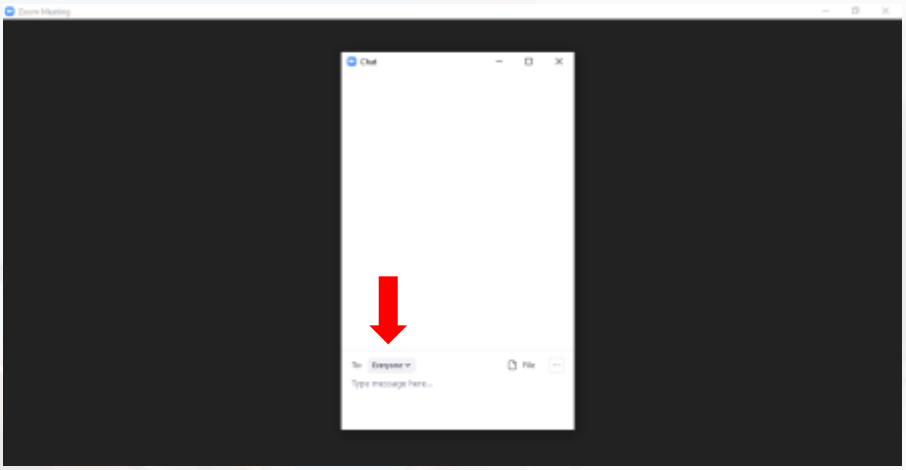
4. To mute your microphone, click "mute".



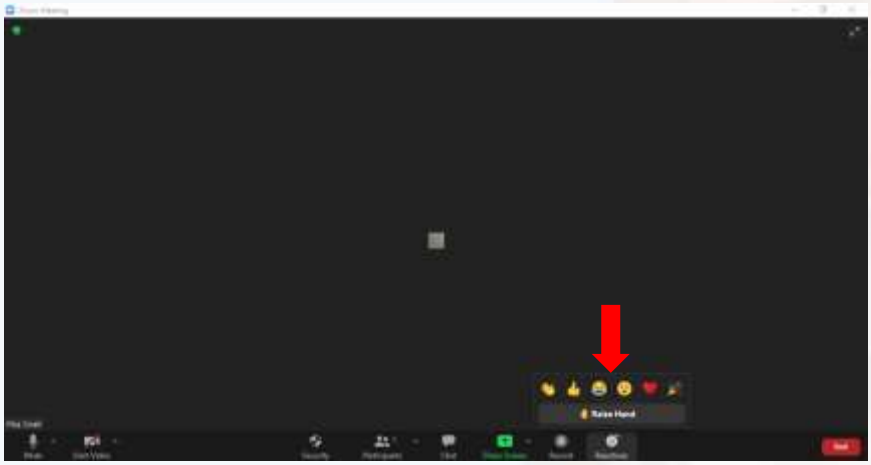
5. To chat with other participants or to everyone in zoom, click "chat"



then click "Everyone" to choose who you want to talk to.



6. To raise you hand, click “reactions” and click raise hand.

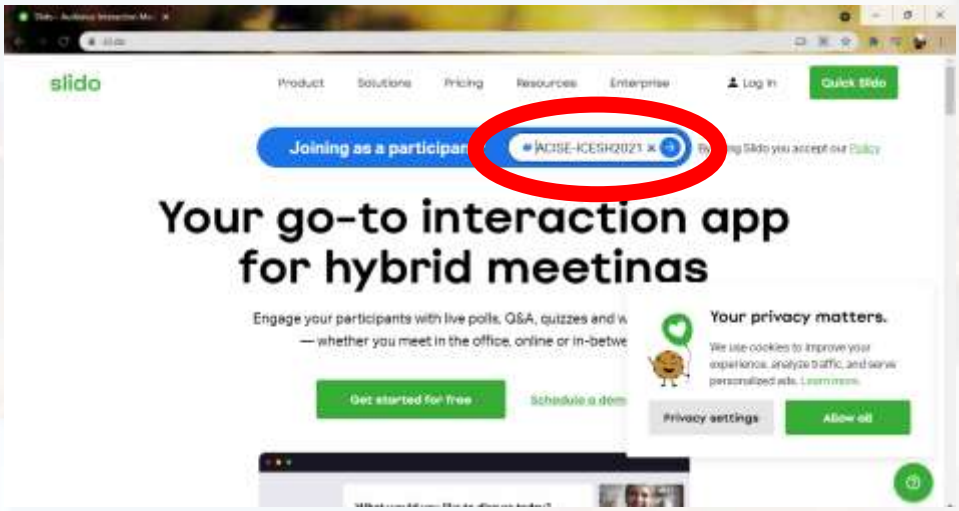


7. In case there is some technical problem and you are accidentally disconnected from the zoom meeting, please re-join the meeting with same meeting ID.

HOW TO ASK WITH SLIDO

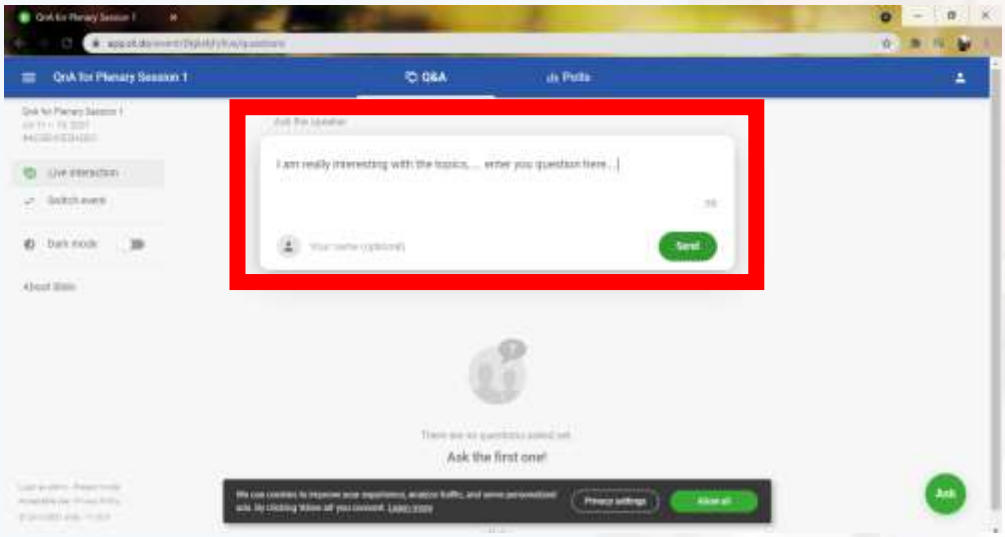
1. To start asking a question, open https://www.sli.do/ , it will show like the picture below.

2. If you are joinig as a participant, enter code that given to you, for example # ACISE-ICESH2021



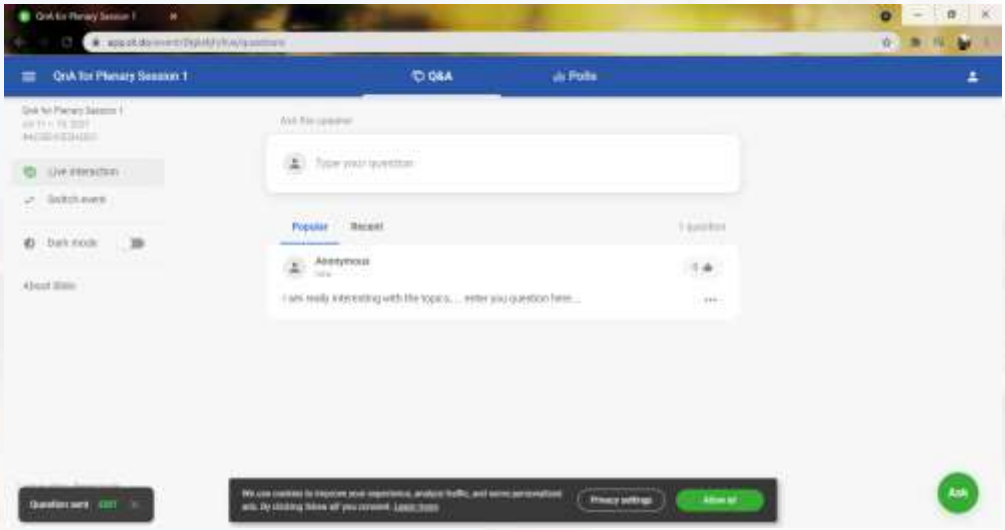
Then, click arrow on the right of the code.

3. To start asking, you can type your question in the box

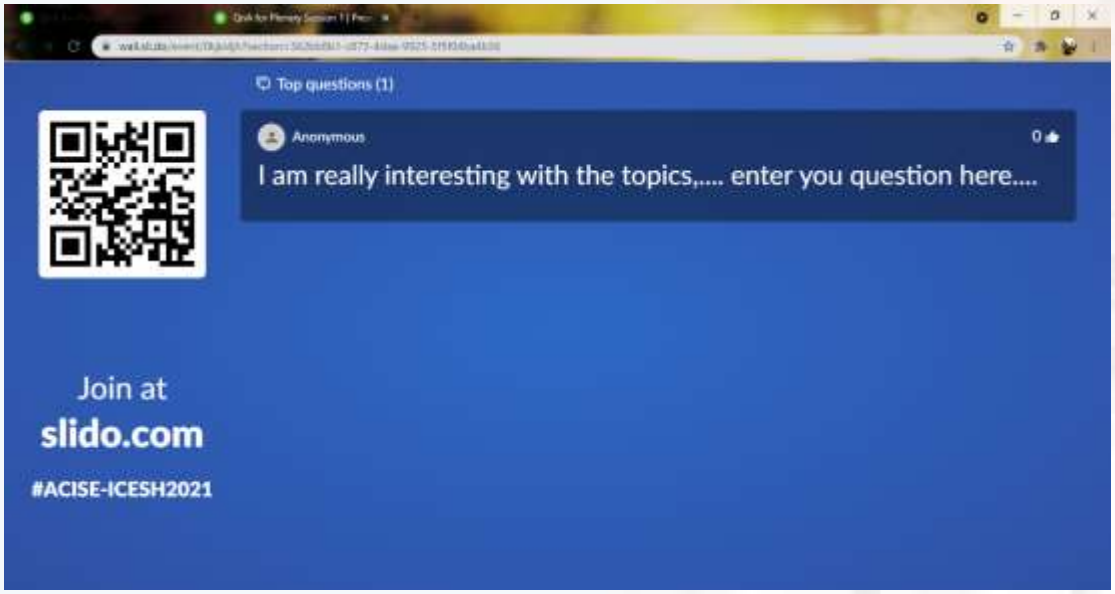


Then click send

4. In participants' screen should look like this.



5. Your question has been automatically get into moderator's screen.



CONFERENCE RUNDOWN

8th ACISE & 1st ICESH 2021

"The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life"

DAY I	Date	Time	Session	Speaker	Speaker Affiliation	Moderator	Zoom Meeting Link
DAY - I							
Tuesday	13-Jul-21	06.30 - 07.00	Pre-opening (preparation)				Zoom meeting link: https://bit.ly/Day1-ACISE-ICESH2021 (Meeting ID: 98861047084 / Passcode: 805815)
		07.00 - 07.30	Inviting conference organizers, speakers, MC, rector, moderator (zoom meeting room)				
		07.00 - 07.30	Inviting participants (zoom meeting room)				
		07.30 - 07.40	Opening ceremony	MC			
		07.40 - 07.50	Welcome speech by ACISE 2021 chair	Dr. -Ing. Novie Susanto	Chair of ACISE-ICESH 2021		
		07.50 - 08.00	Welcome speech by President of PEI	Prof. Yassierli, Ph.D	President of PEI		
		08.00 - 08.15	Welcome speech and opening by Rector of Undip				
		08.15 - 08.45	Keynote Speaker 1:	Prof. Paul Yeow, Ph.D	Head of Business Innovation Department in RMIT University Vietnam	Prof. Dr. Aries Susanty , ST, MT.	
		08.45 - 09.00	Q & A session				
		09.00 - 09.45	Keynote Speaker 2:	Dr. Ir. Heru Prastawa, DEA	Dept of Industrial Engineering Diponegoro University		
		09.45 - 10.00	Q & A session				
		10.00 - 10.15	(break)				
		10.15 - 12.15	Room I: Logistic and Supply Chain			Yusuf Widharto, S.T., M.Eng	
			Room II: Logistic and Supply Chain			Dr Purnawan Adi	
			Room III: Intellegent System and Modelling			Zainal Fanani, S.T., M.T	
			Room IV: Product Design and Innovation			Nia Budi Puspitasari, S.T., M.T	
		12.15 - 13.00	LUNCH BREAK				

DAY I	Date	Time	Session	Speaker	Speaker Affiliation	Moderator	Zoom Meeting Link
DAY - I							
Tuesday	13-Jul-21	13.00 - 13.45	Keynote Speaker 3:	Prof. Juliana Sutanto, PhD	PhD Director in Management Science Department Lancaster University	Dr. Ir. Bambang Purwanggono, M.Eng	Zoom meeting link: https://bit.ly/Day1-ACISE-ICESH2021 (Meeting ID: 98861047084 / Passcode: 805815)
		13.45 - 14.30	Keynote Speaker 4:	Anton Doddy Susanto, S.T., M.M	National Channel Development Manager of Coca-Cola Europacific Partners Indonesia		
		14.30-14.45	Q & A session				
		14.45 - 15.00	(break)				
		15.00-16.45	Room I: Human Factors and Engineering			Dr. Eng Titis Wijayanto	
			Room II: Technology and Knowledge Engineering			Diana Puspitasari ST,MT	
			Room III: Safety, Security and Risk Engineering			Dr. Manik Mahachandra	
			Room IV: Product Design and Innovation			Dr. Arfan Bakhtiar	
		16:45	Closing				

CONFERENCE RUNDOWN

8th ACISE & 1st ICESH 2021

"The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life

DAY II	Date	Time	Session	Speaker	Speaker Affiliation	Moderator	Zoom Meeting Link
DAY - II							
Wednesday	14-Jul-21	07.00 - 07.30	Pre-opening (preparation)				Zoom meeting link: https://bit.ly/Day2-ACISE-ICESH2021 (Meeting ID: 98861047084 / Passcode: 805815)
		07.30 - 08.00	Inviting conference organizers, speakers, MC, moderator (zoom meeting room)				
		07.30 - 08.00	Inviting participants (zoom meeting room)				
		08.00 - 08.45	Keynote Speaker 5:	Prof. Jose Orlando Gomez, PhD, CPE	University of Rio de Janeiro(UFRJ) in Industrial Eng. Dept. & Graduate Program in Informatics.	Dr. Johanna Renny Octavia	
		08.45 - 09.30	Keynote Speaker 6:	Dr. Richard Hanowski	Virginia Polytechnic Institute and State University | VT · Virginia Tech Transportation Institute (VTTI)		
		09.30 - 09.45	Q & A session				
		09.45 - 10.00	(break)				
		10.00 - 12.00	Room I: Human Factors and Engineering			Dr. Eng Listiani Nurul Huda, M.T.	
			Room II: Human Factors and Engineering			Ratna Sari Dewi, ST., MT., PhD	
			Room III: Human Factors and Engineering			Dr Denny Nurkertamanda	
			Room IV: Safety, Security and Risk Engineering			Sugiyono S.T., M.T., PhD	
		12.00 - 13.00	LUNCH BREAK				
		13.00 - 13.30	Room I: Plenary session of PEI **(will be delivered in Bahasa Indonesia)**	dr. Riskiyana Sukandhi Putra, M. Kes	Direktur Kesehatan Kerja & Olahraga, Kementerian Kesehatan RI	PEI	Zoom meeting link: https://bit.ly/Day2-ACISE-ICESH2021 (Meeting ID: 98861047084 / Passcode: 805815)
		13.30 - 14.00		Drs. Muhammad Idham, MKKK	Direktur Bina Pengujian Keselamatan dan Kesehatan Kerja, Kementerian		

DAY II	Date	Time	Session	Speaker	Speaker Affiliation	Moderator	Zoom Meeting Link
					Ketenagakerjaan RI		
		14.00 - 14.30		Ir. Wakhid Hasyim, MT.	Direktur Teknik dan Lingkungan Migas, Kementerian ESDM RI		
		14.30 - 15.00		Q and A session			
		13.00 - 15.00	Room II: Logistic and Supply Chain			Dr. Naniek Utami Handayani	
			Room III: Intelligent System and Modeling			Dr. Singgih Saptadi	
			Room IV: Intelligent System and Modeling			Yusuf Widhiarto, S.T., M.Eng	
		15.00 - 15.15	(break)				
		15.15 - 16.45	Room I: Human Factors and Engineering			Muhammad Ragil Suryoputro, ST., M.Sc	
			Room II: Human Factors and Engineering			Dyah Santhi Dewi S.T, M.Eng.Sc, Ph.D	
		17:15	Closing				

CONFERENCE RUNDOWN

Congress of PEI

"The Roles of Information System, Human Factors Engineering and Ergonomics in Preparing the Post-Pandemic New Way of Working Life

DAY III	Date	Time	Session	Speaker	Zoom Meeting Link
DAY III					
Thursday	15-Jul-21	07.30 - 08.30	Peserta Kongres PEI IX memasuki ruangan Zoom		To be Announce
		08.30 - 08.35	Pembukaan	MC	
		08.35 - 08.40	Do'a		
		08.40 - 08.45	Menyanyikan lagu Indonesia Raya		
		08.45 - 08.55	Sambutan Ketua PEI	Ketua PEI (Prof. Yassierli, PhD, CPE)	
		08.55 - 09.05	Sambutan Dewan Pembina PEI	Perwakilan Dewan Pembina (Dr. dr. Lientje Setyawati Kusumaharta Maurits, MS. SpOk)	
		09.05 - 09.15	Pemutaran video profil PEI & foto bersama	MC	
		09.15 - 09.45	Pengumuman MANUABA AWARD 2021 dan SUTALAKSANA AWARD 2021	Panitia Award	
		09.45 - 09.50	Penetapan Pimpinan dan Perangkat Sidang musyawarah anggota	Ketua PEI	
		09.50 - 09.55	Pembacaan tata tertib kongres	Pimpinan Sidang	
		09.55 - 10.40	Pembahasan dan pengesahan Anggaran Dasar dan Anggaran Rumah Tangga (AD/ART)	Pimpinan Sidang	
		10.40 - 11.20	Pemaparan, tanggapan, dan pengesahan Laporan Pertanggungjawaban (LPJ)	Ketua PEI & Pimpinan sidang	
		11.20 - 11.50	Diskusi dan masukan dari anggota untuk program PEI yang akan datang	Ketua PEI & Pimpinan sidang	
		11.50 - 12.00	DOORPRIZE Sesi 1		
		12.00 - 12.30	Istirahat		
		12.30 - 13.00	Peserta memasuki zoom		
		13.00 - 13.10	Sosialisasi tata cara pemilihan ketua PEI	Pimpinan sidang	
		13.10 - 13.20	Pengumuman calon Formatur baru PEI berdasarkan hasil Voting pra-acara tanggal 11-12 Juli 2021	Pimpinan sidang	

DAY III	Date	Time	Session	Speaker	Zoom Meeting Link
DAY III					
		13.20 - 13.35	Breakout Room: Musyawarah internal formatur untuk memilih ketua formatur baru PEI sekaligus Ketua PEI 2021-2024	Formatur baru PEI	To be Announce
			Ruang Utama: GAMES	Peserta sidang	To be Announce
		13.35 - 14.20	(Opsional) Voting ketua formatur sekaligus Ketua PEI 2021-2024 jika musyawarah internal formatur tidak mencapai mufakat	Pimpinan sidang	
		14.20 - 14.35	(1) Penyampaian hasil musyawarah dari formatur (2) Pembacaan SK untuk Ketua PEI terpilih 2021-2024	Formatur dan Pimpinan sidang	
		14.35 - 14.45	Sambutan dari Ketua PEI 2021-2024	Ketua PEI 2021-2024	
		14.45 - 14.55	Pemilihan tempat kongres selanjutnya	Pimpinan sidang	
		14.55 - 15.25	GAMES & DOORPRIZE Sesi 2	MC	
		15.25 - 15.35	Penutupan	MC	

PARALLEL SESSION

Day 1	Parallel 1	Room 1: Logistic and Supply Chain	Room 2: Logistic and Supply Chain	Room 3: Intellegent system and modelling	Room 4: Product Design& innovation
10.15 - 12.15		Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM1 (Meeting ID: 98861047084 / Passcode: 805815)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM2 (Meeting ID: 810 4944 8672; Passcode: 579171)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM3 (Meeting ID: 974 0400 1914; Passcode: 857373)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM4 (Meeting ID: 845 2189 0305; Passcode: 860368)
10.15 - 10.45		Invited speaker 1: Prof. Dr. Aries Susanty	Invited speaker 2: Ferry Jie, PhD	Invited speaker 3: Dr. Ratna Purwaningsih	Invited speaker 4: Dr. Rifky Ismail
10.45 - 11.00		Paper ID 78	Paper ID 41	Paper ID 2 & 36	Paper ID 5
11.00 - 11.15		Paper ID 97	Paper ID 42	Paper ID 3	Paper ID 26
11.15 - 11.30		Paper ID 99	Paper ID 43	Paper ID 14	Paper ID 40
11.30 - 11.45		Paper ID 109	Paper ID 46	Paper ID 25	Paper ID 52
11.45 - 12.00		Paper ID 121	Paper ID 48	Paper ID 29	Paper ID 56
12.00 - 12.15		Paper ID 123	Paper ID 63	Paper ID 33	Paper ID 62

PARALLEL SESSION

Day 1	Parallel 2	Room 1: Human Factors and Ergonomics	Room 2: Technology and Knowledge Engineering	Room 3: Safety, Security and Risk Engineering	Room 4: Product Design& innovation
15.00 - 16.45		Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM1 (Meeting ID: 98861047084 / Passcode: 805815)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM2 (Meeting ID: 810 4944 8672; Passcode: 579171)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM3 (Meeting ID: 974 0400 1914; Passcode: 857373)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM4 (Meeting ID: 845 2189 0305; Passcode: 860368)
15.00 - 15.15		Paper ID 15	Paper ID 16	Paper ID 58	Paper ID 69
15.15 - 15.30		Paper ID 17	Paper ID 24	Paper ID 59	Paper ID 103
15.30 - 15.45		Paper ID 18	Paper ID 61	Paper ID 60	Paper ID 104
15.45 - 16.00		Paper ID 19	Paper ID 73	Paper ID 114	Paper ID 126
16.00 - 16.15		Paper ID 27	Paper ID 74	Paper ID 83	Paper ID 127
16.15 - 16.30		Paper ID 30	Paper ID 76	Paper ID 98	Paper ID 106
16.30 - 16.45		Paper ID 102	Paper ID 125	Paper ID 105	Paper ID 107

PARALLEL SESSION

Day 2	Parallel 3	Room 1: Human Factors and Ergonomics	Room 2: Human Factors and Ergonomics	Room 3: Human Factors and Ergonomics	Room 4: Safety, Security and Risk Engineering
10.00 - 12.00		Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM1 (Meeting ID: 98861047084 / Passcode: 805815)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM2Day2 (Meeting ID: 867 7574 9987; Passcode: 663098)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM3 (Meeting ID: 974 0400 1914; Passcode: 857373)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM4 (Meeting ID: 845 2189 0305; Passcode: 860368)
10.00 - 10.15		Paper ID 108	Paper ID 95	Paper ID 55	Paper ID 66
10.15 - 10.30		Paper ID 111	Paper ID 112	Paper ID 57	Paper ID 116
10.30 - 10.45		Paper ID 31	Paper ID 7	Paper ID 67	Paper ID 117
10.45 - 11.00		Paper ID 35	Paper ID 8	Paper ID 68	Paper ID 118
11.00 - 11.15		Paper ID 37	Paper ID 10	Paper ID 70	Paper ID 119
11.15 - 11.30		Paper ID 50	Paper ID 11	Paper ID 71	Paper ID 120
11.30 - 11.45		Paper ID 53	Paper ID 12	Paper ID 100	Paper ID 115
11.45 - 12.00		Paper ID 79	Paper ID 13	Paper ID 101	Paper ID 122

PARALLEL SESSION

Day 2	Parallel 4	Room 1: PLENARRY SESSION OF PEI	Room 2: Logistic and Supply Chain	Room 3: Intellegent system and modelling	Room 4: Intellegent system and modelling
13.00 - 15.00		Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM1 (Meeting ID: 98861047084 / Passcode: 805815)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM2Day2 (Meeting ID: 867 7574 9987; Passcode: 663098)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM3 (Meeting ID: 974 0400 1914; Passcode: 857373)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM4 (Meeting ID: 845 2189 0305; Passcode: 860368)
13.00 - 13.15		1. dr. Riskiyana Sukandhi Putra, M. Kes (Direktur Kesehatan Kerja & Olahraga, Kementerian Kesehatan RI)	Paper ID 1	Paper ID 34	Paper ID 96
13.15 - 13.30			Paper ID 69	Paper ID 39	Paper ID 110
13.30 - 13.45		2. Drs. Muhammad Idham, MKKK (Direktur Bina Pengujian Keselamatan dan Kesehatan Kerja, Kementerian Ketenagakerjaan RI)	Paper ID 20	Paper ID 44	Paper ID 65
13.45 - 14.00			Paper ID 28	Paper ID 45	Paper ID 86
14.00 - 14.15		3. Ir. Wakhid Hasyim, MT. (Direktur Teknik dan Lingkungan Migas, Kementerian ESDM RI)	Paper ID 38	Paper ID 54	Paper ID 88
14.15 - 14.30			Paper ID 128	Paper ID 64	Paper ID 89
14.30 - 15.00		Q & A Session		Paper ID 93	Paper ID 90

PARALLEL SESSION

Day 2	Parallel 5	Room 1: Human Factors and Ergonomics	Room 2: Human Factors and Ergonomics
15.15 - 16.45		Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM1 (Meeting ID: 98861047084 / Passcode: 805815)	Zoom meeting link: https://bit.ly/ACISE-ICESH2021ROOM2Day2 (Meeting ID: 867 7574 9987; Passcode: 663098)
15.15 - 15.30		Paper ID 72	Paper ID 113
15.30 - 15.45		Paper ID 75	Paper ID 84
15.45 - 16.00		Paper ID 77	Paper ID 85
16.00 - 16.15		Paper ID 80	Paper ID 87
16.15 - 16.30		Paper ID 81	Paper ID 91
16.30 - 16.45		Paper ID 82	Paper ID 92

Paper ID

ID	AUTHOR	TITLE
1	Vania Rachmadanti, Ratih Setyaningrum and Dwi Izzhati	PDCA Analysis on Management Administration Information System based on Android at Resik Becik Semarang
2	Nurhayati Sembiring, Magfira Ashila Nasution, Andri Gunawan, Nurul Novia Azmi and Muhammad Fadly Tanjung	Various Researches of Artificial Intelligence in Telecommunication
3	Nurhayati Sembiring, Wira Sopyana Sarah and Bayu Andra	The Effect Number of Workers and Working Hours On Eucalyptus Harvest Using The Dynamic System Method
5	P.W. Anggoro, J Jamari, Ap Bayuseno, Tonny Yuniarto, Baju Bawono and Pk Fergiawan	Development of Ceramic Jewellery Industry in the form of necklaces with Indonesian Batik motifs
7	Hari Purnomo, Beta Arya Ash Shidik and Ayudyah Eka Apsari	Design of Elderly Reading Chair to Decrease Musculoskeletal Disorders by Using Quality Function Deployment (QFD) Method
8	Rahmanda Wulandari, Dyah Santhi Dewi and Aditya Sudiarno	Influence Safety Climate and Safety Culture Against the Safety Behaviour on Bus Rapid Transit Driver with Gender as Moderating Variable
10	Wita Anggraini, Monica Dewi Ranggaini and Annisa Putri Ariani	The Relationship between The Use Of Personal Protective Equipment (PPE) With the Levels of Stress in Dentists During the Covid-19 Pandemic
11	Brillian Nur Diansari, Bambang Suhardi and Novie Susanto	Macroergonomic and Analysis Design (MEAD) for Permanent Shelter of Public Transportation
12	Desinta Rahayu Ningtyas, Anisa Puspa Delima and Kirana Rukmayuninda Ririh	Assessment of Mental Workload and The Difference between Work from Home (WFH) and Work Form Office (WFO) using NASA-TLX (Case Study in PT KIC)
13	I Wayan Santiyasa, I Putu Gede Adiatmika, I Nyoman Adiputra and Ida Bagus Alit Swamardika	Formulation of Mathematical Model to Investigate Influence of Heuristic Interface Design on Computer Vision Syndrome of Ergonomic Drawing Tablet Users
14	Hari Krishnan Tamil Selvan and Mohd Nasrull Abdol Rahman	The Critical Variables for the Risk Assessment Associated with Pushing and Pulling of Wheeled Equipment in the Workplace: Expert Panel Review
15	Totong Totong and Hardianto Iridiastadi	Personal protective equipment for health workers during a pandemic: review of discomfort evaluation and physiological response
16	Muhammad Kholid Shalahuddin, Endah Ratna Arumi and Setiya Nugroho	Design of Motorcycle Oil Performance Detector
17	Anisa Fauziah and Khoirul Muslim	Development of a Real-Time Ergonomic Assessment Tool to Minimize Musculoskeletal Disorders Risk
18	Lovely Lady	Assessment of The Comfort of Building Stairs and Height Limits Proposed

ID	AUTHOR	TITLE
19	Ainun Habibah, Dwita Astari Pujiarti, Ari Widyanti and Herman Rahardian Soetisna	The Potential and Challenges of Virtual Reality in Indonesia
20	Firda Nur Rizkiani, Vincent F. Yu and Nurhadi Siswanto	A Genetic Algorithm Based Approach for Maritime Inventory Routing Problem
24	Wisnu Nugroho, Setiya Nugroho and Endah Ratna Arumi	Motorcycle Oil Performance Detector: A Literature Study
25	Nandya Shafira Pramesti, Yu-Chung Tsao, Iwan Vanany and Thuy-Linh Vu	An Economic Production Quantity Model for Smart and Connected Product with Upstream and Downstream Trade Credit
26	Setyo Utomo Soekarsono, Yustiono Dwi Arianto and Hardianto Iridiastadi	Toyota Production System in Aircraft Industry
27	Laras Swandayani, Adithya Sudiarno and Chiuhsiang Joe Lin	Visual Fatigue Examination on Static and Dynamic Virtual Environment
28	Ermayana Megawati, Ari Heryanto, Aries Susanty and Novie Susanto	Indicators Prioritization to measure the Impact of Implementing Covid-19 health Protocol`s in the workplace
29	Fatin Saffanah Didin, Hardianto Iridiastadi and Ari Widyanti	Review of Objective and Subjective Tools for Rear-End Collision Risk Assessment
30	Made Agung Raharja, Susy Purnawati, I Putu Gede Adiatmika, I Nyoman Adiputra and Ida Bagus Alit Swamardika	Android-Based Learning Media Analysis On Tembang Bali Learning Materials Based On The Principles Of Human Computer Interaction (HCI)
31	Sevty Auliani and Hardianto Iridiastadi	Factors Causing Train Driver Fatigue: A Systematic Review
33	Rindra Yusianto, Marimin Marimin, Suprihatin Suprihatin and Hartrisari Hardjomidjojo	The Center of Gravity Method Optimization using Spatial Perspective
34	Aries Susanty, Pradhipta Listyawardhani and Heru Prastawa	Systematic Literature Review: Bibliometric Analysis of Green Consumer Behavior
35	Markus Hartono, I Made Ronyastra and Tania Aisyah Fajrin	Human-Side Emotional Service Design for Experience-Centric Amusement Park
36	Ratna Purwaningsih, Maharani Ratri W. Sabrina, Susatyo Nugroho W. Pramono and Aries Susanty	Sustainability Assessment of Tourism Destination with Multidimensional Scaling Approaches
37	Nyoman Kristina, I Made Ady Wirawan and I Putu Gede Adiatmika	Intervention Exercise Precription Based on Effective Total Ergonomy to Reduce Musculoskeletal Disorders on Dentist's Work in Community Health Centres in Denpasar City
38	M. Mujiya Ulkhaq	Efficiency Analysis of Indonesian Schools: A Stochastic Frontier Analysis using OECD PISA 2018 Data
39	Muhammad Faisal Ibrahim, Muhamad Akbar Falahi and Dana Marsetiya Utama	Fuzzy TOPSIS Approach for Post-Harvest Fish Losses Drivers Evaluation: a Case Study of Gresik, Indonesia
40	Arfan Bakhtiar, Febby Veronica and Denny Nurkertamanda	Comparing of Online Transportation Providers Service Quality in Semarang City Using Competitive Zone of Tolerance Based Importance Performance Analysis (CZIPA) - The Case of Online Transportation Providers X and Y

ID	AUTHOR	TITLE
41	Ratna Purwaningsih, Putri Indah Ramadani, Sri Hartini and Ade Aisyah Arifna Putri	Supply Chain Risk Assessment at Poultry Slaughterhouses using House of Risk Method to Define Mitigation Action
42	Veniranda Widyastuti, Veniranda Widyastuti and Yuanita Windusari	Analysis of Gastroenteritis Incidence during the Covid-19 Pandemic on Shopping Center Employees
43	Arfandi Ahmad and Nur Ihwan Safutra	Analisa Perancangan Pengendalian Kualitas Statistik Pada Kelompok Tani Wanita - (Studi Kasus Petani Cengkeh Kecamatan Bontomanai Kepulauan Selayar)
44	Paulino Gamboa and Moses Singgih	Productivity Improvement Using Lean Six Sigma, ECRS, and TRIZ Methods
45	Deni Dwi Junico and Moses Laksono Singgih	Designing the Performance Measurement System of PT XYZ using Balanced Scorecard and Analytical Hierarchy Process Method
46	Achmad Nanang Zulfikar and Moses Laksono Singgih	Performance Measurement Improvement of Maintenance Service Provider Using Quality Function Deployment
48	Ahmad Padhil, Nurhayati Rauf and Mony Rezki	Analisis Faktor-Faktor Yang Berpengaruh Terhadap Hasil Produksi Calcine Unit Rotary Kiln (Rk)Iii Dengan Menggunakan Metode Taguchi PT. XYZ
50	Andrean Emaputra, Kartinasari Ayuhikmatin Sekarjati and Indri Susilawati	The Customer Satisfaction Analysis of the Cinema during Covid-19 Pandemic using the Kano Model in Indonesia
52	William Faustin	3D Printing Technology: A New Advancement for Modular construction?
53	Auditya Purwandini Sutarto, Titis Wijayanto and Irma Nur Afiah	A Conditional Process Analysis on the Relationship between Work-Life Balance, Well-being, Job Satisfaction, and Work from Home Practice during the COVID-19 Pandemic
54	Gary Yu-Hsin Chen, Ronald Sukwadi and Chen-Yi Hung	Study of Optimization Problems Associated With Technical Implementation of Drones in the Post-Pandemic Society
55	Lina Dianati Fathimahhayati and Risky Risky	University Students' Mental Workload and Sleep Quality due to Online Lecture during Covid-19 Pandemic
56	Bambang Purwanggono and Jouondo Ibana	Implementation of Preventive Maintenance on CNC Milling Tape Drill Machine at PT XYZ Using FMEA Method and Age Replacement
57	Amrita Kaur Seera Harapajan Singh, Shaik Farid Abdull Wahab and Rohayu Othman	Ergonomic Risk Assessment Of Musculoskeletal Disorders (MSD) During Chest Compression In Three Different Position In A Rescuer Performing Paediatric Basic Life Support
58	Ananda Vania Arisa Putri, Rheza Aulia Ramadhan and Bambang Purwanggono Sukarsono	Risk Analysis and Management of Procurement Activities in Elementary School Book Printing Project using House of Risk Method
59	Rheza Aulia Ramadhan, Ananda Vania Arisa Putri and Bambang Purwanggono Sukarsono	Risk Study of Supply Chain of Learning Module Procurement Project (Case Study: PT. XYZ)
60	Soraya Muthma Innah Nasution, Fadhilah Muslim and Yusuf Latief	Evaluation of the Implementation of Fire Safety Management Based on Work Breakdown Structure for High-Rise Apartments

ID	AUTHOR	TITLE
61	Desma Desma, Leni Sagita and Mochamad Ichsan Damiat	Improving oil and gas wireline log data quality using six sigma methods
62	Astiti Dana Oktaviani and Mohammed Ali Berawi	Implementation of 3D Concrete Printing Technology in Precast Concrete Mass Production Industry
63	Wahyu Dwi Nurdiyanto, Djatmiko Ichsani and Nurhadi Siswanto	Modeling Operations of CCPP Tambak Lorok, Based on Gas Fuel And Investment in CCPP Block 3
64	Muqimuddin Muqimuddin, Nurul Ilmi and Bayu Nur Abdallah	Value Added and Non-Value Added Activity Analysis in Disassembly Process for Productivity Enhancement during Covid-19 Pandemic
65	Gary Yu-Hsin Chen and Chen-Yi Hung	Study of RFID technology Applied to Parts Distribution Center in the Utility Sector
66	Desi Aryani, Yuanita Windusari and Fenny Etrawati	Risk of Musculosceletal Disorders (MSDs) on Traditional Jewelry Creamers
67	I Made Sutajaya, Desak Made Citrawathi, Ni Putu Sri Arnita, Ni Luh Putu Mia Lestari Devi and Ni Made Citra Aryani	The Implementation of the Tri Datu Concept of Socio-Cultural Ergonomic Oriented to Maintain Entrepreneurial Attitude of Workers on The Covid-19 Pandemic
68	Mohd Anas Mohd Nor, Shaik Farid Abdull Wahab, Nik Hisamuddin Nik Ab Rahman and Rohayu Othman	Ergonomic Risk Assessment of Musculoskeletal Disorders During Simulated Endotracheal Intubation Using Direct Laryngoscopy and Video Laryngoscopy Among Doctors in Emergency and Trauma Department of a Teaching Hospital
69	Nadya Y. Fahmi, Cindy R. Priadi and Heri Hermansyah	Effect of Bioaugmentation by using Cow Manure Microbial Consortium for Treating Food Waste with Anaerobic Digestion on Biogas Enhancement
70	Nurul Inzany, Iham Bakri and Sapta Asmal	Correlation between Backpack Weight and Shoulder Pain in Children Aged 6-11 (A Case in Elementary School in Makassar Indonesia)
71	Yustina Nugraheni Wahyuningtyas and Heru Prastawa	Risk Level for Manual Material Handling Activities Using Key Indicator Method in the Simulation of TPS Laboratory at Industrial Engineering, Diponegoro University
72	Faradhina Azzahra and Titis Wijayanto	The Effect of Emotion Induction on Situation Awareness and Driving Performance
73	Anni Z. Putri, Djoko M. Hartono and Sandyanto Adityosulindro	Analysis the Relationship Between the Distance of Groundwater Wells to the Septic Tank on Groundwater Quality
74	Syarfina Andini and Nyoman Suwartha	Evaluating the Effect of Floating Photovoltaic on Trophic State using Mesocosm Experiments
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ABSTRACTS

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PDCA Analysis on Management Administration Information System based on Android at Resik Becik Semarang

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Abstract

One of the Waste Banks in Semarang is, "Resik Becik". It is located at Cokro Kembang Street Number 11 Krobokan Village, West Semarang. It is established on January 15th, 2012, is an Micro- medium enterprises that processes inorganic waste such as plastic and paper into goods that have high economic value. This final task research aims to determine the improvement of administration management of "Resik Becik" based on the plan-do-check-action cycle and also generate a design of administrative management information system at the waste bank from the results of continuous improvement analysis in plan-do-check-action. The results of this study are 1) Implementation of administrative management at "Resik Becik" Semarang based on PDCA method, in the plan cycle analyzes the cause of the problem by using seventools. On Do cycle creates android-based apps as well as create questionnaires. On check cycle tests questionnaire variables using SPSS software and Action cycle publishes android-based applications. 2) The design of administrative management information system at"Resik Becik" with android-based application which has the advantage to shorten the management process time at "Resik Becik". 3) Applications are made in a more modern way and take advantage of existing technological developments.

Keyword : *Waste Banks, Continuous Improvement, Seventools, Administration Management, PDCA*

Paper ID : 2

Various Researches of Artificial Intelligence in Telecommunication

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Abstract

Two faces communication not greatly suitable to the model of communication theory between artificial intelligence (AI) and society interplay, which is by intermediary virtual, terms-generation software, and social bots. To cite this decide among appeared technology and communication theory, this study serves a beginning spot for connecting the distinction among acquaints a theoretic base, prior technologies, and communicative AI for steering these states in the shape of fellowship inside human–machine communication (HMC). A research agenda outlined by built within three points of communicative AI that are the functional standards, relational vibrants, and metaphysical purposes imaged on a HMC framework.

Keyword : *artificial, intelligence, optimization, telecommunication*

Paper ID : 3

The Effect Number of Workers and Working Hours On Eucalyptus Harvest Using The Dynamic System Method

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Abstract

Eucalyptus Pelita is the raw material for pulp at PT. XYZ. The determination of the amount of eucalyptus production is based on the request of the company. The demand for the number of eucalyptus production is increasing every year. So it is necessary to conduct research to increase eucalyptus yields to ensure the amount of eucalyptus production as raw material for paper pulp. Based on the results of discussions with the management of PT. XYZ there are numbers of workers and working hours that are not optimal. For that, a decision support tool for planning eucalyptus planting is needed to increase the yield of eucalyptus so that it can be stable. The simulation model in this study integrates a dynamic system during the eucalyptus planting process. There are two simulation scenarios carried out on the eucalyptus land owned by PT. XYZ. The actual number of company workers is 3000 people with working hours of 6.4 hours/day. In this study the simulation was carried out using two scenarios, namely in scenario 1 the addition of 1000 workers so that the number of workers became 4000 people with working hours to 7 hours/day and in scenario 2 the addition of workers is 1160 people so that the number of workers is 4160 people with working hours of 6.4 hours/day. Verification is performed to check if the model has errors. Model validation was done by using the Mean Absolute Percentage Error (MAPE) test. The results of the model validation test show that the model is valid and very precise with a MAPE value below 5%.

Keyword : *Eucalyptus, System Dynamics, Number of Workers, Hours of Work, Anylogic Software.*

Paper ID : 5

Development of Ceramic Jewellery Industry in the form of necklaces with Indonesian Batik motifs

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Abstract

The manufacturing industry can develop if it is followed by developments in science and technology. This development further encourages people to be more creative in developing creative economy-based businesses. The creative economy is very helpful for the government in efforts to increase state revenue from the export of these industrial products to other countries. This is also supported by the competitive habits of the Indonesian people, resulting in a significant increase in purchasing power and community needs related to manufactured products, one of which is ceramics.

Ceramics is one of the creative product manufacturing industries that is growing rapidly and is supported by the Ministry of Trade of the Republic of Indonesia. This industry produces cutlery, sinks, wall tiles, and jewellery products with the addition of textures with different motifs. Ceramic jewellery is a product development of ceramic tale and tableware which is combined into a piece of jewellery to increase artistic value and higher sales. This selling point becomes valuable if this product is contoured with unique reliefs and has Indonesian characteristics, such as Batik Nusantara. The basic characteristics of Indonesian batik ornaments are generally geometric, flora, and nature forms (leaves, stems, palm shapes, flowers, buds, and landscapes) and are designed with modern artistic CAD-CAM technology. Naruna Ceramic Studio (NCS), local ceramic industry in Salatiga, Central Java, is unlikely to produce a distinctive jewelry ceramic with unique ornaments, precision, and a large amount of handmade art.

This paper seeks to increase the competitive advantage of NCS and CV Sibad Engineering through the use of modern design technology - manufacture and fabrication of CAD-CAM-CNC-based artistic ceramic jewellery products so that they have significant competitive selling value and help increase NCS turnover. The method of implementation carried out by researchers used the design - manufacture - fabrication method based on modern artistic CAD-CAM-CNC technology. The use of this method can produce several variations of Indonesian Batik patterned pendant designs according to market demand in a precise,

accurate, consistent, artistic, and realistic manner. The output of the first-year research was the use of this technology so that it was able to obtain a master prototype pendant model and jewellery ceramic products ready for sale through the online portal that NCS already had.

Keyword : *Manufacturing industry, creative economy, Jewellery Ceramic*

Paper ID : 7

Design Of Elderly Reading Chair To Decrease Musculoskeletal Disorders By Using Quality Function Deployment (QFD) Method

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Abstract

The increase in the number of elderly people is quite high in Indonesia, so that supporting tools are needed to create healthy, active and productive elderly people. Some of these activities are able to keep the mind healthy and can help maintain mental health. Based on the initial research, it was found that there were disorders from the elderly related to the body parts movement systems. Therefore, it is necessary to design an ergonomic facility for the elderly to reading books so that it can reduce musculoskeletal disorders and provide comfortness to the elderly. The design facility is a reading chair for the elderly, where in this study the design uses the Quality Function Deployment (QFD) method. Based on the research, the elderly need a reading chair with a comfort cushion and backrest, equipped with a footstep, has an adjustable table, has a drinking spot, easy to move, strong and has long life durability. The results of the reading chair design are made according to the dimensions of the elderly atropometry with adjusted percentile calculations. The result of the satisfaction level test showed that some of the respondents 'attributes are more satisfied with the renewal reading chair design than the competitors'.

Keyword : *Elderly, Quality Function Deployment, Reading chair, muskuloskeletal disorders, Ergonomic*

Paper ID : 8

Influence Safety Climate and Safety Behavior Against The Safety Behavior On Bus Rapid Transit Driver With Gender As Moderating Variable

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Abstract

TransJakarta is one of the service providers engaged in the transportation sector. Over the past 6 years there have been 2,631 accidents. In 2019 there were 320 accidents. This accident is thought to have a close relationship with safety behavior. This study aims to measure the impact of the safety climate and safety culture on the safety behavior of TransJakarta bus drivers by identifying the most significant factors. The questionnaire was adapted to fit the characteristics of the object of transportation. Questionnaires were distributed to 261 TransJakarta drivers. Modeling was carried out using Structural Equation Modeling - Partial Least Square (SEM-PLS) with a confidence level of 95% (α = 5%). The test results show that all three hypotheses are accepted with a significant positive effect for H1 safety culture with the safety climate. H2 safety climate with safety behavior. H3 safety culture and safety behaviour. For the moderating variable, there is a significant negative relationship for H4 safety culture on safety climate and H5 safety climate on safety behavior, while H6 gender does not moderate the effect of safety culture on safety behavior. T-statistic 1.143 and P-Values 0.254 (significance greater than 0.05).

Keyword : *safety culture, safety climate, safe behavior, public transportation, gender*

Paper ID : 10

The Relationship Between The Use Of Personal Protective Equipment (PPE) With the Levels of Stress in Dentists During the Covid-19 Pandemic

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Abstract

Background: Coronavirus transmission during the global Covid-19 pandemic can be transmitted through bioaerosol produced during dental care. Dentists are most susceptible to exposure to this virus because they come into direct contact with droplets or fluids in the patient's mouth when carrying out dental treatment. PPE that is recommended for dentists is PPE level 3.The level 3 of PPE consists of: 1) google or face shield, 2) hair cap, 3) N-95 mask, 4) disposable gloves, 5) non-absorbent clothing, 6) shoe covers. On the other hand, it turns out that the use of PPE can limit the space for dentists. Purpose: as a preliminary study to determine whether there is a relationship between the use of PPE and the stress level of dentists during the Covid-19 pandemic. Methods: using a questionnaire containing questions about the use of PPE and Perceived Stress Scale online to dentists in Indonesia. Results: The subjects of the study were 270 dentists consisting of 81 men (30%) and 189 women (70%). There were significant differences between the number of practice days per week (p:0,000); the number of practice hours per day (p:0,000); and the number of patients (p:0,000). The results of the Spearman test showed that there was a very weak relationship between the use of PPE and stress levels (rs: -0,014). Conclusion: The use of PPE will limit performance in practice which can increase stress for dentists. During the Covid-19 pandemic, dentists reduced their practice days per week, length of work and number of patients per day. This has indirectly controlled stress levels. Therefore, not all dentists using PPE experience stress while working during the Covid-19 pandemic.

Keyword : *Personal Protective Equipment, dentist, stress level*

Paper ID : 11

Macroergonomic and Analysis Design (MEAD) for Permanent Shelter of Public Transportation

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Abstract

The availability of public facilities is permanent BST (Batik Solo Trans) shelter as public transportation in Surakarta City. Bamwesigye and Hlavackova (2019) explain the smart cities and analyse a private transportation. Sohail, Maunder and Cavill (2006) had research case study about sustainable public transport in developing countries with the critical importance of communication and coordination between stakeholders. Sipus and Abramovic (2017) concern about the accessibility of public transport and just analyzed the demographic factors. The application of macroergonomic method has chosen because this method involves all elements to interact and produce satisfaction. The population of this research is BST's passenger with a sample requirement of 40 respondents with sample criteria being considered respondents who use the BST's permanent shelter at least once, the Transportation Agency, and disabled. The objective of this study is to increase the interest of people to use public transportation for reducing the private vehicles use and improving air quality in the city. The conclusion is four alternatives proposed improvement using (Macroergonomic Analysis and Design) MEAD, that are: design improvement by human centered and universal design, improvement refers to the Ministry of Transportation's standard, redesign of the BST shelter, improvement and utilization of BST shelter facilities.

Keyword : *Smart Cities, Public Transportation, Macroergonomic Analysis and Design (MEAD)*

Paper ID : 12

Assessment and the Difference of Mental Workload between Work from Home (WFH) and Work form Office (WFO) Using NASA-TLX (Case Study in PT KIC)

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Abstract

The world is currently impacted by novel coronavirus disease (COVID-19). The government issued a policy to control the spread of the Covid-19 virus, this policy is to limit the activity in public areas. Some industries applied the policy to do work from home (WFH) and work from the office (WFO) as well as PT KIC does. The application of this work system has an impact on the mental workload experienced by employees in PT KIC. This study aims to determine the mental workload factor during WFH and WFO and to analyze the difference of Working Workload (WWL) at the marketing department in PT KIC. The method used is NASA-TLX, and the difference of WWL used the Wilcoxon test. The NASA-TLX uses six indicators namely mental demand, physical demand, temporal demand, own performance, effort, and stress level (frustration). The results obtained from the NASA-TLX method are that the biggest mental workload factor during WFH is performance and the biggest mental workload factor during WFO is effort, based on the Wilcoxon test results value of average WWL $z=-3.296$, $p=0.001$ ($p<0.05$). There was a significant difference in the measurement results of the average WWL of employees during WFH and WFO.

Keyword : *Mental Workload, NASA-TLX, WFH, WFO, Covid-19*

Paper ID : 13

Formulation of Mathematical Model to Investigate Influence of Heuristic Interface Design on Computer Vision Syndrome of Ergonomic Drawing Tablet Users

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Abstract

The use of computers in this present age is very widespread, as almost all human activities utilize computer technology to complete their tasks. With the aid of computers, completing tasks becomes more practical and efficient. However, prolonged and continuous computer use can lead to diseases including Occupational Health Hazard, which is commonly known as Computer Vision Syndrome (CVS). This syndrome is the number one occupational hazard in the 21st century. Common symptoms of CVS due to prolonged computer use are internal ocular symptoms (eye tension and pain), external ocular symptoms (dry eyes, irritation and pain), visual symptoms (blurred eyes, double vision). This study aims to evaluate the usability of the interface of the ergonomic drawing tablet application in the Balinese script writing system using a heuristic method. The heuristic method is based on the ten heuristic evaluation proposed by Molich and Nielsen. In that study, Molich and Nielsen evaluated the usability of an application which was used by workers to aid in completing their tasks. They applied mathematical modelling to determine the level of CVS experienced by the workers. In this study, the results showed that the level of CVS symptoms in the use of ergonomic drawing tablet applications in writing Balinese script based on the study of Molich and Nielsen are as follows. The percentage of workers who experienced CVS symptoms after using the ergonomic drawing tablets for 3-4 hours, 4-5 hours, and more than 5 hours is 29.46%, 34.26%, and 36.28% respectively. The odds-ratio (OR) of using ergonomic drawing tablets for 3-4 hours = 1.03, 4-5 hours = 1.17 and les than 5 hours = 1.23 with system usability level of 89.88%.

Keyword : *Mathematical Modeling, Heuristic Interface Design, Computer Vision Syndrome, Usability*

Paper ID : 14

The Critical Variables for the Risk Assessment Associated with Pushing and Pulling of Wheeled Equipment in the Workplace: Expert Panel Review

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Abstract

The current study aimed to determine the critical variables for the observational-based assessment of wheeled equipment's pushing and pulling (PP) based on the inputs from subject matter experts (SMEs). Therefore, the feedback from SMEs in Malaysia and globally were gained through a self-administered online questionnaire. The critical variables for PP assessment were chosen based on the content validity ratio above 0.59, given that the number of expert panels was 11. Thirteen variables or 56.5% (type of device, wheel diameter, handle height, handgrip, load magnitude, frequency, distance, posture, task duration, floor condition, obstacles along route, congestion and gender) from the 23 variables evaluated, were found to be essential variables in assessment of PP activities. It was observed that many of the variables were not considered in the present observational-based assessment tool for PP activities. Therefore, it is reasonable to develop a new assessment tool for PP activities by considering the input from the SME.

Keyword : *Pushing and pulling, subject matter experts, ergonomics, observational-based risk assessment, wheeled equipment*

Paper ID : 15

Personal Protective Equipment for Health Workers During a Pandemic: A Review of Evaluation of Discomfort and Physiological Response

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Abstract

Personal protective equipment must be used by health workers to prevent transmission while handling COVID-19 patients. However, its usage causes side effects in the form of discomfort. This study aimed to conduct a systematic literature review of the discomfort and physiological responses experienced by health workers when using PPE for handling COVID-19. The method of collecting articles in this systematic literature review used search engines such as Science Direct, Springger Link, Proquest, PubMed, Taylor & Francis Online and google scholar. The search results obtained 396 articles, then a checking process was carried out so that 19 articles were reviewed thoroughly. The discomfort experienced by health workers when carrying out activities using PPE for handling COVID-19 includes physical, psychological, and cognitive discomfort. The physiological responses experienced include end-tidal CO2, heart rate, respiratory rate, blood pressure, oxygen saturation, and perfusion index. Risk factors for discomfort include demographic factors, habits, time of use and work environment. This literature review provides information on the level of discomfort, physiological responses and risk factors experienced by health workers when using PPE for handling COVID-19. The results of this review can be used as a direction by interested parties to support the performance of health workers when treating patients.

Keyword : *COVID-19, health workers, personal protective equipment, discomfort, physiological responses*

Paper ID : 16

Design of Motorcycle Oil Performance Detector

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Abstract

IOT development currently leads in all fields of science, one of which is the area of the vehicle. One of the important things in a vehicle is a lubricating system. Some accidents happen besides human negligence, but also on the condition of the vehicle is not good that the lubrication system is problematic. Checking the condition and quality of the oil can use a dipstick and a viscometer, but this method is still conventional. To solve this problem, it is necessary to develop technology by applying a microcomputer-based rotor drive to display the results of the calculation of oil viscosity on the LCD, and to make it easier for users to read the results. This study uses a turbidity sensor that is mounted directly on the engine to check the condition of the oil automatically. The method used in this research is to make the concept by designing checking tool performance and quality of oil using an Arduino controller. Results of this research is to design an automatic oil performance testing tool to display the percentage of the oil's condition to avoid the driver's negligence in replacing.

Keyword : *IOT, Oil Performance, Turbidity Sensor.*

Paper ID : 17

Development of a Real-Time Ergonomic Assessment Tool to Minimize Musculoskeletal Disorders Risk

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Abstract

This study proposes a design of an assessment tool that provide real-time feedback on ergonomic risks to workers based on their postures. Field study was performed by conducting direct visits to a manufacturing plant in Indonesia observing several production tasks to obtain primary data related to complaints of Work-Related Musculoskeletal Disorders (WMSDs) in the workplace. Tasks with a higher risk of injury were selected to perform task analysis to segment the task steps and to select appropriate risk assessment methods available such as Rapid Entire Body Assessment (REBA), Rapid Upper Limb Assessment (RULA), Ovako Working Posture Analysis System (OWAS), etc. An appropriate assessment tool was selected based on the critical characteristics of the tasks. In this study, the tasks being evaluated included cleaning up the residues of production, grinding processes, manual bending, and welding, and the appropriate assessment method used was OWAS. Measures to be considered as WMSDs risk factors were the posture of back, arms, legs, and weight being handled. These measures were considered in the design of the sensor system that integrated seven Inertia Measurement Units (IMU) placed on the specified body parts based on OWAS assessment method. An IMU sensor contains a tri-axial accelerometer, a triaxial gyroscope, and a triaxial magnetometer. In the proposed system, body segment angle values obtained from each of IMU sensor were saved in a log and uploaded into an online database using an android based application. In the android application, the score shows the value at risk, a warning signal is provided to the worker, and the signal is recorded into the database when the risk condition occurrs in the form of a log.

Keyword : *WMSDs, OWAS, real time, system sensors, IMU*

Paper ID : 18

Assessment The Comfort Climb The Building Stairs Up and The Number Of Floors Is Proposed

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Abstract

Climbing stairs requires considerable work energy, many people avoid climbing stairs and choose to use escalators or elevators for comfort. Complaints often came from building users because going up stairs makes people exhausted. However, based on the rules in Indonesia PP no. 36 in 2005 article 58 the use of elevators is only required for office buildings with a height above 5 floors. This study aims to assess whether the dimension of stairs commonly used in office buildings is convenient for users as well as assess up to what height the use of stairs is ergonomics for the users. The research was conducted on a stairs that are commonly used in office buildings, the stairs have a slope of 30o and a bordest after 11 steps. The assessment on the stairs design and height were based on the amount of metabolic cost that calculated from the work energy and oxygen consumption when climbing the stairs. A total of 14 participants climbed the stairs up to the height of 17,6 m. Based on this work energy, a half (50%) of the subject had a heavy category metabolic load when go up the stairs to the 3rd floor or a height of 8.8 meters, but when it rises to a height of 13.2 metres more than 50% of the subject expends energy at the heavy level and 29% has reached a very heavy level. Based on this data, daily activities for climbing stairs up to 8 meters should be done carefully and with a tempo adjust to the condition of the subject body. While daily activity of climbing stairs more than 13 m is not recommended because 29% of subjects expend energy on very heavy.

Keyword : *comfort stairs, ergonomics stairs, metabolic cost, height limit*

Paper ID : 19

The Potential and Challenges of Virtual Reality in Indonesia

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Abstract

Virtual reality is a technology that allows humans to interact with virtual environments. The use of VR is now widespread in various fields. However, their use in Indonesia is still very limited because of the price. This paper describes the use of VR and the reasons for the importance of implementing VR and its potential development and challenges that may arise from its use.

Literature search are conducted using Google Scholar machine learning for journals published after year of 2000 with several search keywords. The search through Google Scholar is continued to several academic databases such as IEEE Xplore, Scopus, and ScienceDirect. Result show that VR can have benefits in various fields ranging from business, training, engineering & design, medical, entertainment, education, architectural design & prototyping, virtual manufacturing, mobile and gaming, and others. In Indonesia, VR has only been used in the tourism and entertainment sector, such as console games and video games. This is because the price of VR is quite expensive and requires high processor specification. Another important issue is related to the distrust of this technology. Implication of this result are discussed.

Keyword :

Paper ID : 20

A Genetic Algorithm Based Approach for the Maritime Inventory Routing Problem

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Abstract

The maritime inventory routing problem (MIRP) aims at satisfying the demands at different ports at a minimum cost during the planning horizon. In MIRP, a heterogeneous fleet of bulk ships with undedicated compartments is used to transport multiple non-mixable products from a production port to consumption ports located in several islands. Inventory constraints are present both at the factory and the silos, and there are upper and lower limits on the inventories. Besides, there are capacity constraints on the capacity of the ship compartments and the depth of ports. The objective is to find a solution that minimizes transportation cost while satisfying several technical and physical constraints. To solve MIRP, we propose a genetic algorithm (GA). The proposed GA is tested on instance adopted from real-world problems with up to 6 consumption ports and 5 ships. Computational results indicate that the proposed GA effectively solves MIRP.

Keyword : *Inventory Routing Problem, Maritime Transportation, Undedicated Compartment, Genetic Algorithm.*

Paper ID : 24

Motorcycle Oil Performane Detector : a Literatur Review

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Abstract

Many motorists often underestimate their motorbikes, especially in terms of changing motorbike oil. Lubricants function to keep the engine running smoothly and hassle-free. Also as a cooler and insulation. Oil contains fine layers, serves to prevent the occurrence of collisions between metal and metal engine components to a minimum, preventing scratches or wear. Oil acts as a protector and fills the gap between the piston and the cylinder. If the piston is in trouble and the motor is forced to run, the consequences can be fatal. Most likely the surface of the cylinder is scratched and if it is severe, the engine will jam. For that we need a tool that can help many riders in helping to determine the quality of oil performance in motorcycles. The method used is a literature study, namely by analyzing the literature that has been selected from various sources through an online database. Based on the results of a review of several literatures, it was found that the tool to detect oil performance. The development of this detection tool is expected to be a solution to people's problems in determining the time to determine the quality of oil that affects oil performance.

Keyword : *Oil Performance, Literature Study, Motorbikes, Oil Detection Tools and oil Quality.*

Paper ID : 25

An Economic Production Quantity Model for Smart and Connected Product with Upstream and Downstream Trade Credit

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Abstract

This study investigates an inventory model considering the effect of smart and connected product. The advance development of technology, such as Internet of Things (IoT), has transformed traditional physical products into smart and connected products, equipped with sensors, artificial intelligence (AI), and information technology. This transformation adds new product capabilities including the ability to monitor surroundings, control of product functions and performance enhancement based on the level of technology embedded to the product. In this study, a manufacturer produces a smart and connected product, where demand increase as the selling price decreases and the number of sensors embedded to the product increases. Moreover, in practice, manufacturer often receive a permissible delay in payment (trade credit) from the supplier while also offering it to the customer to attract more sales. Hence, the objective of this paper is to determine the optimal selling price, lot size and the number of embedded sensors in a single product to maximize the manufacturer's profit under the upstream and downstream trade credit. An economic production quantity (EPQ) model is developed, and the conditions of the optimal solution are derived. Numerical example is carried out to illustrate the theoretical results and solution approach.

Keyword : *EPQ inventory model, Smart and connected products, Pricing, Lot-sizing, and Trade credit.*

Paper ID : 26

Toyota Production System in Aircraft Industry

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Abstract

Three years after the lean manufacturing plan was first put forward by Womack and Jones in 1990 in his book The Machine That Changed The World, US Airforce and MIT initiated the establishment of the Lean Aerospace Initiative (LAI) to study the application of lean manufacturing in the aircraft industry. PTX as an aircraft manufacturing industry also applies lean manufacturing concept since 2013 which is divided into 7 stages. This paper explains how the process of applying lean in PTX and the results it has obtained. Comparison with the literature on the application of lean in the HMLV industry in general, and the aerospace industry in particular is done to be able to provide a more complete understanding of the process of lean implementation in PTX. According to the literature, PTX must also modify some lean tools before they can be applied, in addition to some that can be used directly. Overall, the application of lean manufacturing concept in PTX has managed to increase production effectiveness by 70%, reduce production lead time and defect 60% and 40%, and reduce inventory by 60%.

Keyword : *Lean manufacturing, lean implementation, aircraft manufacture, HMLV, LAI.*

Paper ID : 27

Visual Fatigue Examination on Static and Dynamic Virtual Environment

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Abstract

Many companies are competing to develop Virtual Reality (VR) because they see it as a great industrial potential. However, the acceleration of VR applications penetration does not come up with customer experiences development. Fatigue, which generated by eye conflict, is still becoming a natural problem that the VR user feels. While actually, this condition can be minimized by adjusting the parallax. Furthermore, no particular guideline has stated the maximum duration of using VR to prevent visual fatigue. This research is aimed to validate the effect of the VR environment and the task inside towards visual fatigue. Objective and subjective measurement is applied respectively into the static and dynamic scenario. Critical Flicker Fusion Frequency, Eye Fixation, Eye Saccades, and Eye Blink Rate are used to measure the eye capability to handle the fatigue. This research is expected to find out the relationship between parallax inside the VR environment to visual fatigue. This result can be used by the VR developer as a concern when developing VR in the future. This research contributes to generating the exact maximum duration of VR used as a guideline to prevent visual fatigue while using the VR.

Keyword : *Dynamic, Parallax, Static, Visual Fatigue, Virtual Reality.*

Paper ID : 28

Conceptual Model for Covid 19 Protocol's Effect for Internal Supply Chain to Sustain Company Operational Performance

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Abstract

Supply chain is an organizational system in which there are roles and perform various activities, including information, funds and other resources that are interrelated in the movement of a product or service from supplier to customer. One typical supply chain management is internal supply chain management, where is one of the integrated activities that plays an important role in the operational performance of the company, but in COVID-19 pandemic era every country including PT. AST Indonesia has implemented the COVID- 19 health protocols along with their government role, WHO's role also International Safety standard such as OHSA. Internal supply chain is composed strategic purchasing, production and distribution exactly will have affected by this health protocols. Some researchers have published many factors that influence the performance of the company like quality, flexibility, innovation but also important to study the relevant thing with COVID- 19 health protocols. In this paper, we proposed a conceptual model consist of COVID-19 health protocols, strategic purchasing, production and distribution to sustain company operational performance. AHP method is use in this research to find the dominant influencing protocol factor that affecting in making of ISCM sustainability strategy.

Keyword *: COVID-19 Health Protocols, Internal Supply Chain, Company Operational Performance, and AHP.*

Paper ID : 29

Review of Objective and Subjective Measurement for Rear-End Collision Risk Assessment

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Abstract

Rear-end collisions are the most common type of accident in several countries, such as Japan, China, the United States, and Indonesia toll roads. There are different measurements to investigate risk factors of rear-end collisions, such as objective and subjective measurements. This study aimed to review the measure for rear-end collision risk on the toll road and used for research related to rear-end collision risk assessment. The method in this study was a literature review of research that used objective and subjective measurements of rear-end collisions risk. This study indicated that to validate the results of risk measurement, and needs to use one or more measuring instruments. The objective measure used the history data of rear-end collision on the toll road for modeling, laboratory experiments using various types of driving simulators, and conducting a naturalistic driving study with different equipment specifications. While the subjective measurement used self-report, Driving Behavior Questionnaire (DBQ), Driving Attitude Questionnaire (DAQ). Indeed, objective and subjective measures have advantages and disadvantages instead of limitations. Future research has recommended applying multiple measurements to measure the rear-end collision risk to found research results with a thorough understanding of existing risk factors.

Keyword : *Rear-end Collision, Risk Assessment, Objective measurement, Subjective Measurement.*

Paper ID : 30

Usability Analysis of Tembang Sekar Alit Learning (SekARAI) Applications Using The Human Computer Interaction (HCI) Model In Bali Students

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Abstract

Bali is an area known for its artistic and cultural wisdom, one of which is tembang. Along with the development of the tembang learning era, there has been a shift from using conventional learning media until now it has developed to interactive learning media based on information technology, especially learning Tembang Bali. The purpose of this study was to perform Usability Testing of the Sekar Alit song learning application called Sekarai. Usability Testing needs to be done to find out in advance the possible problems in using the application that will be faced by the user. Usability is measured by five criteria, namely: learnability, efficiency, memorability, errors, and satisfaction, which consists of 18 questionnaire questions. The application of the concept of HCI, especially usability testing on the SekARAI application for students in the city of Denpasar which is based on user opinions shows that the learnability indicator is the aspect that has the highest assessment, with a value of 4.21, memorability is the most important aspect. has an assessment with a value of 4.18, the third satisfaction indicator with an assessment of 4.17, Efficiency is the fourth indicator with an assessment of 4.03 and an indicator of errors with a value of 3.93.

Keyword : *usability, Balinese tembang, Human Computer Interaction (HCI)*

Paper ID : 31

Factors Causing Train Driver Fatigue: A Systematic Review

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Abstract

Fatigue is a factor that causes accidents in the railway industry. Understanding the factors that cause fatigue will minimize the risk of accidents. The objective of this study is to investigate the factors that cause fatigue when operating a train base on a literature review. The method of this study is based on the literature published by various sources. Then these reviews are grouped into several factors based on the odds ratio/p-value and concluded which factors influence the level of machinist fatigue. There were 6 articles reviewed. The results of this study indicate that the fatigue of the machinist when operating the locomotive is caused by factors related to the official and non-technical service. These factors are demographics, job characteristics, environment, lifestyle, trips to work, and sleep and rest. However, existing studies do not explain the type of train they studied (passenger train or freight train), especially freight train. This research can be used both for government, companies, and researchers to understand driver fatigue when operating a train so that strategies can be designed to minimize driver fatigue when operating a train.

Keyword : *Fatigue, train driver, literature review.*

Paper ID : 33

The Center of Gravity Method Optimization using Spatial Perspective

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Abstract

Determining the logistic center point is an art in horticultural commodity logistics, because it is perishable, very high price fluctuations, and not durable. The objective of this study is to propose a new method to determine the most optimal logistic center point using a spatial perspective. We consider temporal congestion, risk hazard zones, and topography. The contribution of this research is that we modified the Center of Gravity (COG) method by adding a spatial perspective (Si). We still used the coordinates of each point (di) and capacity (W). We added a spatial perspective (Si) to the COG equation. The results of this study showed that the new method provided a more reasonable solution compared to classical COG. The result showed that the efficiency of delivery time is 3.3%. Based on verification and validation using sensitivityanalysis, it can be seen that if the COG position is moved with the same radius, the delivery efficiency will change to increase to 12.2% and decrease by 8.9%. So that this new method can be used. For future research, this new method can be used to determine a more optimal logistics distribution route.

Keyword : *Center of Gravity, Logistics Center Point, Route, Spatial Perspective*

Paper ID : 34

Systematic Literature Review: Bibliometric Analysis of Green Consumer Behavior

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Abstract

This study aims to use bibliometric analysis to provide a systematic overview of the green consumer behaviors research from publication on Scopus from 2010 to 2021. As a result, 926 papers were found. In this study, the bibliometric analysis was performed using VOS-viewer software to see research productivity in green consumer behavior based on the increasing rate in the number of papers published and citations per year and the most leading country, institution, source title, and author in this research field. The VOS-viewer software is also used to identify the leading research and emerging topics in the research field based on visualizing the high-frequency and clustering keywords. The results of research profiling showed that green consumer behavior research articles had been published in 26 subject areas, from more than ten different institutions, 161 different journals, and 81 countries. This study pointed out that Universidade de Sao Pulo was the most significant number of green consumer behavior-related study publications with a total of 8 papers. Most of the top institutions was dominated by the Anglo-Saxon and Asian Nations. Business, Management, and Accounting was the journal with the mostsignificant number of publications with 375 articles. The co-author's analysis showed that the author with the highest number of papers was Han, H with six articles. The co-occurrence analysis in terms of keywords indicated that the top 10 keywords for green consumer behavior from 2010 to 2021 were environment, green marketing, consumer behavior, sustainable consumption, sustainability, green consumption, green products, environmental concern, theory of planned behavior, and purchase intention.

Keyword : *Green consumer behavior, research profiling, bibliometric, Scopus, VOS-Viewer.*

Paper ID : 35

Human-Side Emotional Service Design for Experience-Centric Amusement Park

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Abstract

Service company puts effort on how to increase customer satisfaction and loyalty. At least, there are two main issues addressed. First, how to understand customer need and impression is critical. Second, customers expect more than they are expected. It is beyond customer satisfaction. It leads to customer delight, which it drives customer loyalty. Recent studies on human factors in services show the importance of customer emotional need as a complement to the usability and functionality of services. Hence, this study proposes an applicative framework of customer experience-centric through human-side emotional design for amusement park. A case study on the amusement park is chosen to validate the applicability of the proposed applicative framework. It contains more on emotional-based customer experiences. It is quite interesting of how to understand the customer emotional needs, analyze and prioritize strategies for the improvement plan. The purposive sampling involving 100 participants has been conducted. Kansei Engineering, SERVQUAL and Kano model were utilized. In addition, Kansei mining methodology was embedded in the applicative framework. This study found and offered 24 valid and reliable main experience-centric service attributes. The cleanliness of the area was found to be the most critical attribute. Both theoretical and practical contribution were discussed.

Keyword : *Emotional Design, Kansei Engineering, Amusement Park, Mining, Service Quality*

Paper ID : 36

Sustainability Assessment of Tourism Destination with Multidimensional Scaling Approaches

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Abstract

Flower Garden Celosia in Semarang, Central Java is an artificial tourism destination that provides flowers garden, and miniature world icons for visitor photo spot. The flower garden has not implemented sustainable tourism yet and focus on business development. A sustainability assessment is needed to monitor the development of a tourist destination. Assessment of sustainability status was done used Rap-Tourism method, a modification of Rap-fish (Rapid Appraisal for Fisheries) method with Multidimensional Scaling analysis technique. This sustainability assessment has four dimensions: environment, economy, socio-cultural and institutional. The results of the MDS analysis show that the sustainability status of Flower Garden is quite sustainable with an index of 63.52. The index for each dimension is environmental dimensions of 55.34 (quite sustainable), economic dimension of 100.00 (very sustainable), socio-cultural dimension of 71.04 (quite sustainable) and institutional dimension of 63.14 (quite sustainable). The lowest index value is the environmental dimension and the most sensitive attribute to sustainability status is the environmental management and protection system so that the recommendation is the preparation of Environmental Management Efforts and Environmental Monitoring Efforts, Evaluation of Plant Maintenance Performance, waste sorting and evaluation of environmental management.

Keyword : *Tourism, Sustainability Status, Rap-tourism, MDS*

Paper ID : 37

Ergonomic Intervention With Dirgaswasam Modeling Integrated Exercise Prescriptions (Dirgasexpres) Reduce Musculoskeletal Complaints In Dentists

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Abstract

Nowadays dentists do more dental services and spend more time in dental and oral services. In this service, dentists use more of their work stations, such as the length of time a dentist works in a dental chair. So that the prevalence of musculoskeletal disorders among dentists is increasing. This article would like to present and explain the mechanism of the factors that cause musculoskeletal disorders in dentists as well as suggest a prescription for stretching exercises that focus on areas of the muscles that have a tendency to tighten in the position of dental posture which is carried out for a long time and repeatedly and continuously continuously. The stretching recipe is trained so that the muscles that are in the opposite direction to the target, tight muscles can be focused on giving exercise according to the stretching recipe that we made. With the hope that the dentist can practice this stretch prescription independently.

Keyword : *Stretch Prescription, Ergonomics, Dentist.*

Paper ID : 38

Efficiency Analysis of Indonesian Schools: A Stochastic Frontier Analysis using OECD PISA 2018 Data

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Abstract

The importance of high-quality education as a source of economic growth and well-being is broadly acknowledged. Enhancing the efficiency of schooling system as well as individual schools are consideredas a means to improve the provision of better-quality education. With imperfect markets for the services in the education sector, it is vital to assess the efficiency. This study aims to measure the efficiency of Indonesian schools which participated in PISA 2018. Stochastic frontier analysis (SFA) was used toaccomplish the objective of the study. The data were modeled into four different models by considering the distribution assumption of inefficiency, i.e., (i) half-normal model, (ii) truncated-normal model, (iii) exponential model, and (iv) heteroscedastic model. The last model is presented to consider the determinants of inefficiency. The PISA score of reading literacy was considered as a dependent variable, while seven independent variables are: index of school's economic, social and cultural status, type of school, school size, class size, student-teacher ratio, as well as student- and teacher behavior hindering learning. The ICT infrastructure was selected as determinants of inefficiency. This study is expected to give an insight about how to apply SFA in the field of education as well as how to interpret the results.

Keyword : *Education, Efficiency, Indonesia, School performance, Stochastic frontier analysis.*

Paper ID : 39

Fuzzy TOPSIS Approach for Post-Harvest Fish Losses Drivers Evaluation: a Case Study of Gresik, Indonesia

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Abstract

The latest data shows that the value of post-harvest fish loses (PHFL) in Indonesia is 35%, or equal to IDR 30 trillion. Fish is the most easily damaged of all staple commodities in a tropical climate, and this needs to be tackled because fish is nutritious food that contains a lot of quality protein. An inefficient process starting from harvesting until fish being received by consumers decreases the overall quality of the fish. The purpose of this paper is to propose a methodology to find the most critical causes of PHFL using a Fuzzy TOPSIS approach. In this paper, four PHFL criteria are chosen based on systematic literature review. This research limits the scope to the aquaculture supply chain in the district of Gresik. The current study observes some operational processes that cause PHFL throughout the supply chain which then become PHFL drivers. Questionnaires are designed and distributed to experts along the supply chain. The result of Fuzzy TOPSIS approach is able to identify the biggest causes of PHFL and it is recommended that such a contributor driver is handled immediately.

Keyword : *fish supply chain; MADM; fuzzy TOPSIS; post-harvest fish losses*

Paper ID : 40

Quality Comparison for Online Transportation Services Using the Competitive Zone of Tolerance Based Importance-Performance Analysis

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Abstract

Online Transportation X and Online Transportation Y are technology companies that provide online application-based transportation services. Online Transportation X has operated in Semarang City since 2015 and managed to dominate the market share until the emergence of Online Transportation Y in 2017. In regard to this, benchmarking is needed to determine the strategies and competitive positions of the two companies to make improvements in the quality of services to be provided and be able to compete competitively. Management needsto know the service quality that their companies provide through looking at the customer satifactions upon the services that they receive and understanding or identifying the service quality desired by customers. There are 5 dimensions of service quality in the SERVQUAL concept developed by Parasuraman, namely tangibles, reliability, responsiveness, assurance, and empathy that incorporate the use of the Competitive Zone of Tolerance based Importance Performance Analysis (CZIPA) method. The comparison results of the quality of services show that online transportation X had 3 attributes short of its competitor. On the other hand, online transportation Y had 11 attributes short of its competitore. There were 3 attributes in online transportation X and 4 attributes in online transportation Y which were the priority improvements. The suggested improvements were based on the gap between the importance and performance of the online transportation service providers.

Keyword : *Online Transportation, SERVQUAL, CZIPA.*

Paper ID : 41

Supply Chain Risk Assessment at Poultry Slaughterhouses using House of Risk Method to Define Mitigation Action

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Abstract

A poultry slaughterhouse has a strategic role in the broiler supply chain because they determine the quality of carcass products sent to the processing industry and to consumers. RPA also acts as a buffer when there is an over-supply of live birds due to the uncertainty of the production sector and the consumer market by functioning as a cool storage. The series of activities to transform harvesting live birds became fresh and frozen carcasses in an RPA have variousrisks that lead to product quality degradation and financial loss. This study aims to identify and assess the risk event and risk agent along the supply chain and then provide mitigation actions against potential risk causes to minimize the impact of losses and the frequency of risk occurring. The House of Risk (HoR) method is used because it can help identify and assess risks in each activity according to the stages of the business process. The HoR method itselfcombines Quality Function Deployment (QFD) with FMEA (Failure Mode Effect Analysis). This study tries to useHoR with a sequence of activities arranged according to the SCOR (Supply Chain Operation Reference) stage. HoR stage I found 26 risk events, 52 risk agents and 12 of them are potential risk agents. The 3 highest risk agents are product mishandling, insufficient manpower and engine breakdown. HoR phase II proposes 28 risk mitigation actions and obtained 8 selected mitigation actions that consider the difficulty level of implementation, and the company's ability both in terms of costs and human resources. The recommendations given are implementing reward and punishment, training and briefings for workers and carrying out periodic maintenance for machines.

Keyword : *Poultry Supply chain, slaughterhouse, house of risk, risk management*

Paper ID : 42

Analysis of Gastroenteritis Incidence During the Covid-19 Pandemic on Shopping Center Employees

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Abstract

Background:Shopping centers as a public facility where people gather to carry out various activities can become a cluster of Covid-19 transmission. During the SARS-CoV-2 pandemic, most of our attention was focused on the symptoms of respiratory distress. Meanwhile, we cannot rule out the symptoms of diarrhea and other digestive tract disorders, such as gastroenteritis which is characterized by complaints of bowel syndrome. Method:. This study was an analytic study with a cross sectional design. The research subjects were 208 employees at 5 malls in Palembang and 12 restaurants that were the employees' choice for lunch. Result: The bivariate analysis showed that all variables in the restaurant sanitation hygiene assessment were related to the number of complaints of Irritable Bowel Syndrome (IBS). The biggest factors causing foodborne illness (gastroenteritis) in shopping center employees are food processing (OR =3,618), restaurant location (OR = 3,409) and restaurant door variables (OR =3,409). Shopping centers, where often people gather not only to buy necessities but also to have fun, need to be more paid attention to, among others, through the personal hygiene of its employees, which can be started from restaurant choices and cooking menus so that they do not become a new cluster in the spread of Covid-19.

Keyword : *Gastroenteritis, shopping center, Palembang, covid-19*

Paper ID : 43

Analisa Perancangan Pengendalian Kualitas Statistik Pada Kelompok Tani Wanita - (Studi Kasus Petani Cengkeh Kecamatan Bontomanai Kepulauan Selayar)

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Abstract

Quality control by the company is needed inside production process that works for decreasing defective product that happened because of company operation system and works to identified is the defective products are still in control or not. This research was conducted to analize are the products that produce by the company still inside the control limit that already identified and to analize factors that cause the production are not comform with the standard that has been identified. This research was done in Desa Gollek Kepulauan Selayar, for 10 days, in 21st of February 2021 until 30th of February 2021. The results of this research concluded that based on analysis with P-Chart, shows that clove production in separating process and drying process are in controlled condition. While form Ishikawa diagram, shows that factor that caused the product thatbeing roduced are not conform with the standards is that there is material, method, and machine which must always be considered.

Keyword : *Quality control, P-Chart, Statistical process Control, Cause and Effect Diagram*

Paper ID : 44

LEAN MANUFACTURING IMPROVEMENT USING ECRS AND TRIZ METHODS

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Abstract

Lean manufacturing is a method used by Toyota to eliminate or reduce waste to reduce production time and decrease production costs. This paper proposes lean manufacturing, ECRS, and TRIZ to reduce waste and increase production efficiency. The results of implementing lean manufacturing with ECRS and TRIZ in this study will contribute to the literature on ways and solutions for more effective and efficient improvements so that it can be helpful in industry and academics in the future. Eliminate, Combine, Rearrange, Simplify (ECRS) are used to eliminate, combine, rework and simplify the non-value-added activity. Meanwhile, the Theory of Inventive Problem Solving (Theory of Resheniya Izobreatatelskikh Zadatch, TRIZ) is helpful for systematically solving or reducing waste based on data and contradictions.

Keyword : *Lean Manufacturing, waste, TRIZ and ECRS*

Paper ID : 45

Designing Performance Measurement System for Animal Feed Company Using Balanced Scorecard and Analytical Hierarchy Process Method

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Abstract

Animal Feed Company (AFC) has the vision to be the largest agricultural company in Indonesia to provide the best quality and service. Tight competition in the current era encourages companies to improve their companyperformance on an ongoing basis. Currently, AFC does not have a formal performance measurement system. Theunavailability of the formal performance measurement system caused the vision and mission tending to become slogans without being supported by proper strategic planning. Currently, AFC designs a performance measurement system adaptive to business processes using the Balanced Scorecard (BSC) method. Performance measurement in this study applies the Analytical Hierarchy Process (AHP) method as a method for determining to weight between perspectives, strategic objectives, and Key performance indicators (KPI) on a priority scale. This performance systemdesign produces six strategic targets and 12 performance indicators (KPI). The implementation of this research design shows that the current performance indicator value of AFC in the second semester of 2019 is 6.04, which is at levels 4-7, and traffic lights symbolize the system as yellow. The performance shows that AFC performing quite well but still needs improvement in achieving the expected target.

Keyword : *Analytical Hierarchy Process (AHP), Balanced Scorecard, Key Performance Indicator (KPI)*

Paper ID : 46

Performance Measurement of Offshore Facility Maintenance Service Provider Using Quality Function Deployment

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Abstract

Many oil and gas company operations use the support of service providers, including maintenance. The quality of maintenance services is a challenge for companies to align with an effective operational program. The research was conducted using field observation methods, questionnaires, and interviews with experts and service providers. The Service Quality Model is used to determine service quality attributes and is used to view service quality by measuring the level of response level (gap) or perceptions of service quality. Classification of the level of importance and quality of attributes developed with the concept of importance-performance analysis, which then develops responses to technical service attribute priorities using the Quality Function Deployment method. The results showed that the service quality attributes could still not meet consumer expectations. The sequential dimensions and objections were the reliability dimension (-0.770), tangible dimension (-0.739), empathy dimension (-0.654), responsiveness dimension (-0.603), and assurance dimension (-0.577). Meanwhile, the three priorities for technical responsibility for quality improvement are contractors who have dedicated technicians (19.9%), led by competent project managers (17.4%), and have specialist maintenance or maintenance specialists (12.1%).

Keyword : *Maintenance, Offshore, Quality Function Deployment, Service Quality*

Paper ID : 47

Waste Reduction on Conical Taper Head Bolt Production Using Lean Six Sigma Method in PT. ROLLER

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Abstract

Lean Six Sigma (LSS) is an essential tool in business strategy for process improvement, especially in the manufacturing industry. One effective LSS method in optimizing the production process, product quality, and productivity is Define, Measure, Analyze, Improve, And Control (DMAIC). PT Roller, a competitive market in bolt nut production, requires a production target of up to 3,000 sets per month. In its production activities, PT. Roller only achieved production figures of an average of 2300 sets per month. One of the products that significantly influence the production process every month is the conical taper head bolt with a production value of 60% of the total bolt nut set produced every month. One of the factors that influence production results and production lead time is waste. So, reducing waste can improve and optimize the production process. Based on these problems, one of the tools used in improving and reducing waste is LSS with the DMAIC method. This study aims to identify the causes of waste, perform waste classification ¸ and analyze the effect of waste on the conical taper head bolt production process using the DMAIC method. Furthermore, the research carried out can be used as suggestions for the company to reduce waste. So, the bolt and nut workshop production process runs optimally.

Keyword : *Lean, Six Sigma, Waste, DMAIC.*

Paper ID : 48

Analisis Faktor-Faktor Yang Berpengaruh Terhadap Hasil Produksi Calcine Unit Rotary Kiln (RK)III dengan Menggunakan Metode Taguchi Pt. Xyz

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Abstract

Production is an activity or process that transforms inputs into an output so that it can obtain a production process activity satisfactory as planned. PT. XYZ is a manufacturing company which is engaged in the mining and processing of FeroNikel. *Rotary Kiln* Unit is a *pyroprocessing* device that is used to raise materials up to at high temperature (Calcination) in a continuous process. In this unit it works for remove moisture and water crystals from 22±1% to 1%. Calcine Products Produk expected to have an LOI of 1%. The historical data for June 2019 shows the results the production of rotary kiln III units did not reach the target where the June target was 40,597.8 Tons of Calcine but only 37,484.2 Tons of Calcine were realized which did not reach the target caused by the main problem, namely Clinker. Clinker is one of the problems the main role in the operation of the Rotary Kiln, if the Clinker is formed then the operation in the Rotary Kiln must be stopped and the clinker must be cleaned, it will indirectly interfere or affect the production process. To overcome this problem, it is necessary knowing the factors that affect the production of calcine then determine optimal factors and levels in the production of Calcine unit Rotary Kiln III. From analysis using Taguchi, then we get the influencing factors, namely Content Fe, Temperature TIC-162, Temperature TIC-163, Temperature TI-172, Fullness, Durati Retantion Time. And the optimal factor and level in Calcine production, namely, A2: Content factor Fe at level 2 is 7.81%, B1 : Temperature Factor TIC-162 at level 1 is 900 oC, C3: TIC-163 Temperature Factor at level 3 of 850 oC, D2: TI-172 Temperature Factor at level 2 of 280 oC, E3 : Fullness factor at level 3 of 10%, C1 : Factor The retention time at level 1 is 97%.

Keyword : *Production, Clinker, Rotary Klin, Taguchi*

Paper ID : 50

The Customer Satisfaction Analysis of the Cinema during Covid-19 Pandemic using the Kano Model in Indonesia

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Abstract

Most of the countries suffered from the COVID-19 pandemic, especially Indonesia. It slowed down business growth. One of them was the cinema industry. The cinemas had difficulties to reopen the business sincethe cinema was a place gathering many people indoor using air conditioning system and had the theatre rooms that were close and soundproof room. The conditions were hazardous for the COVID-19 transmission and opposite with the new normal procedures. This study aimed to identify customer requirements the cinema should have to get customer satisfaction during the pandemic. This study used the Kano model to classify the quality attributes of the cinema during the pandemic. The total of respondents were 251 people of Indonesian citizens and living in Indonesia. The study found one attractive quality attribute, five must-be quality attributes, one reserve quality attribute, and five indifferent quality attributes. The cinema operator should provide free gloves to the customer as an attractive quality attribute and had to require the hand sanitizer, masks and face shields, periodic disinfection, the distance between the seats, and the air conditioning system equipped with the excellent air ventilation system and regular maintenance as a must-be quality attribute. The cinema operator should provide the attributes because it would significantly affect customer satisfaction to make the customer brave and feel safe to visit the cinema.

Keyword : *Customer Satisfaction, Cinema, COVID-19, Kano Model, Indonesia.*

Paper ID : 52

3D Printing Technology: A New Advancement for Modular construction?

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Abstract

It is not an exaggeration to say that the key of a successful construction project is the implementation of good and effective construction method. As such, engineers has long been trying to apply the best method possible in their project. This research will discuss about the advancement for one of the construction methods that has been proven to be highly effective and efficient for construction industry, which is off-site prefabrication. The advancement will be done by combining modular prefabrication method with 3D concrete printing technology. This combination is expected to simplify the construction process, while at the same time canceling the limitations. The research will be done based on literature of several studies about modular prefabrication and the application of 3D printing technology, especially 3D concrete printing that has been published prior to this research. Based on that, author developed a diagram that depict the process of prefabricated 3D printing construction. Alongside with the process of 3D printed modular construction, this paper will also provide contractors with some benefits and shortcoming of this combined method that can be used as a reference to consider the implementation of this method for their projects.

Keyword : *construction method, off-site construction, modular prefabrication, 3D printing technology, 3D concrete printing*

Paper ID : 53

A Conditional Process Analysis on the Relationship between Work-Life Balance, Well-being, Job Satisfaction, and Work from Home Practice during the COVID-19 Pandemic

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Abstract

The unprecedented crisis of the COVID-19 pandemic in 2020 has forced many Indonesian organizations to introduce work from home (WFH) arrangements. With a lack of preparation and little prior experience, such working arrangements may adversely impact employees' well-being and work-related outcomes. This study aims to investigate the conditional or moderator effect of the work from home arrangements on the relationship between work-life balance, and job satisfaction as well as the mediating effect of well-being during the COVID-19 pandemic. A cross-sectional study design using an online survey gathered data from 405 Indonesian employees during October- November 2020. A conditional process analysis using Process Macro Model 5 showed that the relationship between work-life balance and job satisfaction was completely mediated by employees' well-being levels. Moreover, with the same levels of work-life balance, employees who WFH perceived more satisfied with their jobs while the same effect was not expected to be observed among employees who remained working at their offices or work-sites. The use of a conditional process analysis was able to link the difference of working arrangement and in a more complex relationship involving work-life balance, well-being, and job satisfaction in the context of a pandemic. Our findings suggested the benefits of WFH arrangement for individual and organizational outcomes despite potential increased stressors during the pandemic. This study offers insights for organizations to raise employees' satisfaction by preserving their well- being for example through improving work-life balance. Our cross-sectional study design and small sample size limit us to infer causality and generalizability. Further prospective studies that incorporate other psychosocial factors are needed.

Keyword : *Work-life balance, job satisfaction, COVID-19, work from home, well-being.*

Paper ID : 54

Study of Optimization Problems Associated With Technical Implementation of Drones in the Post-Pandemic Society

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Abstract

As the world faces the pandemic of COVID-19, how to minimize human contact becomes an imperative issue for governments short of shutting down their entire economies or closing borders with their neighboring countries. Several new technologies have emerged in this time of needs, particularly the drone technology, which has been used extensively in disaster reliefs, warehouse operations and security monitoring. In this research, several optimization problems related to the drone technology were surveyed, especially the facility location problem. Moreover, the optimization modelers—LINGO and PuLP—were used to solve the optimization problem and compared in terms of their performance. Even though both performed the same in terms of solution quality, PuLP performed better with respect to the execution time. Overall, this paper offers a complete view of drone applications in this world facing with the pandemic, drone optimization issues and implementation for solving an optimization problem.

Keyword : *COVID-19, Drones, Optimization, Unmanned Aerial Vehicle (UAV), Facility Location Problem*

Paper ID : 55

University Students' Mental Workload and Sleep Quality due to Online Lecture during Covid-19 Pandemic

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Abstract

Regarding covid-19 pandemic, government makes a policy of social distancing for Indonesian society which also gives impact to learning process in university. The learning process which previously conducted inside the class is dismissed for a while and it is replaced by online learning conducted at home. This drastic learning method change indeed will affect students' mental condition, moreover for students who were not used to conducting such online learning method. There are complaints regarding online learning method such as the increase of stress level and feel sleepy when having online class. Based on this problem, the study about mental students' workload analysis and sleep quality during online class so that a recommendation for improvement of online learning class. Questionnaire of NASA- TLX was used tomeasure mental workload meanwhile questionnaire of PSQI (Pitssburg Sleep Quality Index) was used tomeasure sleep quality. The respondents are 209 industrial engineering students of Mulawarman University.The result of study shows that 58.8% of students experienced high metal workload; 12.9% of studentsexperienced very high metal workload; 26.3% of students experienced medium metal workload; and therest experienced low and very low mental workload. Meanwhile the majority of students had poor sleepquality.

Keyword : *Mental workload, Sleep Quality, Online Lecture.*

Paper ID : 56

Implementation of Preventive Maintenance on CNC Milling Tape Drill Machine at PT XYZ Using FMEA Method and Age Replacement

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Abstract

The Maintenance system is an important factor that can boost the productivity of a company, likewise for PT XYZ which is engaged in the jig and tool industry. In fulfilling the customer demand, work productivity is needed in company, especially in the company's machine maintenance system. There are many machine problems that occur at PT XYZ, such as downtime due to the company's production machines. This can cause the production process to stop suddenly and can even cause losses due to maintenance that occurs due to the damage. The research was carried out on the CNC milling tape drill machine which has the most downtime frequency of 70 times with a time reaching 206.15 working hours during 2017 to 2019. This study provides maintenance proposal at PT XYZ by implementing preventive maintenance with age replacement method which then obtained a cost comparison between the maintenance model used by PT XYZ now and the proposal. From the Research results, there are 4 critical components because they have a Risk Priority Number value that is above the critical of RPN, where the four components are the solenoid valve with an RPN value of 180, a plarail chain of 150, a spindle motor of 140, and signal lamp of 180 where the critical value of RPN is 123.54. From this study also obtained the optimal replacement time interval for 4 critical components where the optimal replacement is on the 41st day for solenoid valve, 38th day for plarail chain, 207th day for motor spindle, and 90th day for signal lamp. Then obtained the difference in maintenance costs is IDR 39.356.404 if PT XYZ implements preventive maintenance using the age replacement method.

Keyword : *Maintenance System, Preventive, Risk, Replacement*

Paper ID : 57

Ergonomic Risk Assessment Of Musculoskeletal Disorders (MSD) During Chest Compression In Three Different Position In A Rescuer Performing Paediatric Basic Life Support

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Abstract

Paediatric cardiopulmonary resuscitation (CPR) is a life-saving technique that involves the use of chest compressions and artificial ventilation to maintain circulatory flow and oxygenation during cardiac arrest. It is typically practised in hospitals, including the emergency room. Medical staff are required to perform CPR in any position and surface available. Musculoskeletal pain is one of the adverse effects from resuscitation. The aim of the study was to determine the ergonomic risk factor for musculoskeletal disorders in rescuers performing infant chest compression in three separate positions: beside a radiant warmer, in front of a radiant warmer, and standing next to a stretcher. The Emergency and Trauma Department of Hospital Universiti Sains Malaysia, Kelantan, conducted a cross-sectional study with 54 participants, all of whom were emergency medicine residents. The participants were asked to perform two cycles of chest compression in three separate positions, and the ergonomic risk score was calculated using the Rapid Entire Body Assessment (REBA) method. Two positions (standing beside the radiant warmer and the stretcher) had a mean REBA score of high risk, indicating they should be investigated, and changes implemented as soon as possible, while one position (standing in front of the radiant warmer) had a medium risk.

Keyword : *CPR, Musculoskeletal Disorder, Ergonomics, REBA.*

Paper ID : 58

Risk Analysis and Management of Procurement Activities in Elementary School Book Printing Project using House of Risk Method

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Abstract

Risk management is a management effort to control the company's risk operations by conducting risk analysis, risk evaluation and mitigation plan. Risk management efforts are feasible to be applied to the company's business activities including procurement activities. PT XYZ is one of the printing companies whose main demand is the printing of Elementary School Books. There is a decrease in demand that results in disruption to the company's cash flow so that a tight money policy is applied to every company's activities including procurement activities. This policy increases the risk that may occur, so risk management efforts are needed to minimize the impact that can occur. The House of Risk method is used to identify risk events and risk agents that cause them, and design mitigation measures to address those risk agents. The results showed that there were 10 risk events and 10 identified risk agents, with priority risk agents to be handled are A1 (volume and type of raw materials are incorrect) and A3 (communication interruption). There are 5 recommended mitigation measures.

Keyword : *House of Risk, Risk Management, Supply Chain Management*

Paper ID : 59

Risk Study of Supply Chain of Learning Module Procurement Project (Case Study: PT. XYZ)

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Abstract

Modern era has an impact on the industry. Relate to technology to turn raw goods into finished goods. Look at competitive in competition between companies that are required to customer demand. PT. XYZ is a publishing and printing company, constructing and concocting books and learning modules. Currently PT. XYZ does not yet havestructured risk management to identify and mitigate risks that occur primarily in supply chain functions. Therefore, research is needed that aims to identify possible risks in PT. XYZ supply chain activities. Determine the cause of risk that must be prioritized to be mitigated in the supply chain PT. XYZ and determine mitigation strategies that must be prioritized to address the causes of risks in the supply chain PT. XYZ. The method used in this study is by the House Of Risk method. HOR is used to identify risk events, risk agents in the supply chain and also design mitigation strategies for risk agents based on ARP (Aggregate Risk Potential) value. The results of this study show that there are 10 risk events and 15 risk agents that become supply chain risks as well as recommendations for tackling priority risk agents.

Keyword : *Risk Management, Supply Chain Management, House of Risk, SCOR.*

Paper ID : 60

Evaluation of the Implementation of Fire Safety Management Based on Work Breakdown Structure for High-Rise Apartments

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Abstract

The growing population makes the presence of apartments in Jakarta inevitable. The supply of apartments in Jakarta for the period 2020-2023 is considered to reach 49,200 apartment units. One of the problems that often arises related to high-rise apartments is fires. Fire safety management is required to analyze, evaluate and control fire safety. The purpose of this research is to find out the implementation of fire safety management in apartments in Jakarta. Four dimensions of fire safety management according to Furness & Muckett consisting of fire prevention in buildings, safety of people in the event of a fire, monitoring, auditing and reviewing the fire safety systems, reactive monitoring-reporting, recording and investigation based on Work Breakdown Structure were used as an indicator to evaluate the application. Field observations were made on the implementation of fire safety management using checklist sheets and filled by building managers in various apartments in Jakarta. The results showed that on average 91% of apartment buildings in Jakarta have implemented four fire safety management indicators with the highest application rate of 95% in fire prevention in buildings and the lowest at 89% in reactive-monitoring, reporting, recording and investigation.

Keyword : *Apartment; Fire Safety Management; Fire; Work Breakdown Structure.*

Paper ID : 61

Improving Oil aand Gas Wireline Log Data Quality Using Six Sigma Methods

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Abstract

Wireline log data is one of the subsurface data that always generated and used in every exploration and production (E&P) activity in oil and gas industry. It has a very high value because it will be processed into information which will be used in various decision making related to the discovery, search, and removal of oil and gas. The quality of subsurface data will help companies shorten the "time-to-first-oil" and extend the production phase. The Monthly Subsurface Data Management Report shows that from October 2018 to July 2020 there were 20 of 34 incident tickets for data quality information problems that were sourced from wireline log data. This study uses the six sigma DMAICmethod to identify problems, measure the quality of wireline log data as a product of oil and gas drilling projects and analyze the main causes of wireline log data quality problems. And finally, at the improvement and control stage recommends some steps that can be taken to reduce the problem and how it will be improved in the future

Keyword : *Data Quality, Wireline Log, Six Sigma.*

Paper ID : 62

Implementation of 3D Concrete Printing Technology in Precast Concrete Mass Production Industry

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Abstract

Construction industry has been developing rapidly in past years. Adaptation of new technology in this digital era is highly needed to be able to compete within the industry development. Precast concrete implementation used to be one solution for speeding up project performance. But the production of the precast concrete itself also needs to boost to match the speed of construction development. The purpose of this research is to intervene mass production of precast concrete by using 3D printing technology to increase the productivity rate. Model simulation combining the use of 3D printing from COBOD company and observation on Project X precast production in PT Z factory was conducted using Primavera software based on structured interviews done with related parties from COBOD Company, PT Z, and Project X. Discussion with three experts is also conducted to validate the simulation result. This study results on the productivity improvement by 50% compared to original conventional method. Faster productivity with less environmental impact, the use of 3D printing is able to benefit this industry. With the same area of production yard and the same number of human resources, factory can speed up two times faster only by replacing the casting method to 3D printers.

Keyword : *Precast Concrete; 3D Printing; Productivity; Construction Industry.*

Paper ID : 63

Modeling Operations of CCPP Tambak Lorok, Based on Gas Fuel And Investment in CCPP Block 3

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Abstract

To support the company's growth rate which is expected to be faster and more competitive, also to support the company's vision and mission, PT Indonesia Power to support the Block 3 CCPP construction project using the latest technology with the best level of efficiency. At the time of entering the operation period, taking gas fuel for CCPP Tambak Lorok is projected with only 100 BBTUD in accordance with the Letter Minister ESDM no. 34 K / 16 / MEM / 2020, from planned design 173 BBTUD. Currently CCPP Block 3 is the construction phase and commercial operation is planned in 2022. Operations Research (OR) with a mixed integer-linear programming mathematical program is used to determine the optimization of CCPP Blok 1, Blok 2 and Blok 3 Tambak Lorok with maximum benefits, by looking at the investment side of the Block 3 CCPP development. With limited gas availability only 100 BBTUD, the optimum profit can make with the operation of Tambak Lorok Blok 3, and only operating Blok 2 if any surplus gas and stand by mode for PLTGU Blok 1 operating only when Blok 3 off.

Keyword : *Power Generation, MILP, Operation Optimization, Power Plan Investment.*

Paper ID : 64

Value Added and Non-Value Added Activity Analysis in Disassembly Process for Productivity Enhancement during Covid-19 Pandemic

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Abstract

Reduction of working hours and termination of employment became a big issue during the COVID-19 pandemic. This was affected by social restrictions which had a direct impact on decreasing product demand. Remanufacturing companies surely must have the right strategy to lower the company losses due to decreased productivity and the cost of using human resources to remain stable. The company's strategy is to do efficiency by eliminating non-value added activities in the remanufacturing process. In remanufacturing, the disassembly process is one of the main processes and differentiates it from manufacturing companies. Therefore, the researcher intends to analyze non-value added activities to increase the efficiency of the disassembly process and influencing the company's efficiency. The method to be used is work sampling. It results in a value analysis methodology and non-value added for the disassembly process. The methodology developed is simple and can help decision makers to increase the productivity of remanufacturing companies. The result is known that the seven non-value added activities had measured, can reduce the productivity of the company. By eliminating it, the company can achieve the output target in the disassembly process and reduce the burden on companies due to the COVID 19 pandemic.

Keyword : *Disassembly, Non-Value Added Activity, Productivity, Value Added Activity, Work Sampling.*

Paper ID : 65

Study of RFID technology Applied to Parts Distribution Center in the Utility Sector

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Abstract

The trend of smart technologies has also impacted the warehousing sector. The technologies including radio frequency identification (RFID) bring the promises of lowering transport cost and bringing visibility to the supply chain. In this research, we investigated the factors impacting the RFID readability, measured by received signal strength indicator (RSSI), in the parts distribution centers of the utility sector. Factors such as horizontal distances and material characteristics were explored and analyzed; horizontal distance levels were assigned at 1, 2, 3 and 4m while commonly found materials in parts distribution centers including paper, wood, plastic and metal were chosen. One-factor and two-factor experiments were conducted according to the procedure of design of experiment. The analysis of variance (ANOVA) and follow-up tests performed on the collected data yielded interesting, valuable results which may be useful for the implementation of a RFID system. Additionally, the practical suggestions for setting RFID environment were provided.

Keyword : *Radio Frequency Identification (RFID) Technology, Design of Experiment (DoE), Utility Sector, Warehousing, and Received Signal Strength Indicator (RSSI)..*

Paper ID : 66

Risk of Musculosceletal Disorders (MSDS) on Traditional Jewelry Creamers

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Abstract

The risk of Musculoskeletal Disorders (MSDs) can occur in a variety of occupations including in traditional jewellers. The complaint is caused by an awkward position during work activities. The study aims to identify complaints of Musculoskeletal Disorders (MSDs). This study used qualitative approach through in-depth interviews on 5 key informants and 2 key expert informants and ergonomic risk determination referring to the BRIEF method. The results showed that all informants experienced complaints of the upper neck, lower neck, right shoulder, back, right elbow, right upper arm, and right forearm. Measurements through the BRIEF sheet show that complaints on the left and right elbows, left and right shoulders, neck, and back include high category ergonomic hazards while complaints on the hands and wrists of the right include moderate category ergonomic hazards. High risk of Musculoskeletal Disorders (MSDs) is found at all stages of work (smelting, grinding, posturing, jewelry formation, and gilding). Therefore, workers are recommended to perform muscle relaxation for (8-12 seconds) every half hour.

Keyword : *Musculoskeletal Disorders (MSDs); risk, traditional jewelry creamers.*

Paper ID : 67

The Implementation of the Tri Datu Concept of Socio-Cultural Ergonomic Oriented to Maintain Entrepreneurial Attitude of Workers on The Covid-19 Pandemic

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Abstract

The research objective was to determine the implementation of the Tri Datu concept oriented to socio-cultural ergonomics to maintain the entrepreneurial attitude of the community during the Covid 19 pandemic. This field experimental research involved 25 workers who switched professions to other occupations. Through observation, interviews, and questionnaires, data were recorded: (1) duration of determining job choices, (2) duration of adaptation to new jobs, and (3) entrepreneurial attitudes. The duration of determining job choice and adaptation to a new job was analyzed descriptively. Changes in workers' entrepreneurial attitudes between before and after the implementation were analyzed by using the dependent sample t test. The results showed that: (1) workers who changed professions after more than 2 months were 72% and 28% less than two months, (2) workers who could adapt to a new profession in less than two months were 84% and 16% over two months, and (3) the entrepreneurial attitude of workers increased significantly by 45.5% ($p < 0.05$) between before and after the implementation of Tri Datu. The conclusion is that the implementation of the Tri Datu concept which is oriented to socio-cultural ergonomics can improve the entrepreneurial attitude of the community.

Keyword : *Pandemic Covid 19, Tri Datu, and Entrepreneurial Attitudes.*

Paper ID : 68

Ergonomic Risk Assessment of Musculoskeletal Disorders During Simulated Endotracheal Intubation Using Direct Laryngoscopy and Video Laryngoscopy Among Doctors in Emergency and Trauma Department of a Teaching Hospital

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Abstract

Introduction: Endotracheal intubation is one of the commonest procedures done in Emergency and Trauma Department but the association of different type of laryngoscopy on risk of musculoskeletal disease (MSD) on operator is still unclear. Objectives: To determine the effect of direct and video laryngoscopy on risk of musculoskeletal disorders on operators. Methods: We conducted a cross-sectional manikin-simulated study among emergency medicine residents in a teaching university hospital in Kelantan, Malaysia. Rapid Upper Body Assessment (REBA) score was used to assess risk of musculoskeletal disorders among operators who performed direct and video laryngoscopy in a randomized manner. Results: We recruited a total of 67 participants in this study. Direct laryngoscopy had a higher mean (SD) REBA score of 4.58 (1.68) and video laryngoscopy scored 1.98 (1.09) with p value <0.001. Based on this, risk of MSD is moderate with direct laryngoscopy and low with video laryngoscopy. Conclusion: There is significant increased risk of developing MSD in operators performing direct laryngoscopy as compared to video laryngoscopy.

Keyword : *Ergonomic, laryngoscopy, intubation, REBA score.*

Paper ID : 69

Effect of Bioaugmentation by using Cow Manure Microbial Consortium for Treating Food Waste with Anaerobic Digestion on Biogas Enhancement

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Abstract

The number of microorganisms is the key factor affecting biodegradation capacity for anaerobic digestion (AD). Bioaugmentation strategy using an enriched culture has been known give supplementary microorganisms and consequently improve the biogas production, but bioaugmentation using a microbial consortium without enrichment for treating food waste (FW) is unknown. In the present study bioaugmentation seed (BS) were collected from cow manure (CM) to inoculate in the reactor for enhancing the biogas production and evaluate the change microbial community before and after bioaugmentation. The frequency of bioaugmentation was performed in every three days. The microbial community was examined using metagenomic next-generation sequencing (NGS) to identify changes in the community. The effect of bioaugmentation using BS without enrichment was revealed as well. Findings demonstrated that effectively increase biogas production (1756.8 L/kgVS-day), compared non-bioaugmentation (524.1 L/kgVS-day). Furthermore, NGS analysis showed that CM as bioaugmentation culture enhanced the population of Methanosarcina and Methanosaeta at 17,29% and 11,29%, respectively. The higher Methanosarcina and Methanosaeta indicate the acetoclastic pathway was dominant on biogas production. The success of bioaugmentation using CM depends on environmental factors suitable for microbial life.

Keyword : *Anaerobic Digestion, Bioaugmentation, Cow manure, Food Waste and Biogas.*

Paper ID : 70

Correlation between Backpack Weight and Shoulder Pain in Children Aged 6-11 (A Case in Elementary School in Makassar Indonesia)

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Abstract

Using a Backpack is one of the musculoskeletal complaints in children. A backpack with a heavy load can affect posture changes and harm the spine and musculoskeletal problems. The burden carried in a school backpack is a risk factor arising from back pain, which symptoms can last into adulthood. A backpack often results in complaints of the neck, shoulders, lower back, and other potential risk factors. Early detection of complaints in the neck, shoulders, wrists, back, knees, and feet is necessary to maintain musculoskeletal function. The purpose of the study was to determine the relationship between backpack weight and musculoskeletal pain (shoulder pain) in children aged 6 to 11 years old attending an elementary school in Makassar, Indonesia. The study was a descriptive study with an observational approach using a cross-sectional study design. There were 66 elementary students involved as volunteers. This study concluded that the backpack's weight had a statistically significant effect on the amount of shoulder pain experienced by students. The heavier the bag, the more likely pupils will experience shoulder pain. The development of shoulder pain due to backpack use is due to the backpack straps squeezing and tensing the shoulders so that as the bag's weight increases, the tension on the shoulders increases as well.

Keyword : *school backpack, musculoskeletal, body posture, backpack load, and risk.*

Paper ID : 71

Risk Level for Manual Material Handling Activities Using Key Indicator Method in the Simulation of TPS Laboratory at Industrial Engineering, Diponegoro University

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Abstract

One of the activities that is often carried out by the Indonesian people is manual material handling. Based on a preliminary study distributed to 31 simulation participants at the Toyota Production System Industrial Engineering Laboratory, Diponegoro University, the top three body parts of the simulation participants who experienced complaints were 93.5% on the upper neck, 87.1% on the left shoulder, shoulder right, and back, and 83.9% on the lower neck. It is necessary to identify work attitude factors based on complaints when carrying out these activities. The study used the first, second, third, fourth, packaging and shipping, warehouse, and logistics workstation. The results of the risk factor rating points from observations of the four simulators in all areas in a row are 34-36, 34-36,34-36, 23, 16, 21, and 25. These risk rating points do need to be improved because it is in the slightly increased category level based on the assessment sheet KIM MHO. To overcome risks, it is necessary to improve work by changing the work attitude of hand/arm position also body posture/movement indicator. After proposed improvements are implemented, the results of the risk factor rating points in all areas in a row are 17, 17, 17, 17, 16, 15, and 15. These risk rating points do not need to be improved because it is in the low category level.

Keyword : *Manual Material Handling, Key Indicator Method, Movement.*

Paper ID : 72

The Effect of Emotion Induction on Situation Awareness and Driving Performance

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Abstract

This study investigates the effects of pre-induced emotions on situation awareness (SA) and driving performance. Twelve male students (mean age of 23.9 ±1.8 years old) with a valid driving license participated and attended two driving simulation sessions on separate days. Participants drove a driving scenario for each session after being presented with a series of pictures to induce positive or negative emotion. Participants' SA was measured by quantitative analysis of situation awareness (QASA). Driving performance was determined in terms of the collisions' number. The result showed that emotion induction significantly affected driving performance ($p = 0.005$). The collisions' number was higher after the induction of negative emotion than after positive emotion induction. Participants' SA level 1 was also affected by the emotion inductions ($p = 0.042$), where the SA level 1 after the induction of negative emotion was higher than that after the positive emotion induction. These results indicate that SA partially mediates the effect of emotion on driving performance. Our findings demonstrate the emotion induction effects on situation awareness and driving performance. The results of this study imply that an emotional state before driving is essential for transportation safety.

Keyword : *Pre-induced emotion, situation awareness, driving performance, collisions.*

Paper ID : 73

Analysis the Relationship Between the Distance of Groundwater Wells to the Septic Tank on Groundwater Quality

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Abstract

This study aims to determine the quality of groundwater in several public facility buildings at XX University and to analyze the relationship between the distance of groundwater well to the septic tank to the parameters of groundwater quality. A total of 35 groundwater samples were collected from different boreholes and analyzed for water quality parameters such as pH, TDS, nitrate, manganese, and E. coli. pH and TDS was measured by pH meter and TDS meter; nitrate and manganese were determined using a spectrophotometer. The E. coli concentrations were determined by the Most Probable Number (MPN). The results of the analysis showed that the concentration range of TDS (11-194 mg/L), nitrate (0.35-12.45 mg/L), manganese (0.1-12.8 mg/L), E. coli (0-49 CFU/100ml), and pH value (4.50-8.45). The results of the chi-square test showed that the distance between boreholes and septic tank did not have a significant relationship to the quality of groundwater with pH, TDS, NO3-, and Mn parameters with Sig. > 0.05. However, the distance between boreholes and septic tank has a significant relationship to the parameter E. coli with the Sig. 0.044 < 0.05.

Keyword : *Groundwater quality, physicochemical biological parameters, chi-square analysis, and septic tank.*

Paper ID : 74

Evaluating the Effect of Floating Photovoltaic on Trophic State using Mesocosm Experiments

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Abstract

The applications of floating photovoltaic (FPV) on water bodies are currently on a global demand. Despite the increasing popularity of floating photovoltaic industry, studies on ecological effects of lake coverage using floating photovoltaic – especially in tropical countries – haven't been widely conducted. We present an experimental study regarding the effect of floating photovoltaic on dissolved oxygen and trophic state changes in water bodies using mesocosm experiment. The mesocosm experiment was conducted in Mahoni Lake. The study was conducted from March 25th to April 15th 2021 and a total amount of 7 water samples were collected from each of the mesocosms. Trophic state is an indicator of the degree of transformation and ecological disruption in water bodies. Our results show that mesocosms with 100% FPV cover have a lower dissolved oxygen (p-value < 0,05) and a lower TSI value (p-value < 0,05) compared to mesocosms without FPV cover (control). According to the TSI value, from day-1 to day-22, all four mesocosms are classified as eutrophic. The results obtained are an important tool for further studies focusing on water quality and ecology impact regarding FPV on water bodies.

Keyword : *Floating photovoltaic, trophic state, dissolved oxygen, mesocosm.*

Paper ID : 75

Work Attitude Analysis Using Rapid Entire Body Assessment on Workers at AR Tailor Denpasar

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Abstract

The business competition of textile companies is getting tighter, so that the companies engaged in the apparel industry will spur their respective companies to produce quality clothing, so the companies will focus on labor so that the goods produced are of high quality. Working as a tailor has a less good work posture. The work posture in question is that the tailor sits in a static position for a long time, the posture of the back and head tends to bend which causes complaints such as pain in the neck. So it is necessary to do preliminary research on work posture of workers at AR Tailor, as an illustration of whether work as a tailor has a risk of experiencing musculoskeletal complaints. Then an initial measurement of the tailor's work posture was carried out using the Rapid Entire Body Assessment (REBA). Data collection was carried out by using observation, measurement and interview techniques to two workers at AR Tailor- Denpasar. Measurements taken are analyzing work posture on the job of cutting clothing patterns and sewing using REBA. Data was collected in January 2021. The results of REBA measurements for cutting clothing patterns have a high risk level, while the results of REBA measurements in sewing jobs have a medium risk level. Actions that can be suggested include limiting work time, resting time, providing stretching, socializing appropriate work postures, and designing workstations.

Keyword : *Work Attitude, REBA, Tailor.*

Paper ID : 76

Groundwater Quality Evaluation Of University X With Parameters Of Manganese (Mn), Nitrate (NO3-), PH, TDS, and Escherichia Coli

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Abstract

The need for water supply at University X still depends on groundwater. The use of groundwater as a source of water at University X as sanitation for students and academic workers. The purpose of this study is to identify the quality of groundwater in all faculties at the University X with parameters nitrate (NO3-), manganese (Mn), pH, TDS, and Escherichia Coli and to investigate the correlation between distance of wells and septic tank with quality of groundwater especially Escherichia Coli. Chemical parameter of groundwater was analyzed by SNI method, and biological parameter by using Most Probable Number method and compared with the regulation Minister of Health of the Republic of Indonesia No. 32, 2017. The research was conducted by taking samples of well by tap water to see chemicals and biological parameters. Analyzing showed that TDS has no significant number that exceed the regulation standard. Other parameters, such as pH has 18,52% of samples fulfil the regulation standard. e (Mn) has 45.68% of groundwater samples contaminated and (No3-) has 12.35%. E.Coli parameters has 25 point sample that contaminated the water quality. Final result of statistic analyzing correlation between water quality and distance between septic tank and well indicates has no significant correlation.

Keyword : *Groundwater, quality, distance, wells and septic tank.*

Paper ID : 77

Analysis of Persuasive Communication Strategies and Ergonomics Macro in an Effort to Reduce Workplace Accidents in PT. X Batam

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Abstract

The Macro Ergonomics Approach looks at the human factor in Occupational safety and health (OSH) or well known as K3 in Indonesia through their interaction with the work area of culture and environment. Considering this, an approach that can support the harmonious implementation of culture and humans is needed through a campaign approach. A persuasive campaign has a homogeneous target audience, seeks to be educated, gives an emotional impression, and looks to change attitudes and change behavior through various appropriate communication media. Macro Ergonomics also tries to persuade the target audience to carry out a healthy and safe work culture by communicating company work rules. Reviewing the science of Design and Visual Communication in terms of persuasive communication has the potential to maximize the OSH discipline enforcement process in Industrial Engineering. This research is aim to understand the campaign approach in achieving zero accidents. The research identified the potential hazards of the PT X case study in Batam City using Macro Ergonomics. The results of this research are an assessment of the ranking of potential risk that must be addressed in sequence, i.e., in humans, expertise, then technology, namely machines and equipment, and the last one is policy. The result of the persuasive communication strategy analysis is the Facilitator of a Trigger strategy. This strategy positions the OSH work culture as an easy-to-do culture. This strategy needs to be supported by the stakeholders of the as campaign facilitators and initiators.

Keyword : *Macro Ergonomics, Safety, Hazard, Campaign, Persuasion.*

Paper ID : 78

The Optimization of Facility Location-Routing Decision Model for Municipal Solid Waste Network

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Abstract

Solid waste management is still being a problem in many regions. Yogyakarta, one of the cities in Indonesia wants to optimize waste management. Evaluation is carried out on two main things in waste management, namely routing activities and placement of waste collection point (TPS). The evaluations are conducted because many small TPS existence that affected the cost of routing activities. Therefore, a Multi-Objective Integer Linear Programming model is developed to solve these problems. The objective of the propose model to simultaneously minimize the cost of routing activities and maximize the amount of waste that can be temporarily accommodated in that existed waste collection point. The propose model includes facility location and vehicle routing, it is considered an operational-strategy model. This model is a hybrid of fuzzy theory, max covering problem, and vehicle routing problem. The model solve as single objective by Fuzzy Goal Programming. The results obtained from implementing the model and the sensitivity analysis, using real-world data. Sensitivity analysis has been done in order to determine how the parameters changes can affect the objective functions.

Keyword : *Solid Waste Management, Facility Location - Routing Problem, Fuzzy Goal Programming.*

Paper ID : 79

The Effect of Intercultural Learning Challenges on Cognitive Load of Indonesian Students Abroad

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Abstract

The ease of accessing information about education abroad encourages students to continue their study in other countries. However, studying abroad has many challenges. Managing intercultural diversity and overcoming intercultural learning are two of them. These factors affect international students' cognitive load. Furthermore, intercultural aspects have not been considered widely in many studies related to cognitive load, particularly in education. This study analyzes the effect of intercultural diversity and intercultural learning challenges on the cognitive load of Indonesian students in the foreign countries. The data is collected by distributing online questionnaires to 124 Indonesian students studying abroad. In the later stage of this study, Structural Equation Modeling (SEM) is employed to evaluate the significance of relationships among several factors studied. The results showed that intercultural learning challenges have a significant effect on student's cognitive load.

Keyword : *Cognitive load, Foreign language, Intercultural learning challenges and SEM.*

Paper ID : 80

Implementation Of Kansei Engineering, Kano model, And TRIZ In Improving The Quality of Fully Online Learning System

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Abstract

A sound learning system must have system components that support such as learning objectives, learning materials/materials, learning media, learning strategies, and the last is learning evaluation. Since the COVID 19 pandemic, there have been changes in implementing the learning method, which was initially carried out face-to-face, had to change immediately to an online learning system without any prior preparation. Several approaches are used in this study to improve the quality of the fully online learning system, namely Kansei Engineering, Kano Model, and TRIZ. This research distributes questionnaires and employs approximately 50 Institut Teknologi Sepuluh Nopember students as respondents with the criteria of active status, currently undergoing a minimum of 4 semesters, and students of the Faculty of Technology and Industrial Systems. The questionnaire explores complaints from students and the expectations of those students on the fully online learning system. The information is processed using Kansei Engineering and Kano Model methods. In the final stage of this research, the TRIZ principle is implemented in finding solutions for improving the quality of the fully online learning system.

Keyword : *Kansei Engineering, Kano Model, TRIZ, Full Online Learniing System.*

Paper ID : 81

Analysis of Train Passenger Comfort Related to the Vibration and Heat It Creates

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Abstract

Oftentimes train passengers feel discomfort due to sitting too long, especially on long-distance journeys. This discomfort can be caused by a hot buttock from rubbing against the chair and the vibration of the chair. The purpose of this paper is to determine the impact of seat vibration on the rate of heat change in the passenger's buttocks so that health risks can be properly avoided. The initial stage of this research is a literature study on vibration, ergonomics - human comfort, health, and simulation. Next step is to create 3D CAD models for train and passenger seats. Finite Element Analysis (FEA) simulation and mathematical calculations were employed to determine the relationship between chair vibration, buttock pressure, and heat generated. Based on the simulation test, it was found that the greater amplitude of vibration, the increase in heat gain and reduce the concentration of buttock pressure on the passenger seats of the train. It can be concluded that there is a strong relationship between vibration parameters, weight, type of clothing material - train seats, and passenger comfort (feeling hot when sitting).

Keyword : *FEA, train, vibration, CAD, human buttock comfortable.*

Paper ID : 82

Perceived Usability Evaluation Of MOLS (Mulawarman Online Learning System) During COVID-19 Pandemic Using System Usability Scale (SUS), Performance Measurement, and Thinking Aloud Methods

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Abstract

Due to COVID-19 pandemic, the teaching-learning process is evolving rapidly from a traditional classroom environment to online learning only. To cope with this situation, Mulawarman Learning Online System (MOLS) is implemented to allow students to interact with learning tools via web browsers. This paper aims to evaluate the student's perceived usability of MOLS based on effectiveness, efficiency, and user satisfaction. Moreover, this paper attempts to improve the usability and user satisfaction of MOLS through modifying the user interface from the gathered information of ergonomics concept. For this purpose, three methods are applied, i.e., using SUS (System Usability Scale) to measure student's satisfaction, Performance Measurement to evaluate effectiveness and efficiency and Thinking Aloud to gather data about what users really think about MOLS design which usually turn into redesign recommendations. A number of 96 students of Engineering Faculty participated in SUS Questionnaire and 10 students were involved in Performance Measurement and Thinking Aloud process. Result showed that SUS score was 61.64 which is below marginal score 68. The effectiveness was 99% and efficiency was 0.0035 task/second. Thus, improvement needs to be developed to make MOLS more usable in order to increase student's satisfaction.

Keyword : *Usability, MOLS, SUS, Performance Measurement, and Thinking Aloud.*

Paper ID : 83

Identification of Occupational Health and Safety Management System Indicators Based on Indonesian Government Regulation Number 50 Year 2012 and ISO 45001:2018 on Safety Culture in EPC Projects

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Abstract

The construction industry has a very high risk of danger, and the EPC (Engineering, Procurement, Construction) industry is no exception. An EPC Company in Indonesia has a TRIR (Total Recordable Incident Rate) below 1 (one) but has a high record of near miss and unsafe conditions. This has an impact on the safety culture level based on Bradley Curve of DuPont which currently on "independent" level and plans to reach "interdependent" level in 2023. The purpose of this study is to identify the indicators of OHSMS (Occupational Health and Safety Management System) based on Indonesian Government Regulation Number 50 Year 2012 and ISO 45001:2018 on Safety Culture in EPC Projects. The study is conducted by validating sub-variables and indicators by experts. Results show that there are 12 sub-variables and 39 indicators of OHSMS based on Indonesian Government Regulation Number 50 Year 2012, 9 sub-variables and 38 indicators of OHSMS based on ISO 45001:2018, and 4 sub-variables and 7 indicators on safety culture.

Keyword : *OHSMS, Safety Culture, EPC Project.*

Paper ID : 84

Ergonomic Risks Associated with Musculoskeletal Disorders in Ikat Weaving Workers in Letmafo Induk Village, Insana Tengah District, Timor Tengah Utara Regency

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Abstract

Musculoskeletal Disorders (MSDs) are complaints of parts of the skeletal muscles that are felt by weaving workers ranging from very mild complaints to very painful. This study aims to determine the ergonomic risk factors associated with age, body mass index, years of service, education, work attitude, workload, working hours, and temperature on complaints of MSDs in weaving workers in Letmafo Induk Village, Insana Tengah District, Timor Tengah Utara Regency. The study used descriptive analytic study with a cross sectional design. The population in this study is all active weavers in Letmafo Induk Village, Insana Tengah District, Timor Tengah Utara Regency. The sampling technique in this study used a total sampling method of 47 people. The data analysis used is Chi-Square analysis. The results showed that there is a relationship between work attitudes with MSDs, there is a relationship between workload and MSDs, and there is a relationship between working hours and MSDs with the p-value of$<\alpha$ (0.05). There is no relationship between temperature and MSDs with the p-value of $>\alpha$ (0.05).

Keyword : *Ergonomic Risk, Weaving Workers, Musculoskeletal Disorders.*

Paper ID : 85

Macro Ergonomic Modeling in Instagram Usage Based on The Socio-Technical System Approach

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Abstract

The internet is one of the things that is needed today, especially in social media. Social media is in great demand for exchanging information and discussions. Many millennials are addicted to social media, one of which is Instagram. They experience high sleep disorders, extraversion, and neuroticism. The internet and social media are often used by people in everyday life in fast-changing societies. Technological, psychosocial, and cultural variables (socio-technical system) which influence each other significantly affect individual productivity. Technology is part of the Internet of Things that must be optimized for use. This psychosocial aspect consists of internet addiction, Instagram intrusion, self-esteem, and life satisfaction. This study uses the TAM approach to ensure that individuals are fit in using Instagram technology, optimizing the use of Instagram and its influence on these individuals to be more productive and doing activities to optimize their self-esteem and life satisfaction. The formulation of problems discussed in this study is to formulate a macro ergonomic model composed of technological and psychosocial variables in Indonesia with the TAM approach. This study analyzes aspects of macro ergonomics by paying attention to technology and psychosocial variables using the TAM approach in Indonesia. Furthermore, modeling Instagram intrusion, internet addiction, self-esteem, and life satisfaction with the TAM approach to optimize individual self-esteem and life satisfaction and formulate recommendations for prevention addiction to Instagram in Indonesia. This study uses a method of integrating macro ergonomic aspects (socio-technical system), the TAM approach, questionnaires, and SEM (Structural Equation Modeling) testing..

Keyword : *Socio-Technical System, Macro Ergonomics, Internet Addiction, Instagram Intrusion, Self Esteem, Life Satisfaction.*

Paper ID : 86

Identification of Digitalization-Based Work Plans to Improve Time Performance in Railway Infrastructure Development Projects

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Abstract

The development of railway infrastructure projects in the development of the country is very important, however, the development of railway infrastructure still seems to be marked by the problem of delays. One of the causes of delays is a less than optimal work plan. This study aims to identify processes in the work plan at the control stage that can be digitized. The research method used was a pilot survey then in-depth interviews with each respondent, then the data was processed and analyzed. This study hopes that this research can become an improvement in work plans, so that digital-based work plans to improve time performance in railway infrastructure development.

Keyword : *Infrastructure construction, delays, planning, and digitization.*

Paper ID : 87

Working-Posture Analysis on Workers at Bagging Sector of Urea Fertilizer I in PT Pupuk Sriwidjaja Palembang

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Abstract

Part of Occupational Safety and Health was the ergonomics aspect. Ergonomics has a strong correlation with work - postures and manual handling activities. Improper work postures and heavy manual handling are risk factors for development of musculoskeletal disorders. The aims of this research were assessing ergonomic risk with work –posture analysis on workers at the bagging sector of urea fertilizer I in PT Pupuk Sriwidjaja Palembang using Quick Exposure Check (QEC) to describe the risk for musculoskeletal disorders. The method of this research was descriptive and qualitative. Informants in this study amounted to 1 key informant from the bagging se ctor of urea fertilizer I department and 1 key informant from industrial hygiene and health department then 12 informants from bagging sector workers with 3 people working for> 10 years, 7 people working for 5-10 years and 2 people working for <5 years. Ergonomics risk assessment uses Quick Exposure Check (QEC). Quick Exposure Check (QEC) was designed to assess the exposures of risk factors for musculoskeletal disorders on workers. Work posture of filling the fertilizer bag and cutting the yarn had an avera ge exposure score 88,5% then tidying up the fertilizer bag and sewing the fertilizer bag got 87% and placing the fertilizer bag to pallet was 91,4%. All of the postures in the bagging sector of urea fertilizer I in PT Pupuk Sriwidjaja Palembang had exposure scores above 70% which are included to action level 4. So based on the result, it needs to be investigated and changed immediately on work posture to reduce ergonomic risks and prevent musculoskeletal disorders.

Keyword : *Ergonomics, Musculoskeletal Disorders, Quick Exposure Check, Fertilizer Bagging.*

Paper ID : 88

The Framework of Information Distribution in Project Communication System of Quality Culture in Construction Companies to Reduce Construction Failure Levels

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Abstract

Development in Indonesia is increasing every year which affects to Construction Companies. There were more than 17 incidents of construction failure in national companies since the 2016 - 2020. One of the causes of construction failure was the information distribution. The aim is to get the variables that impact the for improving the information distribution strategy in project communication system to reduce the construction failure rate. This study conducted data analysis from 10 experts and 35 respondents who work in the construction companies using quantitative methods and questionnaire. the results, there are 15 variables that impact to construction failure rate for improving strategies the information distribution in project communication system at quality culture to reduce the construction failure rate.

Keyword : *Construction Service Company, Information Distribution, Quality Culture, Construction Failure.*

Paper ID : 89

Framework of Leadership System in Improving Quality Culture in Indonesian Construction Company to Reduce Construction Failure

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Abstract

Construction failures in infrastructure development in Indonesia have often occurred in recent years, to be precise in 2016-2019. The causes of construction failure include design deficiencies, unskilled manpower, administrative deficiencies, random specifications, faulty equipment, and deficient material (Mohammad & Darade, 2017). A quality culture must be developed in order to achieve project success. Leadership has an important role to play in developing a quality culture. Therefore, this study aims to identify the leadership system variables that have an effect on construction failure. The variables were then validated by 10 experts. There are 11 variables that will be developed in improving the quality culture.

Keyword : *Construction failure, quality culture, leadership system.*

Paper ID : 90

Evaluation of Information System Implementation on Civil Registration Service at Surabaya, Indonesia. Case Study: Birth Certificate Service.

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Abstract

Information systems and technology are expected to have a good impact on the civil registration service process including during the COVID-19 pandemic. DISPENDUKCAPIL Surabaya had transformed the civil registration service systems which are LAMPID system into KLAMPID, and KLAMPID COVID system later during the COVID-19 pandemic by implementing the information system. These transformations are proven in reducing the paper utilization and transportation activities which are expected to reduce the environmental impact that is generated by the civil registration service activities. However, those transformations are also proven to increase electricity consumption and internet use since there is information system equipment such as computers and databases equipment which are utilized. This study tries to evaluate the total environmental impact in each transformation by using the Life Cycle Assessment (LCA) approach. The environmental impact calculation results from SimaPro software for LAMPID, KLAMPID, KLAMPID COVID offline submission, and KLAMPID COVID online submission are 24.64 mPt, 41.95 mPt, 41.71 mPt, and 36.81 mPt respectively. This study indicates that the information system implementation was able to reduce the environmental impact from the paper utilization and transportation activities reduction, however, those reductions cannot cover the environmental impact that is generated from the information system equipment.

Keyword : *Information system, civil registration service, LCA, environmental impact.*

Paper ID : 91

Comparison of Quick Eksposure Check (QEC) and Nordic Body Map (NBM) in Traditional Broom Workbench

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Abstract

Purbalingga is a producer of traditional woven brooms. Based on preliminary observations, workers carry out their activities manually using current workstations with repetitive work postures. Workers feel MSD disturbances or pain in the back, waist, neck, and hands. A new workstation has been made with adjustments to the workstation's height, the slope of the back of the chair, the displacement of the seat (forward or backward), and adding a tool to roll the yarn, RULA work posture analysis has been measured. This study compares MSD complaints and works posture at the current workstation and the new workstation using QEC and NBM method. The NBM method's result shows improvement after using new workstations than the previous workstations. The average complaint rate for MSD decreases from 55.56% to 33.33%. This result because the bent back position is minimized, the back position is no longer bent when using the new workstation. The average QEC exposure level value also decreases from 66% to 61%. The Wilcoxon test results show significant differences in NBM complaints (0.036) and QEC exposure level significant differences (0.014). In addition to experiencing a decrease in the level of MSD complaints. The right leg experienced an increase in the level of MSD complaints. They are indicating that NBM can be used to detect design errors.

Keyword : *Brooms, MSD, QEC, NBM, Workstation.*

Paper ID : 92

Ergonomics Assessment for Wearable Elbow Exoskeleton Prototype

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Abstract

This study aims at assessing ergonomics and usability variables in wearable elbow exoskeleton prototype. Ergonomics testing is conducted in three level of iteration. Usability testing is performed based on Nielsen approach. The results of ergonomics testing in the third iteration of observation show that the product has met all the existing checklists and is ready to be tested directly on the patient. In terms of medical and therapeutic stages, the product can withstand the load, the repetition speed is good and the delay between reps is also not long. The respondents agreed that the stroke therapy aids were easy to understand and acceptable (80%). Respondents chose neutral level of memorability (70.83%). It means stroke therapy aids can help them make it easier for them to undergo therapy. Respondents chose neutral regarding the level of efficiency (80.83%) of the stroke therapy aid. There was an error while undergoing therapy with a stroke therapy aid, but felt comfortable undergoing therapy with the help of a stroke therapy aid. Respondents feel happy, satisfy and comfortable (83%) undergoing therapy with stroke therapy aids and are able to adjust to the differences.

Keyword : *Ergonomics, Assessment, Wearable, Elbow, Exoskeleton.*

Paper ID : 93

The Design of Web-Based University Students Internship Information System

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Abstract

The internship has become a phase that needs to be crossed by every college student in the lecture curriculum. In practice, there are many things to handle in an internship process flow, from selecting a company to do the internship on to experiencing internship report defense. Developing an information system to facilitate internship process flow of complicated correspondence will be advantageous to college students, lecturers, and internship coordinators in executing the internship process flow of Industrial Engineering Study Program Faculty of Engineering Atma Jaya Catholic University. The Built system will be mapped, made, designed, and programmed to become a specialized website to run internship process flow. Built system uses System Development Life Cycle (SDLC) framework with a system prototyping method. The programming language used is HTML framework, CSS for styling, PHP for back-end processes, and javascript for jquery. The development of the system starts from the planning phase, then continued by the requirement analysis, database design, prototype, and implementation. Testing with system testing is also done to make sure that the website can run properly.

Keyword : *Information System 2, SDLC 3, System Prototyping.*

Paper ID : 95

Evaluation of the SM-8018 Shima Ergono Wheelchair Product Prototype Design Based on Quality of Life and Ergonomic Function Deployment

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Abstract

This research aims to evaluate the comfort of the product prototype of the SM-8018 Shima Ergono Wheelchair produced by PT SPU. The ergonomic approach method is reviewed from UQoL and EFD. A survey of 30 respondents with anthropometric data on the 5th, 50th, and 95th percentiles, the NBM questionnaire, fatigue, boredom, satisfaction tested with t independent samples at a significance level of 5% ($\alpha = 0.05$), and VoC data for wheelchair standard attributes manual for obtaining HoE consists of; Effective, Comfortable, Safe, Healthy, and Efficient aspects. The results of the study found that anthropometry was appropriate, redesign was needed on the seat, back and head rests, musculoskeletal complaints and fatigue were still there, especially for thrusters of 52.05% and 50.20%, a decrease in boredom and satisfaction by 17.52% and 12.85. % ($p < 0.05$). The order of priority of the specification target based on the HoE is; Adjustable push handle & Ergonomic Factor, the stand does not bend easily when occupied, the backrest and height are anthropometrically adjusted, and need to add a headrest, the stability of the front tire when going through obstacles in the area of incline, derivation, and slope remains stable.

Keyword : *SM-8018 Shima Ergono Wheelchair Prototype, UQoL, and EFD.*

Paper ID : 96

Baby Food Product Ad Design on Instagram and Facebook

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Abstract

Social media is a manifestation of the rapid development of information and communication in modern marketing methods. One of the challenges faced by business people who consider promotion on social media is ensuring that social media advertising serves its purpose effectively. The @foodformybaby account offers catering and ala carte with various types of organic food (homemade) for babies aged 6-12 months. The marketing strategy will always change along with the development and the diverse needs of consumers. This study aims to determine the effect of different channels, time, and day of ad serving on the number of impressions and actions. The method to be used in this research is analysis of variance (ANOVA) for 2x3 factorial designs. The research variables tested were the number of impressions and the number of actions. While the independent variables in this study are social media channels, time of ad serving, and day of ad serving. The analysis shows that there is a significant effect of social media channels, ad serving time, and day of ad serving on the number of impressions and number of actions. The recommendations given are illustrated in the form of ads designs.

Keyword : *Experiment design; factorial design; social media; advertising; baby food*

Paper ID : 97

Designing Strategies to Anticipate Circular Economy Barriers in Furniture Industry

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Abstract

Circular economy is a new concept that improves the traditional concept of linear economy, which produces with the model of "take-make-distribute-consume-dispose" to "take-make-distribute-consume-return". When the product has reached the final stage, the product will not be disposed, but will returned in a form or quality that is different from the initial product. This return process considers the 6R principle of reduce, reuse, recycle, recovery, redesign, and remanufacture. In its implementation, circular economy experiences various barriers. This study aims to identify and analyze barriers to the implementation of circular economy in the furniture industry and create a strategy to anticipate these barriers. Respondents in this study are 75 furniture entrepreneurs in Central Java. Questionnaire are processed with the AHP (Analytical Hierarchy Process) method with the help of Expert Choice software to assess the importance weight of 5 barriers and 17 sub-barriers. The results of this study, the barrier with the highest weight is Financial with a value of 0.355. Based on the results of interview with some respondents, to overcome these barriers, the furniture industry must have a business model that is in accordance with the principles of circular economy. The most suitable business model is Product Life Extension.

Keyword : *circular economy, 6R, furniture industry, barriers, AHP*

Paper ID : 98

Studi Kasus: Cerita dari Pekerjaan Perawatan Sumur di Laut Dalam. Apakah Mengikuti Prosedur Menjamin Kesuksesan/Keselamatan Operasional?

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Abstract

Working in offshore oil and gas have a very high risk. Several work activities related with the oil and gas well cycle consists of site preparation, drilling, well completion, maintenance or repair, and closing or leaving wells. This case study in well maintenance shows that correct violation will generate operational success, while misplience will result something unwanted happen. In work where there are high volatility, uncertainty, complexity and ambiguity, need balance between obeying the written procedures and the eagerness to deviate, take risks, and give professional judgment to adjust the limited resources available to the context or conditions at the work site to achieve operational success and work safety.

Keyword : *Keselamatan, penaatan, prosedur, pelanggaran, kecelakaan.*

Paper ID : 99

Designing Sustainable Procurement System Based on Enterprise Resource Planning

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Abstract

Seeing the increasing competition in the manufacturing industry, the implementation of Sustainable Supply Chain Management (SSCM) can be a solution to improve the efficiency of a company's supply chain and also increase competitiveness with competitors. PT. XYZ is a company engaged in the leather tanning industry located in Garut West Java. This company does not yet have a system to support the implementation of SSCM in its business processes, including for the procurement department. In addition, the company also does not have a system to monitor its business processes. Therefore, this study aims to design an integrated information system for the procurement department using a system based on Enterprise Resource Planning (ERP), as well as to design a monitoring dashboard so that business processes can be more effective, efficient, and of course, able to manage SSCM well. The results of this study are in the form of a system design and a monitoring dashboard based on ERP to support the implementation of SSCM.

Keyword : *Enterprise Resource Planning (ERP), Sustainable Supply Chain Management (SSCM), Sustainable Procurement.*

Paper ID : 100

Application of Occupational Health and Safety (K3) in Agrotourism

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Abstract

Agrotourism means travel organized around farming, small-scale food production or animal husbandry. Visiting a working farm or ranch for the purpose of enjoyment and education are key parts of this often rural experience. Farmer's markets, wine tourism, cider houses and corn mazes all constitute examples of Agrotourism. Travelers who participate in this type of vacation frequently desire to see how food is grown and prepared or to learn how animals are raised. Human elements in Agrotourism such are tourist. Human element on Agrotourism are tourist, farmer, tour guide and worker. Agrotourism in Indonesia is a good alternative development in agriculture, tourism, and economy. The problem is the lack of attention from all of the human elements of the occupational health and safety (in Indonesian called K3/kesehatan dan keselamatan kerja) in work activities and excursions. This research approach is carried out with qualitative and quantitative methods. The qualitative method was carried out by direct observation and interviews with agrotourism managers. Observations were made to determine the presence of risk factors in human activities in the agrotourism area. Quantitative method is done by giving questionnaires to users and managers of agrotourism to determine the application of K3 in agrotourism management. The conclusions of this research are: (a) aspects of health, safety and comfort of tourists in the area Agrotourism need to be created according to the characteristics and tourist activity in the area of agro-tourism. (b) Health risk factors of farmers and worker of Agrotourism needs to be improved, (c) Application of health and safety (K3) Agrotourism in Indonesia still has not gone well and needs several applications such as: commitment as a government policy maker, area planning Agrotourism, K3 measurement, evaluation, and program management capacity of the K3.

Keyword : *Agrotourism, agriculture, risk factor, K3 (occupational health and safety).*

Paper ID : 101

Effective Workplace Stretching Exercise for decreasing Musculoskeletal Disorders in Ndao Ika weavers in Rote Ndao Regency

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Abstract

Musculosceletal disorders are one of the main health problems found in traditional ika workers in Rote Ndo Regency- NTT. The ika weavers still done it manually with a bent body position accompanied by static and repetitive movements and it caused them suffer musculoskeletal disorders. The purpose of this study was to determine the effect of work stretching exercise on decreasing musculoskeletal disorders in ika weavers. A total of 18 active ikat weavers who met eligibility criteria were randomly selected participated in this study. Work stretching exercises with low until medium levels was given to the participant using a one group pretest-postest design. Measurement of musculoskeletal disorders using Nordic Body Map and the results were analyzed by paired sample t-test. The results showed that the mean aged of weavers was 41.94±11.05 years, the mean of weaving activity was 8.72 ± 1.36 hours/day and the mean of weaving length was 41.94 ± 11.05 years. The intervention work stretching exercise reduced musculoskeletal disorders significantly (p = 0.007) with a reduction rate of 19.39%. The conclusion is Work Stretching Exercise was effective in reducing musculoskeletal disorders in traditional ika workers.

Keyword : *Traditional Ika Workers, Musculoskeletal Disorders, Workplace Stretching Exercise.*

Paper ID : 102

Independent Design of the Legalization Office by Applying Activity-Based Flexible Office Concepts

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Abstract

The preliminary study found some employee complaints in the current legalization office. 46.67% complained about the inadequate facilities; 23.28% protested about the uncomfortable office design; 14.81% mentioned the unpleasable physical work environment; 33.33% complained about ineffective communication. This situation affected the loss of work productivity in legalizing many substantial documents given an inflexible office design that did not satisfy the user criteria. Thus, it is significant to improve or develop the office ergonomically by using the flexibility concept approach. The objective of this study is to design the Legalization Office with the Activity-based Flexible Office Concept and ergonomic principles. These concepts focus on work activities and flexibility for users to determine where, when, andhow to get the work done as well as the comfort of work as a basic principle in design. The axiomatic design method was applied to find some design parameters of the office with the mapping process from functional requirements and customer attributes. The survey was conducted to identify the user requirements and validate the design parameters by using hypothesis testing. The result of this study is a flexible Legalization Office design with 27 items of valid design parameters to meet the user needs and it is more suitable than the current office at a 5% significance level.

Keyword : *Activity-based Flexible Office (A-FO), Axiomatic Design, Design Parameter, Legalization Office.*

Paper ID : 103

Designing Sustainability Accounting and Dashboard Monitoring Based on Open ERP using Quickstart Approach

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Abstract

This research aims to design Sustainability Accounting and Dashboard Monitoring for companies engaged in the manufacturing process using Open Enterprise Resource Planning (ERP). Open ERP is a system appropriate to be implemented for companies at the MSME level. ERP is an information system that can integrate and enable business processes in the company. This research focused on designing sustainability accounting and dashboard monitoring in the environmental cost for measurements accounting, and the financial process considers sustainability on environmental aspects. The research results are the model design of an ERP system regarding sustainability accounting and dashboard monitoring using Quickstart research methods.

Keyword : *Sustainability Accounting, Dashboard Monitoring, Open ERP, Quickstart Approach*

Paper ID : 104

Design of Web-Based Occupational Safety and Health Management Information System (OSH-MIS) at Engineering Faculty of Diponegoro University

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Abstract

The Faculty of Engineering, Diponegoro University (FT UNDIP) is an educational institution in Semarang city that is planning the implementation of OHSMS (Occupational Health and Safety Management System). FT UNDIP with 12 departments and 57 laboratories in it certainly contains a lot of unsafe conditions that can endanger the safety and health of the academic community. The result of the onsite visit to each department found that 67% of the OHS program had not been fulfilled. This unsafe condition must be managed immediately to improve the image of FT UNDIP with the title of zero accident. The implementation of this OHSMS needs an information systems so that it can be managed quickly, dynamically and easily accessed especially in incident reporting, HIRARC (Hazard Identification, Risk Assesment and Risk Control), and equipment inspection. This study aims to design a website based on OHSMS. The website that was built also pay attention to the level of usability to see how the acceptance and satisfaction of potensial users of the OHSMS website. The usability assessment used the Nielsen method which was given to 20 KOMITE OSH teams. The OHSMS website usability value is 4,24 from a scale of 5. This value is in the good category, which means that the website that has been designed is able to meet every need related to OHS management in FT UNDIP. From the 5 factors assessed, the variable with the lowest mean is few of errors on the item which states that respondents get a clear warning when an error occurs. The proposed improvement to improve the usability of these variable is to provides a pop up that provides a warning or condition that must be done when the system is in error or the user makes an error. The OHSMS website, which is overall good and given suggestion for improvement, is expected to be able to be applied to support the successful implementation of OHSMS in FT UNDIP.

Keyword : *Information System; Website; OHSMS; Website; Usability; Nielsen Method*

Paper ID : 105

Cognitive Differences between Senior and Younger Worker: A Mental State Examination

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Abstract

The need for more competences in information and communication technology have raised the issue of the roles of senior workers at workplace while their population have increased. Senior workers are associate with declines in cognitive ability, which is defined as the ability to think logically, analyze and solve novel problems. The purpose of this study is to compare the cognitive ability between young and senior workers using the Saint Louis University Mental State Examination (SLUMS), which measures the ability of attention, visuospatial, memory and calculation, and language. Thirty-one younger worker participants who are fresh graduates (age range 22-24 years old) and sixty-two senior workers who are classified into two groups (52-56 and 57-61 years old) are involved voluntarily in this study by filling out the SLUMS questionnaire. The result of this study shows that there are significant cognitive differences between younger and senior workers, especially in language and visuospatial ability. This study also found no correlation between the type of work and cognitive ability in younger workers, but the correlations exist for the senior workers. As predicted, education also correlates with the cognitive ability of senior workers. The implications of this results from ergonomics point of view is discussed.

Keyword : *Cognitive ability, senior workers, ergonomics, SLUMS*

Paper ID : 106

Occupational Health and Safety in Classroom Facilities Layout When New Normal at Bali International University

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Abstract

The Covid-19 pandemic has a profound impact on the order of human life around the world, many areas affected include: the fields of economy, health, education and tourism. Imbas in the field of Education is impaired in theteachingprocess, where both lecturers, teachers, students and students turn sistem learning that hasbeen face-to-faceinto online teaching. The facilities in the classroom need special attention to the layout of the seats and the natural air conditioning that passes through the windows and ventilation. This study discusses how health and safety for lecturers and students on the layout of classroom facilities when new normal in college to be able to continue to carry out learning activities in accordance with the existing health protol. By using exploratory case studies with qualitative descriptive analysis approach to obtain data information about the impacts and consequences of the Covid-19 pandemic and facing a new normal period. This research is expected to produce a solution for universities to be able to carry out teaching in this new normal, especially the problem of the layout of facilities related to social distancing, natural conditioning and ventilation.

Keyword : *new normal, k3, layout*

Paper ID : 107

Analisis Kelelahan Kerja dengan Metode Subjective Self Rating (Studi Kasus: Pekerja Bagian Produksi) UD Kurnia Mandiri

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Abstract

In today's modern industrial era, job burnout is a complex matter where many factors can influence it. This study aims to measure the level of work fatigue, find out what factors cause work fatigue, and provide recommendations for improvement in reducing work fatigue in UD Kurnia Mandiri workers. The study was conducted on 27 January 2021 – 27 February 2021 involving 9 respondents in the study. In measuring work fatigue, the Subjective Self Rating Test (SSRT) method is used. The SSRT is a Subjective Self Rating Test from the Industrial Fatigue Research Committee (IFRC) of Japan, which is one of the questionnaires that can measure the level of fatigue subjectively. Then at the final stage, recommendations for improvement will be given.

Keyword : *Work Fatigue; subjective self rating test*

Paper ID : 108

Ergonomic Approach on Rail Industry Workers Using Rail Ergonomics Questionnaire

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Abstract

The purpose of this study is to determine the relationship between the human factor scale with the worker performance by using the Rail Ergonomics Questionnaire and find out the most dominant factors on the human factor scale that can affect worker performance. The method used in this study is the REQUEST method. This type of research is an analytic observational study and a descriptive cross-sectional study. The research was conducted using observation, questionnaires, and a literature study to collect data. The sampling technique in this study used the Random Sampling technique and the Slovin method to determine the number of samples. The results obtained from this study are that the exogenous variables with a significant influence on performance are job satisfaction and safety culture. Meanwhile, the other exogenous variables, namely usability, communication, work environment, working hours, workload, and work stress do not have a significant effect on performance.

Keyword : *Rail Ergonomics Questionnaire, Job Satisfaction, Safety Culture, Workload*

Paper ID : 109

Survival Strategies for Small, and Medium Enterprises (SME's) Due to the Covid-19 Pandemic Through Supply Chain Management: a State of the Art Literature Review

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Abstract

The purpose of this paper is to review and analyze researches that related to the implementation of supply chain management systems in Small and Medium Enterprises (SME's) Due to the Covid-19 Pandemic. The method used is literature review, articles are collected using search engines such as Elsevier, emerald, AIMI Journal with keywords supply chain management. Criteria for articles used are those published in 2020. One of the important finding is the implementation of the agile supply chain and its effects on production systems. The results of various studies would also help in designing a novel production system which might be better than the existing systems. This review serves as guidelines for implementing Agile supply chain management system in various SME's and also to identify the critical parameters.

Keyword : *Agile Supply Chain, Small and Medium Enterprises, Covid-19 Pandemic.*

Paper ID : 110

Optimum Route Design for Paper Waste Transportation using Sequential Insertion: Waste Bank in Grobogan

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Abstract

Increasing the volume of waste will be a source of problems if it is not managed properly. The scattered waste requires challenges in the optimal collecting system and route design. Large volumes of waste paper are more valuable when sold to manufacturers. This study intends to design an optimal route for transporting waste. The model used is capacitated vehicle routing problem with a waste bank as an intermediate facility. Problem-solving is done by using the Sequential Insertion algorithm with the help of Mahlab software. The object of research was carried out on the transportation of paper waste at a waste bank in Grobogan. The transportation of waste from the waste bank has not been systematic, where the schedule has not been regular and has not considered the distance between the waste banks, the amount of waste and the capacity of the fleet. Freight costs are sometimes more expensive than the profit margins from selling waste paper. This study has designed an optimal route with 2 scenarios. The first scenario is based on the current depot. Scenario 2 by designing depots in three regions using a Gravity Model. The research recommends the optimal route using scenario 2.

Keyword : *optimal route, vehicle routing problem, Sequential Insertion, paper waste, Mathlab Software*

Paper ID : 111

The Relationship Analysis between Physical and Mental Workload with Work Fatigue in Extruder Section at PT.ABC

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Abstract

Work fatigue can have dire consequences such as decreased productivity and quality, incorrect decision making, and increases risk of work accidents. This study aimed to determine the relationship between physical workload and mental workload with the work fatigue of the extruder section operator at PT ABC. The IFRC questionnaire is used to test worker fatigue, calculate the CVL percentage to determine the physical workload, and NASA TLX to determine the mental workload. This research is a cross-sectional study consisting of two independent variables: physical and mental workload, and one dependent variable, the level of fatigue, is analyzed through simple correlation tests. The sampling method used for this study was total sampling, all 26 operators of the extruder section. The analysis results show from the CVL score indicate that there is no fatigue. Meanwhile, in the NASA- TLX analysis, three operators get very high mental load category, 18 operators in the high category. Then, there are 11 operators into the low category and 15 operators into the medium category for fatigue. The Pearson and Spearman correlation test with 0.05 showed that there was no relationship between physical workload (sig = 0.77) and mental workload (sig = 0.189) on the level of fatigue.

Keyword : *Work Fatigue, Physical Workload, Mental Workload*

Paper ID : 112

Eliminating Unsafe Behaviour Through the Implementation of Nudge Theory in Indonesian Industry

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Abstract

The high number of occupational accident and work-related disease in the world, including Indonesia is still at alarming rate. Over the time, experts are trying to find a way to lower the occupational accident rate all around the world by developing several researches about the major cause of it. Current findings show that one factor that massively contributes to the numbers of occupational accident is unsafe behaviour. Hence, by eliminating unsafe behaviour, it would make the most occupational accidents disappear. This research will introduce 'nudge' as a gentle behavioural push to improve safety culture in the industry. As this research objective is to eliminate unsafe behavior using nudge in Indonesian Industry with the aim to reduce hearing risk, we will see that nudge can be integrated with safety management systems and safety culture paradigm to focus on health and safety at work. This research will also give proof, that nudge can effectively eliminate unsafe behaviour based on convincing and free will instead of rules and instructions. The nudge implementation will be demonstrated through daily hearing check using audiometry pure tone testing.

Keyword : *Occupational Accident, Unsafe Behaviour, Safety Culture, Nudge Theory, Audiometry Pure Tone Testing*

Paper ID : 113

Occupational Stress Assessment and Its Impact on Job Performance During Work from Home

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Abstract

Stay-at-home order during the Coronavirus Disease 2019 (COVID-19) outbreak has forced people to minimize unnecessary activities outside their home. The shift of working conditions caused by thepandemic has brought unfamiliar behavior throughout working days. Behavioral changes are believed tobe one of the most significant factors that caused occupational stress in office workers. This unexpectedphenomenon that brought companies to implement Work from Home has initiated people to question thereliability and effectiveness of doing this implementation. In this research, the assessment conducted to obtain the level of job stress and job performance. The result obtained from comparing the Work from Home and Work from Office condition is that Work from Home has brought significant job stress level compared to Work from Office condition especially towards female workers. The result also found that thesub-scales job stress, role expectation conflict and co-worker support have a significant impact on all job performance sub-scales during Work from Home.

Keyword : *Work from Home (WFH), Occupational Stress, New Job Stress Scale, Individual Work Performance Questionnaire (IWPQ), PLS-SEM*

Paper ID : 114

Ergonomic Risk Factor's Safety Sign: A Review

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Abstract

One of the risks in the workplace today is the risk of ergonomic hazards, apart from the risks of hazards that often occur such as risks of physical hazards and risks of hazards from the work environment. If the risk of physical hazards and the risk of environmental hazards already have many safety signs that are widely accepted, this is not the case with the risk of ergonomic hazards that do not yet have a validated and widely used safety sign. More fundamentally, awareness of the risks of ergonomic hazards is not fully understood by both workers and employer institutions. The method used in reviewing this paper is to enter the keywords safety sign, safety sign design, and ergonomic risk factors on google scholar and science direct.

Keyword : *Safety Sign, Design Safety Sign, Ergonomic Risk Factor's*

Paper ID : 115

Measurement of Situation Awareness on Pedestrians: An exploratory study

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Abstract

Walking is an everyday activity. This automatic behavior triggers pedestrians to perform secondary activities, such as operating a mobile phone. Operating mobile phones while walking can cause cognitive impairment as well as reduced situation awareness (SA). Low SA can increase unsafe behavior among pedestrians. With the increasing dynamics of the pedestrian environment, pedestrians will be more susceptible to injury than other road users. Measurement of SA on pedestrians is one of the efforts to control pedestrian safety. This research is an exploratory study that examines the effect of secondary activities on pedestrians and the appropriate measurement method to assess SA in that condition.

Keyword : *Dual activities; Measurement; Pedestrians; Situation Awareness.*

Paper ID : 116

Analisis Beban Kerja Mental dengan Menggunakan Metode NASA – TLX dan Postur Kerja dengan Menggunakan Metode ROSA dan Nordic Body Map

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Abstract

PT BGM is one of the Private Owned Enterprises (BUMS) which is engaged in the management of financial services, especially in terms of distributing money to ATMs. In the implementation of its business processes, the company encountered several problems related to the mental burden and work posture felt by its employees. This is due to the company's high standard of performance. To find out more about the problem and provide appropriate recommendations for improvement, the NASA-TLX method is used to measure mental load and NBM and ROSA to assess work posture. Based on the results of research conducted on 8 administrative division workers, it was found that the majority of workers experienced overload in terms of mental load with successive scores of 64.67; 73.33; 64.67; 64; 67 at 5 workers and 58; 59; 47.33 to 3 other workers. Then, the ROSA score of 8 workers in a row is 7; 6; 7; 4; 5; 7; 6; 6. This indicates that the majority of workers apply poor posture when working and have the potential to cause MSDs. Some recommendations for improvement given by the researcher are based on aspects of the assessment methods used (NASA-TLX and ROSA) and take several other reference sources from previous studies.

Keyword : *Mental Workload; Body Posture; NASA-TLX; ROSA; Nordic Body Map*

Paper ID : 117

Mask Design for Children Aged 7-12 Years Based on Children's Convenience and Interest

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Abstract

The purpose of this study is to determine children's interest in colors and images of mask. The convenience of wearing a mask affects wearability in children. In a study, the N95 mask was a comfortable mask for children, but children's interest in wearing masks is influenced by colors, shapes and images, so children were still reluctant to wear masks. This study would test masks on children consisting of N95 Respirator and N95 Non-Respirator masks. The observations were carried out in a room with natural comfortable room temperature. Individual children were asked to answer questions about the children's perception of comfort and interest in masks, then assessed using a five-point Likert scale. N95 respirator mask was chosen by the children because it was suitable for convenience, not in pain, not hot, comfortable when breathing and children's interest in masks with images and attractive colors were the reasons for attracting children's interest in continuing wearing the mask. Therefore, the design of the mask must be in accordance with the parameters needed by the children so that the children's resistance when wearing the mask lasts a long time. The convenience of wearing a mask was one reason why children wore them for a long time, but the interest in visual images and attractive colors were also factors that drew children to continue wearing the mask.

Keyword : *mask, children, N95*

Paper ID : 118

Lectures' Mental Workload During Covid-19 Pandemic Online Learning With NASA-TLX

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Abstract

The Covid-19 pandemic has affected all aspects of the field, one of which is education. The education process in Indonesia is carried out with a online learning system to minimize the spread of the COVID-19 virus. But the implementation of online learning can cause problems, namely the emergence of mental workloads for lecture. The purpose of this study is to compare the lecture's workload between online learning and face-to-face learning, identify the dominant dimensions and provide suggestions for improvement. This research was conducted at SMA Negeri 1 Gemolong with 36 lectures as respondents. From the results of the study, it was found that there was a significant difference between the mental workload of lectures between offline learning and online learning. So that online learning can increase the mental workload experienced by teachers. based on online learning, some dimensions dominate the dimensions of own performance by 22%, Effort by 21%, and Mental Demand by 18%. The proposal that is expected to reduce the mental workload of lectures during online learning is the implementation of periodically in-house training and increasing the competence of teachers in the IT field.

Keyword : *Mental Workload, Lecture, Education, e-learning and Covid-19*

Paper ID : 119

Framework of Virtual Reality Based Training System for Improving Stability and Gait of Lower Limb Prosthetic Users

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Abstract

Prosthetic legs are needed by individuals with a lower limb amputee to improve their quality of life. However, the current designs have several limitations that requires substantial training for adaptation to improve posture and gait. As an emerging technology, virtual reality (VR) provides prospective capability for such rehabilitation training. This study aimed to propose a framework of VR-based training system for improving stability and gait of prosthetic users, focused on lower limb prosthetic and transfemoral or above-knee amputations. Previousstudies have demonstrated the ability of VR to improve both stability and gait. However, the training system used seems to diverse. Further analysis, based on an extensive literature study, concluded that the VR-based training system should consider the following three subsystems: technology, content, and feedback. Each sub-system has its alternative combinations. Finally, this study proposed methods that can be used to test the system efficacy and overall acceptance of the VR-based system.

Keyword : *Virtual reality, training, limb prosthetic, stability, gait, ergonomics*

Paper ID : 120

Analysis of Work Posture and Proposed Improvement for Workers of Kaysa Taylor Clothing Home Industry

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Abstract

[Analysis of Work Posture and Proposed Improvement for Workers of Kaysa Taylor Clothing Home Industry] Kaysa Taylor is one of the home industries in apparel production, located in Cilacap Regency. Some operators have complained of some pain in the body parts such as the legs, hands, hips, buttocks, and back based on preliminary observations. They move using all of their limbs repeatedly with improper postures such as bending, picking up, and putting clothes on in their activities. Therefore, this study was conducted to comprehend the complaints of body parts experienced by operators using the Nordic Body Map (NBM), understanding the level of risk of work posture experienced by operators using REBA. Workstation redesign is proposed to reduce complaints and risks of operator work posture in Kaysa Taylor's home industry. The results of this study were based on the NBM, the majority of operators complained of pain in the neck, back, waist, hips, and buttocks, and all operators were at a moderate risk level. The level of risk for work posture based on the REBA results experienced by the operator is at a moderate posture risk level. The proposals for designing a new workstation, with chairs and tables for the cloth-making process.

Keyword : *Clothing home industry, Complaints, NBM, REBA, Work Posture.*

Paper ID : 121

Restaurant Business Insights Based on Zomato Online Food Marketplace Big Data Scraping

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Abstract

The aim of this study is to find restaurant data in the online food marketplace to analyse the insights that can be obtained from an online food marketplace big data. Data search is performed using web scraping methods to extract the big data of online food marketplaces from Zomato online food marketplaces in real-time. We do business analysis based on locations, ratings, reviews, costs, and restaurant facilities from the massive amounts of data that received. This study was limited to restaurants spread across 30 regions in the city of Bandung, Indonesia. This study analyses how restaurants, types of cuisine, and cost are set in the growing online food retail. This study also analyses how number of reviews given by customers and the facilities in restaurants affect restaurant ratings.

Keyword : *big data, web scraping, online food marketplace, restaurant facility, restaurant rating*

Paper ID : 122

Potential Hazard Analysis for Higher Education Laboratory Building (Pilot Case Study in Industrial Technology Faculty)

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Abstract

The application of occupational safety and health in university building, especially in the laboratory (mixed with classrooms) still being underrated and not concerned thoroughly. Industrial Technology Faculty is,one of the example that has building of laboratory consisted with various departments and hazardous material/equipment. Despite of the characteristics of classroom that has not using high risk equipment, the level of danger in the laboratory building needs to be assessed accordingly, for example the needs of implementing a Light Fire Extinguisher (APAR) and First Aid equipment for Accidents (P3K), the use ofpersonal protective equipment (PPE), moreover the lack of safety signs (evacuation routes, hazardous chemicals, exit doors, etc.). In addition, indistinct some building failure is unnoticed such as the holes in the floor containing a series of electrical cables, chemical arrangement, power cables and computers that are not arranged and many other things that have a potential risk of danger. This study aimed to determine the potential hazard risks contained in the Faculty of Industrial Technology laboratories building on the 2nd and 3rd floors of the 5 stories building, assess the level of the risks identified, and also provide solutions for each hazard found. The methods used in this research were the combination of HIRA (Hazard Identification and Risk Assessment) and HAZOP (Hazard and Operability Study). The results obtained in this study were 3 laboratories that have the highest number of risk values, namely The Chemical Engineering Introduction laboratory, Basic Chemistry Laboratory and Chemical Engineering Operations Laboratory with the values of 252, 221, and 157. The extreme risk values for these laboratories are 83 with 6 findings, 63 with 5 findings, and 47 with 3 findings consecutively. The many risks that arise in these laboratories are related to the use of strong-smelling concentrated chemicals, tools and practicum materials that are not well organized, do not obligate policy in the use of PPE and many others. For all laboratories that were used as research objects, the potential hazards that often arise are related to the absence of APAR and First Aid for some laboratories, the not compulsory in the use of PPE during practicum, the absence of safety signs, laboratory equipment that is not well organized and the absence of clear guidance (SOP- Standard Operating Procedure) when entering the laboratory area/perimeter.

Keyword : *Occupational Accident, HIRA, HAZOP, Hazard, Risk Assessment*

Paper ID : 123

Feasibility Study Analysis of Bottle Reverse Vending Machine Based on Value Engineering Concept using IoT Approach

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Abstract

In this study, waste management based on an intelligent waste management system using IoT applications is applied. Especially for plastic bottle waste, which has economic value. In this study, the authors design a DAUR machine to receive plastic bottle waste according to the user's design requirements and objectives. In addition, a simulation of investment feasibility is also carried out using system dynamics according to the Bass Diffusion Model. Two cases are simulated, according to the design alternatives made. From the simulation results, it is found that this technology will be adopted by the community quickly so that it is predicted to enter a saturation period at the end of the fourth year. In addition, the 16% increase in investment costs for machinery has resulted in a lower NPV of up to 68%. However, investment in both design alternatives is still feasible because it has an NPV value greater than zero. The author has also made an identical design on the prototype of the DAUR machine for easy modification, maintenance, and efficiency of manufacturing time.

Keyword : *Plastic Bottle, System Dynamics, IoT, Bass Diffusion Model, Prototype*

Paper ID : 125

The Application of The House of Quality Matrix in Developing Work Time Measurement Technology Prototypes

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Abstract

The first-generation of Vision Sensor-based working time measurement technology has been developed and tested for laboratory-scale usage. This technology consists of hardware components involving the Pixy CMUcam5 integrated with the Arduino Uno Rev 3 with AT Mega 328P and the Logitech C930E series webcam. In addition, a study on user satisfaction with this technology has been carried out, in which recommendations were obtained for improvement. Therefore, this study was carried out to develop a prototype product of working time measurement technology using the house of quality (HoQ) matrix, which is the first stage in the application of the Quality Function Deployment (QFD) methodology. The HoQ matrix was an attempt to convert the voice of customers directly to the technical requirements or specifications of the product to be developed. The result obtained was a HoQ matrix, which consisted of 18 product attribute items as user needs and 9 technical requirements. Based on the relative weight value, the priority of technical requirements consisted of increasing durability and usage time, user-friendly application program features, technology functional optimization, application program feature upgrades, adjustable application program features, increased technology automation, easy to apply and operate technology design, improved connectivity and benchmarking prices in the market.

Keyword : *Product development, Quality Function Deployment, House of Quality Time measurement technology*

Paper ID : 126

The Influence of Using Shopeepay and Shopee PayLater Features on Shopee User Purchasing Decisions During The COVID-19

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Abstract

In its development, the internet is currently not only a medium of information and communication, but the internet can increase one's income in the economy. E-commerce is the process of buying and selling products, services, and information that is carried out electronically by utilizing a computer network and providing ease of payment, namely by using the ShopeePay and Shopee PayLater features. This study aims to find out which independent variables are variables that can influence purchasing decisions for Shopee users and find out which factors are more dominant in influencing purchasing decisions for Shopee users on the use of Shopeepay and Shopee PayLater features. Moreover, the trend of consumer behavior in the future also can be explored from the Zscore. The research method used is the method of Discriminant Analysis. The data collection technique was carried out by surveying 55 respondents through questionnaires. From the equation formed, consumers' tendency to buy or not to make purchases through Shopee E- Commerce is determined by the Customer Satisfaction variable in the transaction. Furthermore, from the Z value, it can be seen that the group that does not make purchases (0) has a Z value = 0.214, while the group that often makes purchases (1) has a Z = -0.207 value. From the equation formed, consumers' tendency to buy or not to make purchases through Shopee E-Commerce is determined by the Customer Satisfaction variable in the transaction. Moreover, from the Z value, it can be seen that the group that does not make purchases (0) has a Z value = 0.214, while the group that often makes purchases (1) has a Z = -0.207 value. From the equation formed, consumers' tendency to buy or not to make purchases through Shopee E-Commerce is determined by the Customer Satisfaction variable in the transaction. Furthermore, from the Z value, it can be seen that the group that does not make purchases (0) has a Z value = 0.214, while the group that often makes purchases (1) has a Z = -0.207 value.

Keyword : *Discriminant Analysis, Shopeepay, Shopee PayLater, Customer Satisfaction, Purchasing Decisions*

Paper ID : 127

Modification Of Theory Of Planned Behavior To Measure The Intentions And Behavior Of Peoples Participation In The Waste Bank Program

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Abstract

The purpose of this research is to investigates what factors that can increase people's intention and behavior of participating in waste bank activities at Bantul Regency. This research using factors from Theory ofPlanned Behavior (TPB) model. Besides of factors from Theory of Planned Behavior this research added other factors like knowledge of how and what, knowledge of the consequences and situational factors used as a measurement tool. The research conducted a questionnaire survey with 300 sample respondents. The target respondents for this research are members who actively participate in the waste bank activities. The sampling technique is purposive sampling, regression analysis methods is using on this research. The analysis results showed that attitudes, subjective norms, knowledge of how and what, knowledge of consequence and situational factor have a significant effect on the people's intention to participate in the waste bank programs. Meanwhile the perceived control behavior variable has no significant effect on the people's intention to participate in the waste bank programs. All the factors togethers can explain the intention of 47.7%.

Keyword : *Waste Bank Activities, TPB Model, Knowledge of How and What, Knowledge of Consequence, Situational Factors*

Paper ID : 128

Consumer Behavior on Selection of Online Retail Stores

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Abstract

Online shopping has increased sharply during the COVID-19 pandemic. This condition is due to the limitation of physical contact for shopping offline. Four factors influence consumer perceptions of online shopping: the quality of information, convenience, price, and product quality. This paper aims to analyze customer behaviour based on the four variables to determine what type of online store is the most suitable for beginner online retail traders. The method used is multiple linear regression analysis, supported by statistical tests using the JASP 12.2 program. The results of this study indicate that partially the independent variables (quality of information, convenience, price and product quality) have a significant effect on the dependent variable (purchase of goods online). Simultaneously, the dependent variables have a significant effect on online purchasing decisions. Based on regression analysis, it is known that product quality has the most substantial influence and convenience has the lowest influence on consumer buying decisions. Therefore, the recommended online store recommendation is to use an online marketplace platform such as Shopee, Lazada, Tokopedia, etc. Based on regression analysis, it is known that product quality has the most substantial influence and convenience has the lowest influence on consumer buying decisions. Therefore, the recommended online store recommendation is to use an online marketplace platform such as Shopee, Lazada, Tokopedia, etc. Based on regression analysis, it is known that product quality has the most substantial influence and convenience has the lowest influence on consumer buying decisions. Therefore, the recommended online store recommendation is to use an online marketplace platform such as Shopee, Lazada, Tokopedia, etc.

Keyword : *Online shopping, Pandemic, Consumer Behavior, Statistical test Multiple Linear Regression Analysis*

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Especially for JAVA TECH and CBIOM3S.

PERHIMPUNAN
ERGONOMI INDONESIA

In Indonesia, ergonomics remains relatively new as a scientific discipline. The field was introduced in the country in the 1960s by academics, industry players, and government bodies.

Seeing the enormous benefits of ergonomics—increased productivity, quality, safety, and health, industries in Indonesia began to adopt it more extensively and profoundly. The benefits also encouraged academics in Indonesia to broaden education and training related to ergonomics in order to support the development of industry in Indonesia.

On October 10, 1987, at the national ergonomics meeting at Institut Teknologi Bandung (ITB), the Indonesian Ergonomics Association (Perhimpunan Ergonomi Indonesia, PEI) was officially established. The PEI has a mission to provide education, research, and consultation on ergonomics applications to increase productivity and the quality of work life.

Developed specifically to encourage academics, researchers, industry practitioners, and professionals to use ergonomic methods and approaches in micro and macro ergonomics, the PEI continues to grow to this day and has members in nearly all regions of Indonesia.

Internationally, the existence of the PEI has been recognized by the South East Asian Network on Ergonomics Societies (SEANES), the Asian Council on Ergonomics & Design (ACED) forums, and the International Ergonomics Association (IEA).

To continue meeting its commitments, the PEI has programs and offerings including the following:

(1) The National Seminar or International Conference on the Indonesian Ergonomics Association, an annual meeting held every year and managed by a designated regional coordinator;
(2) A knowledge-sharing workshop, an event for the PEI's members to share knowledge about the latest research, software, and research tools;
(3) The Ergonomics Students Camp and Paper Challenge (i.e., Ergocamp), an annual activity for all Industrial Engineering students throughout Indonesia, especially in ergonomics, and a good event for students from various universities across Indonesia to network and discuss current trends in ergonomics.
(4) Various webinars;
(5) A series of awards from the PEI given to companies that are committed to the application of ergonomics, Occupational Safety & Health (OSH), and have superior programs that are innovative and sustainable and positively impact the work environment in both the service and manufacturing industries;
(6) Awards given to PEI members with track records and patents based on ergonomics and OSH that have positively impact the community, the workforce, companies, and the environment; and
(7) The twice-annual publication of the *Ergonomics and K3 Journal* and guidance books entitled *Working from Home* and *Learning from Home*.

CV JAVATECH AGRO PERSADA

About Company :

CV. Javatech Agro Persada was established on November 9, 2015. Center production CV. Javatech Agro Persada is addressed at Jl. Raya Pati-Gembong km 5 Pati, central java. This company is in the field of tools manufacturer and agricultural machines, both pre-harvest and post-harvest machines

Pre-Harvest Machines:

Corn Seeder (Corn Planter), Corn Seeder (Corn Planter)Push Type, 3 Inch Water Pump, 4 Wheel Tractor, 4 Inch Water Pump, 6 Inch Water Pump, 2 Inch Water Pump, Cultivator, RiceTransplanter.

Post-Harvest Machines:

Vertical Dryer, Medium Corn Combine Harvester, Power Thresher, Multipurpose Power Thresher, Multipurpose Power Thresher Mobile Multicrop Combine Harvester, Corn Planter, Large Combine Harvester, Paddy Husker, Rice Polisher, Corn Sheller Kelobot, Corn Sheller Mobile, Integrated Rice Milling Unit, Color Sorter, Packing And Automatic Measurer, Rice Grader Moisture Tester

To ensure our production machines run effectively in the community or in the field, we provide the following facilities:

Pre-Sale Service

Provide a real picture to prospective buyers regarding the business prospects of our machines, especially Machines rice dryer, Combine Harvester Machine, Rice Milling Unit, Packing Machine etc.

Training Services

In the form of theoretical training in class and direct practice in the field, for this purpose we provide a Training Center Integrated, for theory in the classroom, practice in the field, lodging, places of worship and others in one unit in Pati-Central Java.

After-sales Service & Warranty for 1 year including spare parts

Regular regular visits to customers to help overcome problems that arise in the field and mutuallyexchange information.

Jl. Raya Pati-Gembong km 5 Pati, Central Java. Email : javatechjaya01@gmail.com. Telp : (+62) 82322771225

Center for BIO MECHANICS BIO MATERIAL BIO MECHATRONICS and BIO SIGNAL PROCESSING | UPT | UNIVERSITY OF DIPONEGORO

Diponegoro University (UNDIP) as a research university that is on its way becoming a World Class University, has a research center that specifically develops health technology, namely the Center for Biomechanics, Biomaterials, Biomechantronics and Biosignal processing (CBIOM3S). CBIOM3S Diponegoro University was established in 2015 and has **now become the Center for Excellence in Higher Education Science and Technology** (PUI PT) assisted by the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia since 2019.

As a center of excellence, the Undip CBIOM3S research team has various fields of expertise: mechanical engineering, electrical engineering, industrial engineering, computer engineering, informatics engineering, psychology, orthopedic medicine, neurology, medical rehabilitation medicine and nursing. Currently Undip CBIOM3S cooperation has been well established with various government institutions, hospitals, educational institutions and industry at the international, national, or regional levels of Central Java.

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