

CERTIFICATE

The Certificate is awarded to

Lina Gozali

in recognition of contribution as

Presenter

12th International Seminar on Industrial Engineering and Management (12th ISIEM)

***"Industrial Intelligence System on
Engineering, Information, and Management"***

March 17-20, 2020, Batu-Malang, East Java - Indonesia

Chair of Committee



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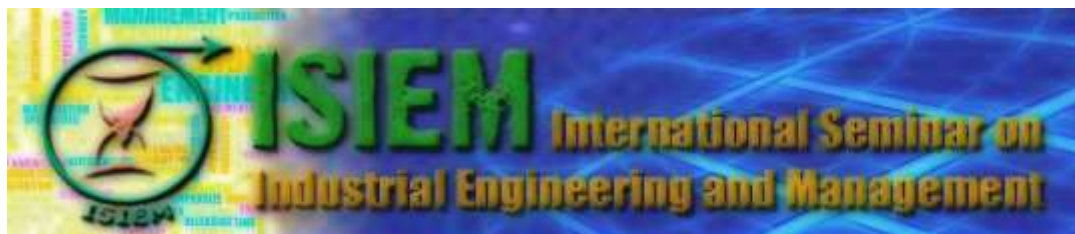


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NOTIFICATION OF PAPER ACCEPTANCE

Dear Respected Authors,

It is a pleasure to inform that your submission (detailed below) is *accepted* at the 12th International Seminar on Industrial Engineering and Management (12th ISIEM). As you are aware of, 12th ISIEM will be held on March 17-20, 2020 in Batu-Malang, Indonesia.

Author(s) : **Lina Gozali, Lamto Widodo, Siti Rohana Nasution and Nicholson Lim**
Title : **PLANNING THE NEW FACTORY LAYOUT OF PT HARTEKPRIMA LISTRINDO USING SYSTEMATIC LAYOUT PLANNING (SLP) METHOD**
Paper Code : **003**
Review result : **Accepted, with revision**

Kindly refer to Reviewers' and Editor's comments for any necessary revision. Please submit the final version of your manuscript on or before January 20, 2020. Please ensure that the submitted final version of your manuscript is in accordance with the prescribed format. Selected papers will be submitted to *IOP conference series: Material Science and Engineering*. The result will be announced between 4-6 weeks after ISIEM Conference via e-mail.

On behalf of the Organizing Committee of 12th ISIEM, I would like to *congratulate you for the acceptance of your paper and to thank you for participating in 12th ISIEM*.

Other arrangements regarding the conference will be informed through you or updated through the website. Should you have any inquiry, please do not hesitate to contact us. Looking forward to see you in Batu-Malang for 12th ISIEM.

Jakarta, December 6th, 2019

12th International Seminar on Industrial Engineering and Management committee
Chairman,

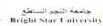
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BOOK PROGRAMME AND ABSTRACT

12th International Seminar on Industrial Engineering and Management (12th ISIEM)

**“Industrial Intelligence System on
Engineering, Information, and Management”**

March 17-20, 2020
Batu-Malang, East Java
Indonesia



The 12th International Seminar on Industrial Engineering and Management (12th ISIEM)
Amarta Hills Hotel and Resort, Batu-Malang-Indonesia, March 17-19, 2020

PROGRAM BOOK

**The 12th International Seminar on Industrial Engineering and
Management (12th ISIEM)**

**Amarta Hill Hotel & Resort, Batu Malang
March 17 – 19, 2020**

Organized by :

Industrial Engineering Department of

- Universitas Pasundan • Universitas Tarumanagara •
- Universitas Trisakti • Al Azhar Indonesia University •
- Universitas Esa Unggul • University of Pancasila •
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This program book is published in line with the Twelfth International Seminar on Industrial Engineering and Management (12th ISIEM). The International Seminars on Industrial Engineering and Management (ISIEM) is an annual seminar to provide an effective forum for invited speakers, academicians, engineers, professionals and practitioners coming from universities, research institutions, government agencies and industries to share or exchange their ideas, experiences and recent progresses in industrial engineering and management and other related fields in dealing with the dynamics and challenges of the 21st century.

This 12th ISIEM is hosted by seven universities, namely Atma Jaya Catholic University of Indonesia, Universitas Trisakti, Universitas Esa Unggul, Universitas Al-Azhar Indonesia, Universitas Tarumanagara, Universitas Pasundan, and Universitas Pancasila. The seminar main theme for this year is **Industrial Intelligence System on Engineering, Information and Management**. Under this theme, we will explore sustainable innovation in industrial technology, information, and management of global issues. The articles cover a broad spectrum of topics in Industrial Engineering and Management, namely Quality Engineering & Management (QM), Decision Analysis & Information System (DAIS), Supply Chain Management (SCM), Production System (PS), Industrial System (IS), Operation Research (OR), and Ergonomics & Product Design (ER&PD).

The articles in this issue provide an overview of critical research issues reflecting on past achievements and future challenges. Those papers were selected from 149 abstracts, and we will send these papers to IOP for publication as an Open Access Proceeding. This is the third time we have had MOU with IOP in United Kingdom to publishing the papers that is indexed by Scopus. This year's seminar become special as more delegates and papers come and received from various universities as well as countries. We are hosting more than 110 delegates both local and from abroad.

I would like to give special commendation to our keynote speakers **Prof. Dr. Abdul Talib Bon** of Universiti Tun Hussein Onn Malaysia and **Y.BHG. Dato' Professor Dr Hj Mohd Rasid Hussin** of Founder and President of International Institute of Risk Management And Crisis Strategies (IIRMACS). We are also grateful to our International partners, namely Kasetsart University Thailand, Bright Star University Libya, Chung Yuan Christian University Taiwan, and Universiti Tun Hussein Onn Malaysia, for their contribution to enrich the variety of articles and participants. We are deeply grateful to PT. LEN Industri for sponsoring our seminar. We appreciate all reviewers and

editors, for their commitment, effort and dedication in undertaking the task of reviewing all the abstracts and full papers. Examining large number of submissions in a relatively short time frame is always challenging. Highest appreciation is also given to all members of committees for their mutual efforts and invaluable contribution to success of this seminar. Without their help and dedication, it would not be possible to produce this program book in such a short time frame.

Finally, special thanks to all delegates of 12th ISIEM for their contributions. We hope the information in this Program book are useful to all of you. Thank you.

Vivi Triyanti ST., M.Sc.
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Amarta Hills Hotel and Resort, Batu-Malang-Indonesia, March 17-19, 2020*

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- Dr. Pornthep Anussornnitisarn

SCHEDULE

Day #1 – Tuesday, 17 March 2020

- 15.00 – 17.30 Hotel Check-in
17.30 – 18.30 Registration
18.30 – 19.30 Dinner
19.30 – 19.45 Opening Ceremony
19.45 – 21.00 Keynote Speech #1 Y.BHG. Dato'
Professor Dr Hj Mohd Rasid
Hussin of Founder and President
of International Institute of Risk
Management And Crisis
Strategies (IIRMACS) - Malaysia
21.00 – 21.15 Photo Session



Day #2 – Wednesday, 18 March 2020

- 06.30 – 08.00 Breakfast and Registration
08.00 – 09.15 Keynote Speech #2: Prof. Dr. Abdul
Talib Bon; Professor of Technology
Management – Universiti Tun Hussein
Onn Malaysia
09.15 – 09.30 Coffee and Tea Break
09.30 – 12.10 Parallel session #1
12.10 – 13.00 Lunch break
13.30 – 15.40 Parallel session #2
15.40 – 16.00 Coffee and Tea Break
18.00 – 19.30 Dinner



Day #3 – Thursday, 19 March 2020

06.30 – 08.00 Breakfast
08.00 – 10.00 Parallel session #3
10.00 – 21.00 City Tour

Day #4 – Friday, 20 March 2020

06.30 – 08.30 Breakfast
12.00 Check Out

Thursday, 18 March 2020

Session 1 (09.30 – 12.00)				
Track : Production & Maintenance System (PS)				
Venue :		Room 1		
Session Chairs:		Lina Gozali, Ph.D		
Paper ID	Time	Name	Title	University
42	09.30 - 09.45	Niken Parwati, Nurdina, A.T. Purwandari, and W.N. Tanjung	Prototype Design of Plastic Waste Processing Equipment	Universitas Al Azhar Indonesia
121	09.45 - 10.00	Nunung Nurhasanah, Machfud, Djumali Mangunwidjaja and Muhamamd Romli	The Application Of Soft System Methodology To Design The Conceptual Model For Intelligent Supply Chain Model Of Natural Fibre Agroindustry	IPB University
29	10.00 - 10.15	Rini Prasetyani, Siti Fatimah Aulia, Gita Timang	Design of facility location for new model of medical pharmaceutical refrigerator production area on PT. XYZ	Pancasila University
32	10.15 - 10.30	Rina Fitriana, Johnson Saragih and Dea Larasati	Production Quality Improvement Of Yamalube Bottle With Six Sigma, FMEA And Data Mining In PT. B	Universitas Trisakti
3	10.30 - 10.45	Lina Gozali, Lamto Widodo, Siti Rohana Nasution and Nicholson Lim	Planning The New Factory Layout Of PT Hartekprima Listrindo Using Systematic Layout Planning (SLP) Method	Tarumanagara University
10	10.45 - 11.00	Aditya Tirta Pratama, Triarti Saraswati, Farhan	Improving Productivity And Quality Of Medium Voltage Cable Production	Swiss German University

		Prianggara and Theodora Savitri		
19	11.00 - 11.15	Aprilia Tri Purwandari, A Ratnamirah, N Parwati, and W N Tanjung	Determining Optimum Eco Paving Block Compositions By Using Factorial Design Method	Universitas Al Azhar Indonesia
100	11.15 - 11.30	Tai-Jung Chen, Yu-Ching Lee, Chin-Hsin Chiang Lee and Chin-Hsin Chiang	Optimizing Production Layout And Capacity Via Flexsim- A Case Study Of Y Factory	National Tsing Hua University, Taiwan
47	11.30 - 11.45	Wilson Kosasih, Lithrone Laricha Salomon and Alfred Darius Halim	Integration Of Conjoint Analysis And QFD For New Product Development In Manufacturing Small And Medium Enterprises (Case Study: A Food Company)	Universitas Tarumanagara
54	11.45 - 12.00	Sarastya Dewi, Judi Alhilman and Fransiskus Tatas Dwi Atmaji	Evaluation Of Effectiveness And Cost Of Machine Losses Using Overall Equipment Effectiveness (OEE) And Overall Equipment Cost Loss (OECL) Methods, A Case Study On Toshiba CNC Machine	Telkom University

Thursday, 18 March 2020

Session 1 (09.30 – 12.00)				
Track : Ergonomics & Product Design (ER&PD)				
Venue :		Room 2		
Session Chairs:		Dr. Lamto Widodo, S.T., M.T		
Paper ID	Time	Name	Title	University

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140	09.30 - 09.45	Bambang Cahyadi, Amanda Maryanti and Gita Timang	Measurement Of Physiological And Psychological Workloads Of Mechanical Department Operator PT. XYZ	Pancasila University
5	09.45 - 10.00	Mira Rahayu, Frans Ariantono Silalahi and Erna Febrianti	Book Trolley Design For Telkom University Library Using User Centered Design (UCD) Method	Telkom University
109	10.00 - 10.15	Ibrahim Mohammed Gana, A A Shhu and A Gbabo	Optimisation of Mechanical Cassava Peeling System Parameters	Federal Polytechnic Bida, Nigeria
51	10.15 - 10.30	Daniel Siswanto, Hardianto Iridiastadi and Khoirul Muslim	The Effects of Sleep Quality on Vigilance and Driving Performance in a Train Simulator	Institut Teknologi Bandung
56	10.30 - 10.45	Muhammad Iqbal and Amalia Suzianti	The NPD Process Design Canvas: Tool for NPD Process Creation	Telkom University
81	10.45 - 11.00	Yansen Theopilus, Sugih Sudharma Tjandra and Billy Sagara	Development of Low-Cost Multi-Input Automated Storage and Retrieval System (AS/RS) for Educational Purposes	Parahyangan Catholic University
83	11.00 - 11.15	Dene Herwanto and Amalia Suzianti	Workplace Design Process at Indonesian Manufacturing SMEs	Universitas Singaperbangsa Karawang
95	11.15 - 11.30	A A Ramadhan, F A Putra, H Wirawan and Taufik Roni Sahroni	Design and Analysis of Electrical Ergonomic Bionic Grip Wrench	Bina Nusantara University
110	11.30 - 11.45	Shiru Jonathan Jacob and Ibrahim Mohammed Gana	Influence Of Moisture Dependent Physical Properties Of Fluted Pumpkin Vital To Development It's Processing Equipments	Federal Polytechnic Bida, Nigeria

6	11.45 - 12.00	Mira Rahayu, Hilman Ardian Ekananda and Ilma Mufidah	Designing A Reading Chair Using Kansei Engineering Approach	Telkom University
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Thursday, 18 March 2020

Session 1 (09.30 – 12.00)				
Track : Industrial System (IS)				
Venue :		Room 3		
Session Chairs:		Vivi Triyanti, S.T., M.Sc		
Paper ID	Time	Name	Title	University
142	09.30 - 09.45	Sulistiandi, Budi Marpaung and Oki Sunardi	Clustering On Small-Scale Food Manufacturing Industry In West Jakarta: A Fuzzy Analytical Hierarchy Process Approach	Krida Wacana Christian University
147	09.45 - 10.00	Nina Sevani, Iwan Aang Soenandi and Fajar Saputra.	Implementation Of Backpropagation Artificial Neural Network For Early Detection Of Vitamin And Mineral Deficiency	Krida Wacana Christian University
11	10.00 - 10.15	Arif Nurrahman, Novan Pizary Husein and Otong Rukmana	Designing Information System For Student Practicum Assessment In The Laboratory	Universitas Islam Bandung
138	10.15 - 10.30	Abdelnaser Omran, Targ Ali Omar Ibrahim and Mohamed Saad Hamad Saleh	Study On Crisis Management In The Libyan Construction Industry	Bright Star University, Libya
30	10.30 - 10.45	Carla Olyvia Doaly, Lithrone Laricha Salomon and Kholid Jabal Arta A	Performance Measurement Using Balance Score Card And Analytic Network Process In Elastomer Switch	Universitas Tarumanagara

			Keypad Manufacturers Indonesia	
41	10.45 - 11.00	Steffi Ratanadewi and Marsellinus Bachtiar Wahju	Inventory And Order System Development At PT.X	Atma Jaya Catholic University of Indonesia
48	11.00 - 11.15	Wilson Kosasih, Carla Olyvia Doaly and Sabhara	Reducing Waste In Manufacturing Industry Using A Cost Integrated Value Stream Mapping Approach	Universitas Tarumanagara
68	11.15 - 11.30	Listiani Nurul Huda	Analysis Of Socio-Technical Approach And Socio User Experience Network Analysis (SNA) To Address Objections Ergonomic Loom In The Village Of Lumban Suhi-Suhi	Universitas Sumatera Utara
71	11.30 - 11.45	Arif Wicaksono, Muharman Lubis, Warih Puspitasari and Fritasya Dwiputri S.	Blueprint Of Perceived Convenience Indicators Towards The Quality Of Infrastructure Of Banking Company	Telkom University
137	11.45 - 12.00	Anas Mussa Abdulhafid Alsrah, Diara Md Jadi and Abdelnaser Omran	Relationship Between Safety Management System, Safety Climate And Safety Performance In The Libyan Construction Sites	Bright Star University, Libya

Thursday, 18 March 2020

Session 1 (09.30 – 12.00)				
Track : Supply Chain Management (SCM)				
Venue :		Room 4		
Session Chairs:		Dr. Ir. Yogi Yogaswara,M.T		
Paper ID	Time	Name	Title	University
144	09.30 - 09.45	Hassan Andrew Fornah and I Nyoman Pujawan	Assessing Supply Chain Practices And How They Are Perceived To Impact Performance Of Firms In Sierra Leone: A Case Study In A Telecommunication Company	Institut Teknologi Sepuluh Nopember
145	09.45 - 10.00	Alimamy Kamara and I Nyoman Pujawan	Investigating The Impact Of Supply Chain Management On The Performance Of Manufacturing Industries In Sierra Leone: Case Study Of Sierra Leone Bottling Company (SLBC)	Institut Teknologi Sepuluh Nopember
13	10.00 - 10.15	Teguh Sri Ngadono and Zulfa Fitri Ikatrinasari	Raw Materials Inventory Planning In Automotive Industries By EOQ Method Consider With The Contract Agreement	Universitas Mercu Buana
126	10.15 - 10.30	Ferdian Suprata, Christine Natalia and Andre Sugioko	Analysing The Cause Of Idle Time In Loading And Unloading Operation At Indonesian International Port Container Terminal: Port Of Tanjung Priok Case Study	Atma Jaya Catholic University of Indonesia
17	10.30 - 10.45	Ardvin Kester S. Ong, Rex Aurelius C. Robielos, Yung-Tsan Jou and Hui-Ming Wee Wee	Three-Level Supply Chain Considering Direct And Indirect Transportation Cost And Carbon Emissions	Chung Yuan Christian University, Taiwan

34	10.45 - 11.00	Dian Dewi, Siddhi Pittayachawan and Elizabeth Tait	A Conceptual Framework For Servitisation Of The Manufacturing Companies To Deliver Product–Service Systems Solutions: A Study Case Of The Indonesian Motorcycle Industry	Widya Mandala Catholic University Surabaya; Royal Melbourne Institute of Technology, Australia
43	11.00 - 11.15	Ahmad , Wilson Kosasih, Helena Kristina, Lamto Widodo, and Christin Pasaribu	Mitigation Of Supply Chain Risk Using HOR Model at PT. Sumber Karya Indah	Universitas Tarumanagara
63	11.15 - 11.30	Aloysius Junianto and Dewinta Sugandha	EPR Approach For Better Waste Management System For Mobile Phone Design In Indonesia	Agung Podomoro University
64	11.30 - 11.45	Satrio Mulyo Nugroho, Laila Nafisah, Muham mad Shodiq Abdul Khannan, Hasan Mastrisiswadi an d Muhammad Nasir Ramdhani	Vehicle Routing Problem With Heterogeneous Fleet, Split Delivery, Multiple Product, Multiple Trip, And Time Windows: A Case Study In Fuel Distribution	Universitas Pembangunan Nasional Veteran Yogyakarta
73	11.45 - 12.00	Parwadi Moengin and Fakhri Darussalam	Scheduling And Allocation Of Airport Service Manpower By Considering Time And Work Constraints Using M-MAPTWTC Method: A Case Study	Universitas Trisakti

Thursday, 18 March 2020

Session 2 (13.00 – 15.30)				
Track : Decision Analysis and Information System (DA&IS)				
Venue :		Room 1		
Session Chairs:		Nunung Nurhasanah, S.T., M.Si		
Paper ID	Time	Name	Title	University
8	13.00 - 13.15	Feliks Prasepta Sejahtera Surbakti	What Is Effective Use of Big Data? The Consensual Definition of Effective Use Of Big Data	Atma Jaya Catholic University of Indonesia
114	13.15 - 13.30	Dadan Umar Daihani and Sony Sonjaya	Development Of Electronic-Based Investigation Management (EMP) Of POLRI	Universitas Trisakti
115	13.30 - 13.45	Resti Afiadinie and Moses L Singgih	Optimization Of Interest Income By Determining Interest Rate Of Revolving Credit Line	Institut Teknologi Sepuluh Nopember
39	13.45 - 14.00	Rayinda Pramuditya Soesanto and Wawan Tripiawan	Design of Multi Criteria Decision Making Tools for IT Project Selection: A Case From Software House	Telkom University
70	14.00 - 14.15	Dutho Suh Utomo, Naraphorn Paoprasert and Ramidayu Yousuk	Determinants of Donation Behaviour on Flood Disasters in Indonesia	Kasetsart University, Thailand
61	14.15 - 14.30	Nuzul Fatma Septiana and Iwan Sukarno	Safety Stock Analysis of Ship Fuel In Shipping Company	Universitas Pertamina
79	14.30 - 14.45	Varis Limlawan and Pornthep Anussornnitisan	Development Of Waiting Time Predictor Based Artificial Neural Network	Kasetsart University, Thailand
134	14.45 - 15.00	Elpawati and Nidaul Hasanati	Designing The E-Marketplace System For Agriculture Products Using Object Oriented Method	UIN Syarif Hidayatulah Jakarta

139	15.00 - 15.15	Johnson Saragih, Rina Fitriana and Tri Andryan	Quality Improvement For Product Body 2-1 At Pt X	Universitas Trisakti
135	15.15 - 15.30	Abdelnaser Omran and Yahya Saad Hamad Saleh	Environmental Management System (EMS) Within Construction Site: A Case Study In Kelantan State, Malaysia	Bright Star University, Libya

Thursday, 18 March 2020

Session 2 (13.00 – 15.30)				
Track : Quality Engineering & Management (QM)				
Venue :		Room 2		
Session Chairs:		Dr. Rina Fitriana, S.T., M.M		
Paper ID	Time	Name	Title	University
7	13.00 - 13.15	Prima Fithri, Dede Jovie Andra, Eri Wirdianto, and Taufik	The Use Of FMEA For The Quality Control Analysis Of Greige Fabrics (Case Study In The Weaving Department Of PT. Unitex, Tbk)	Universitas Andalas
26	13.15 - 13.30	Akhmad Wasiur Rizqi and Moh Jufriyanto	Quality Satisfaction Of Academic Service Industrial Engineering In Private Higher Education KOPERTIS VII Surabaya Area	University of Muhammadiyah Gresik
28	13.30 - 13.45	Chaerul Fahmi Yusuf and Nur Mawati Mambuhu	Services Marketing Mix Services Satisfaction Hotel In Luwuk	Universitas Muhammadiyah Luwuk
40	13.45 - 14.00	Indah Hayati and Luciana Andrawina	Comprehensive Framework Of Customer Loyalty In Fixed Broadband Industry	Telkom University

75	14.00 - 14.15	Erwin Widodo, Heri Suprayitno and Suparno	Productivity Analysis Stevedore, A Descriptive Analysis Method With Integration, Importance Performance Analysis, Quality Function Deployment (Study Case: PT. Port Indonesia III (Persero) Branch Gresiks	Institut Teknologi Sepuluh Nopember
57	14.15 - 14.30	Yati Rohayati and Rizk a Hasna Delvika	Preparation For The Implementation Of ISO 21001-2018 Using Assistance Program: Case Study Of Telkom Vocational High School	Telkom University
62	14.30 - 14.45	Rahmi Ambarita Saragih, Franka Hendra Sukma, Kartiko Eko Putranto and Supriyono	Designing Templates To Support And Monitoring The Activities Of Material Requpment Planning (MRP)	Institut Sains danTeknologi Nasional
69	14.45 - 15.00	Yenny Sari, Muhammad Rosiawan and Arbi Hadiyat	The Design And Implementation Of A Performance Measurement System To Pursue School Excellence: The Integration Of Indonesian National Accreditation Standard Into Baldrige Education Criteria	University of Surabaya
125	15.00 - 15.15	Rina Fitriana, Johnson Saragih and Salma Defina Fauziyah	Quality Improvement On Common Rail Type- 1 Product Using Six Sigma Method And Data Mining On Forging Line In PT. ABC	Universitas Trisakti
94	15.15 - 15.30	Erwin Widodo, Umaiya and Bambang Syairudin	Integration Of Balanced Scorecard And Game Theory For Business	Institut Teknologi Sepuluh Nopember

			Entity's Performance Measurement.	
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Thursday, 18 March 2020

Session 2 (13.00 – 15.30)				
Track : Industrial System (IS)				
Venue :		Room 3		
Session Chairs:		Dr. Winnie Septiani, S.T., M.Si		
Paper ID	Time	Name	Title	University
76	13.00 - 13.15	Yuzar Haspani, Tien F. Kusumasari, Muharman Lubis and Chandra Wardana	The Challenges Of System Usability Scale (SUS) For Testing The Interface Of Android Mobile Application Of Hiking	Telkom University
80	13.15 - 13.30	Meilizar, Ridha Luthvina, Nurike Oktavia and Putranesia	Development Strategy Of The Virgin Coconut Oil Industry And Coconut Farmers Partnership System In Padang Pariaman Regency	Bung Hatta Univesity
136	13.30 - 13.45	Abdelsalam O. Gebriel and Abdelnaser Omran	Evaluating The Importance Of Environmental Education Practice In The Libyan Schools In Al-Bayda City, Libya	Bright Star University, Libya
84	13.45 - 14.00	Bayu Dwi Aqsha, Nurhadi Siswanto and Suparno	A System Performance Analysis Of Ship To Shore Operation Considering Crane Availabilities Using Simulation Approach	Institut Teknologi Sepuluh Nopember
86	14.00 - 14.15	Adithya Sudiarno and Adiek Sudarni	Assessment Of Safety Culture Maturity Level In Production Area Of A Steel Manufacturer	Institut Teknologi Sepuluh Nopember
89	14.15 - 14.30	M. Breda Taftayani, Muharman Lubis, Soni F. Surya	Stress And Cross Browsing Testing For Educational Start Up Website Application	Telkom University

		Gumilang and Chandra Wardana		
93	14.30 - 14.45	Muharman Lubis, Rizky Cherthio Annisyah and Lyvia Winiyanti L.	ITSM Analysis Using ITIL V3 In Service Operation In PT. Inovasi Tjaraka Buana	Telkom University
105	14.45 - 15.00	Mahya Indra Tama, Nurhadi Siswanto and Suparno	Discrete Event Simulation Modeling For Classifying The Container Yard Availability Considering Dock Unloading Activity	Institut Teknologi Sepuluh Nopember
107	15.00 - 15.15	Wisnu Dewobroto and Iv eline Anne Marie	Lean Startup Approach On Product Design And Manufacture Facility Planning In Uncertain Business Climate	Podomoro University
116	15.15 - 15.30	Alfarid Hendro Yuwono, Muhammad Rivai and Tri Arief Sardjono	Solar Panel-Based Wireless Battery Charging System Using Fuzzy Control Method	Institut Teknologi Sepuluh Nopember

Thursday, 18 March 2020

Session 2 (13.00 – 15.30)				
Track : Operation Research (OR)				
Venue :		Room 4		
Session Chairs:		Dr. Ir. Tjutju Dimiyati		
Paper ID	Time	Name	Title	University
149	13.00 - 13.15	Prof. Dr. Abdul Talib Bon	Optimizing Schedule In Furniture Planning	Universiti Tun Hussein Onn, Malaysia
15	13.15 - 13.30	Harummi Sekar Amarilies, A.A.N. Perwira Redi, Ilma Mufidah and Reny Nadlifatin	Greedy Heuristics for The Maximum Covering Location Problem: A Case Study Of Optimal Trashcan Location In Kampung Cipare – Tenjo – West Java	Telkom University
33	13.30 - 13.45	Yosef Daryanto, Bellachintya Reira Christata	Retailer's EOQ model considering demand and holding cost of the	Universitas Atma Jaya Yogyakarta

		and Ika Murti Kristiyani	defective items under carbon emission tax	
50	13.45 - 14.00	Tjutju Dimiyati	Integrated Model For Multi-Criteria Supplier Selection And Order Allocation Problem	Universitas Pasundan
106	14.00 - 14.15	Fransiscus Pratikto and B Batara	Dynamic Pricing in a Coffee Shop	Parahyangan Catholic University
78	14.15 - 14.30	James Yu, Sri Retno Purwaningsih and Hui Ming Wee	A Multi-Objective Model For A Chemical Industry Considering Economic Risk And Environment	Chung Yuan Christian University, Taiwan
Track : Entrepreneurship & Technopreneurship (ET)				
12	14.30 - 14.45	Wydzka Tasha Aulia Akbar, Endang Chumaidiyah and Meldi Rendra	Analysis Of Choice Shrimp Technology Based On Business, Productivity, Financial And Risk Process	Telkom University
49	14.45 - 15.00	Hanaa Rosyada Wijayanti and Endang Chumaidiyah	Measurement Of Feasibility And Risk Level On Modern Embroidery Kebaya Boutique Establishment In Jakarta	Telkom University
53	15.00 - 15.15	Meuthia Murfi, Endang Chumaidiyah and Wawan Tripiawan	Feasibility Analysis And Website Design Of Najwa Collections Fashion Products	Telkom University
82	15.15 - 15.30	Muhammad Rifky Kantaprawira, Endang Chumaidiyah and Rahmat Fauzi	Business Feasibility Analysis And Website Based E-Commerce System Design Using System Usability Scale On Zauber Denim Company	Telkom University

Thursday, 18 March 2020

Session 3 (15.45 – 18.15)				
Track : Production & Maintenance System (PS)				
Venue :		Room 1		
Session Chairs:		Dr. Ir. Arum Sari, M.Sc		
Paper ID	Time	Name	Title	University
123	15.45 - 16.00	Bagus Susilo Pramuwicaksono Susanto and Nani Kurniati	Multi Sensor-Based Failure Diagnosis Using The Mahalanobis Taguchi System	Institut Teknologi Sepuluh Nopember
27	16.00 - 16.15	Lithrone Laricha Salomon, Wilson Kosasih and Carla O Doaly	Lean Service Applications Using FMEA And VSM Approaches (Case Study: Public Healthcare Unit In Jakarta)	Universitas Tarumanaga ra
67	16.15 - 16.30	Melviani Karolin Kamaralo, Judi Alhilman and Fransiskus Tatas Dwi Atmaji	Life Cycle Cost Analysis In Construction Of Green Building Concept, A Case Study	Telkom University
141	16.30 - 16.45	Agung Sasongko, Iveline Anne Marie and Fakhrul Arifin	Forecasting For Steel Production Using Artificial Neural Networks And Feasibility Analysis Of Plant Regeneration Acid Development In Pt. XYZ	Universitas Trisakti
Track : Quality Engineering & Management (QM)				
112	16.45 - 17.00	Arum Sari and Rifqi Yanuar	Performance Evaluation Of An EWMA P Chart Based On Improve Square Root Transformation To Detect Small Shift Process Variation	Universitas Pasundan
117	17.00 - 17.15	Yudha Prasetyawan and Naufal Ghani Ibrahim	Warehouse Improvement Evaluation Using Lean Warehousing Approach And Linear Programming	Institut Teknologi Sepuluh Nopember
118	17.15 - 17.30	Yudha Prasetyawan, Farouk	The Proposed OEE-SIGMA Prediction For Increased Profits	Institut Teknologi Sepuluh Nopember

		Giffari and Bagas Saestu Adi Putera		
124	17.30 - 17.45	Arief Suwandi and Zulh ilmi Naufal Aulia	Improved YM Laser Machine Performance With Overall Equipment Effectiveness And Fault Tree Analysis Methods Implementation at Pt. XYZ	Universitas Esa Unggul
90	17.45 - 18.00	Muqimuddin and Moses Laksono Singgih	Integrated FMEA-MCDM For Prioritizing Operational Disruption In Production Process	Institut Teknologi Sepuluh Nopember
146	18.00 - 18.15	Mohammad Yudi Masduky Sholihin, Rini Prasetyani and Bintang Catur Mukti Pangestu	Analysis Of The Impacts Of Motor Vehicle Exhaust Emissions at Pancasila University On Health In Order To Create A Green Campus	Pancasila University

Thursday, 18 March 2020

Session 3 (15.45 – 18.30)				
Track : Industrial System (IS)				
Venue :		Room 2		
Session Chairs:		Dr. Ir. Nofi Erni , M.M		
Paper ID	Time	Name	Title	University
20	15.45 - 16.00	Vivi Triyanti and Domia Indah Rudolf	Development Of Tool For Measuring Human Reaction Time	Atma Jaya Catholic University of Indonesia
25	16.00 - 16.15	Winnie Septiani, Gebby Aqiilah Aqiilah Divia and Sucipto Adi Suwiryono	Warehouse Layout Designing of Cable Manufacturing Company Using Dedicated Storage and Simulation Promodel	Universitas Trisakti
36	16.15 - 16.30	Kirana Rukmayuninda Ririh, Siswanto Wahyu Wibowo, Nur Yulianti Hidayah and	Risk Impact Analysis Using House of Risk Method and Probability Impact Matrix in Double-Double Track (DDT) Project PT. Hutama Karya	Pancasila University

		Desinta Rahayu Ningtyas		
77	16.30 - 16.45	Ambreen Khattak, Tayyaba Shaheen, Muhammad Hamza, Iphov Kumala Sriwana, Muhammad Shafiq, N T X Hoa and Ayesha Kamal	Factors Influencing Customers' Satisfaction: A Case Study Of SMES From Pakistan	University of the Punjab, Pakistan
Track : Ergonomics & Product Design (ER&PD)				
37	16.45 - 17.00	Lamto Widodo, Silvi Ariyanti and Andreas Jason	Ergonomic Intervention To Improve The Productivity Of Brick Press Tools In Small And Medium Enterprise Akheng Kobar	Universitas Tarumanaga ra
113	17.00 - 17.15	Vivi Triyanti, Hastian Abdul Azis, Hardianto Iridiastadi and Yassierli	Workload and Fatigue Assessment on Air Traffic Controller	Atma Jaya Catholic University of Indonesia
131	17.15 - 17.30	Nofi Erni and Krisna Karamiko Alexander	Implementation Cognitive Ergonomic on Measurement Mental Workload (Case study : Marketing Employee of Insurance Company)	Universitas Esa Unggul
Track : Decision Analysis and Information System (DA&IS)				
1	17.30 - 17.45	Wawan Tripiawan, Shofita Widiana and Yenny	Designing Bank Guarantee Website Tracking Model using UML	Telkom University
9	17.45 - 18.00	Dino Rimantho and Dwi Ardinia	Selection Strategy Implementation of Cleaner Production Using ISM and AHP Method In Chemical Laboratory Of Services Industry	Pancasila University
52	18.00 - 18.15	Judi Alhilman, Muhammad Fadhil Habibie and Wawan Tripiawan	Web-Based Application of Reliability Availability Maintainability and Cost of Unreliability Method to	Telkom University

			Analyze Performance of the Machine	
87	18.15 - 18.30	Asrul Ismail, Natalia Hartono, S Zeybek, D T Pham ¹	Using The Bees Algorithm To Solve Combinatorial Optimisation Problems From TSPLIB	Pancasila University; University of Birmingham , UK

Thursday, 18 March 2020

Session 3 (15.45 – 18.15)				
Track : Industrial System (IS)				
Venue :		Room 3		
Session Chairs:		Aprilia Tri Purwandari, S.T., M.T		
Paper ID	Time	Name	Title	University
72	15.45 - 16.00	Alif Miftahul J., Muharman Lubis , Rd. Rohmat Saedudin and Fritasya Dwiputri S.	Designing The Smart Health Function Towards Puskesmas (Citizen Health Centre) Based On Smart City Concept	Telkom University
101	16.00 - 16.15	Muharman Lubis , Exa Parmita and Lyvia Winiyanti L.	ERP Implementation In Crisis Management: A Case Study Of Government-Owned Electricity Company	Telkom University
133	16.15 - 16.30	Fitri Suryanti and Adithya Sudiarno	Combination Of Value Stream Mapping And House Of Risk Methods To Eliminate Waste In Productivity Enhancement In Production Area Of Fertilizer Company	Institut Teknologi Sepuluh Nopember
143	16.30 - 16.45	Tiena Amran	Management Of Plastic Waste Recycling By Value Stream Mapping	Universitas Trisakti
Track : Supply Chain Management (SCM)				
85	16.45 - 17.00	Dewi Rekno and I Nyoman Pujawan	Analysis Of Comparison Of Onion Production Efficiency (Allium Ascalonicum) Tajuk	Institut Teknologi Sepuluh Nopember

			Variety In Rejoso Sub-District – Nganjuk	
97	17.00 - 17.15	Mia Mutiasari, Widya N. Tanjung, Niken Parwati, , Aprilia Tri Purwandari, and Us Watun Islamiah	User Interface Design In Supply Chain Risk Assessment Of Excel-Based Wooden Toy Industry Using WFMECA Method	Universitas Al Azhar Indonesia
98	17.15 - 17.30	Us Watun Islamiah, Widya N. Tanjung, Niken Parwati, , Aprilia Tri Purwandari, and Mia Mutiasari	Information System Design In Supply Chain Risk Evaluation Of Excel Based Wooden Toy Industry Using Fuzzy House Of Risk (F-HOR)	Universitas Al Azhar Indonesia
Track : Decision Analysis and Information System (DA&IS)				
102	17.30 - 17.45	Muhammad Ariyon, Aldo Setiawan and Refiandi Reza	Economic Feasibility Study Of Onshore Exploration Oil Field Development Using Gross Split Contract	Universitas Islam Riau
Track : Ergonomics & Product Design (ER&PD)				
108	17.45 - 18.00	T Eben Haezar, W Samdan, A Yudha and Taufik Roni Sahroni	Design of Mobile and Integrated Tire Repair Tools for Motorcycle	Bina Nusantara University
148	18.00 - 18.15	Taufiqur Rachman and Stefanny Lyanawati Zalukhu.	Determination of Standard Time and Output Production of Spring Frame Mattress Components Using Work Sampling Method	Universitas Esa Unggul

Thursday, 18 March 2020

Session 3 (15.45 – 18.30)				
Track : Supply Chain Management (SCM)				
Venue :		Room 4		
Session Chairs:		Dr. Iphov Kumala Sriwana, S.T., M.Si		
Paper ID	Time	Name	Title	University
21	15.45 - 16.00	Stefani Prima Dias, Chendrasari Wahyu Oktavia,	Risk Mitigation Strategies On Supply Chain PT. X	Atma Jaya Catholic University of Indonesia

*The 12th International Seminar on Industrial Engineering and Management (12th ISIEM)
Amarta Hills Hotel and Resort, Batu-Malang-Indonesia, March 17-19, 2020*

		Riana Magdalena, M A Lilajati		
23	16.00 - 16.15	Christine Natalia, Chendrasari Wahyu Oktavia and Trifenaus Prabu Hidayat	Integrated ISM-ANP Method For Supplier Selection Criteria Analysis : A Case Study Of Construction Company	Atma Jaya Catholic University of Indonesia
45	16.15 - 16.30	Yogi Yogaswara and Neng Resi Andriyani	Determination Of Multi- Product Distribution Using Capacitated Vehicle Routing Problem (CVRP) And Product Cubication Dimensions Restriction	Universitas Pasundan
74	16.30 - 16.45	Shahzada Zaman Khan, Muhammad Azhar Ashfaq, Muhammad Usman Awan, Hakeem Rehman, Ayesha Kamal, N T X Hoa and Muhammad Shafiq	Investigating Supply Chain Issues In The Food Processing Industry	University of the Punjab, Pakistan
Track : Quality Engineering & Management (QM)				
31	16.45 - 17.00	Syarif Hidayat, Syita Fauzia and Nunun g Nurhasanah	Managing Internal Bullwhip Effect To Plan Product Distribution In A Garment Factory	Universitas Al Azhar Indonesia
44	17.00 - 17.15	Anggina Sandy Sundari, Eka Putri Setyawati and Dino Rimantho	Quality Control Analysis Of Tube Sandwich Using Six Sigma Method In Indonesian Cement Company	Pancasila University
111	17.15 - 17.30	Wahyukaton	Preventive Maintenance Scheduling For Sifter Machine In Flour Mills	Universitas Pasundan
Track : Operation Research (OR)				
14	17.30 - 17.45	Nur Yulianti Hidayah, Muhammad Syafrizal and	Analysis Of Textile Dye Production Scheduling Using FCFS, CDS And Heuristic Pour Methods	Pancasila University

		Muchtar Darmawan		
46	17.45 - 18.00	Riana Magdalena, Stefani Prima Dias, and A P Ginting ¹	Allocation of Maltodextrin Raw Material Orders by Fuzzy Analytic Network Process (FANP) and Goal Programming Methods (Study Case: PT. Neopangan Selaras Indonesia)	Atma Jaya Catholic University of Indonesia
119	18.00 - 18.15	Iphov Kumala Sriwana and Nadya Syauquillah	Analysis of Overall Effectiveness on Hall Separator Punching Machine at PT. DNIA	Universitas Esa Unggul
96	18.15 - 18.30	Farra Nabila Murti and Ahmad Chirzun	Balanced Scorecard Using ISM-ANP at the Directorate of Human Resources, Al Azhar University, Indonesia	Universitas Al Azhar Indonesia

001

Designing Bank Guarantee Website Tracking Model using UML

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Abstract. Bank Guarantee (BG) is a form of credit facility that is given by the bank. The function of BG itself is to prevent default or inability of the guaranteed party to fulfil their responsibility. BG must be well-kept to then be returned back to the guaranteed party after the period of validity ends, or to be claimed when the guaranteed party did default. In PT. XYZ - Eastern Java Distribution Unit, BG are kept based on the order in the list of BGs that is made using MS Excel. After the interview, some disadvantages in the existing system is found. These disadvantages are that the list cannot be accessed using other device, the data must have backup which must be done periodically to prevent the loss of data due to errors and the data can easily be modified by anyone that uses the computer that stores the data. A SWOT Analysis was done to find out a strategy to improve the storage and tracking system involving the BG. It is then known that tracking system using website can be made to be a form of solution for these disadvantages. This simple tracking website then designed using Unified Modelling Language. Based on the SWOT analysis and UML, user interface mock up can be made.

Keywords: SWOT analysis, unified modelling language, system development, user interface

003

Planning The New Factory Layout of PT Hartekprima Listrindo Using Systematic Layout Planning (SLP) Method

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Abstract. PT Hartekprima Listrindo is a manufacturer that produces silent, open and mobile/trailer types of diesel-powered generators, along with AMF/ATS panels and synchronous panels with the HARTECH brand. The generators produce eight Kva power variants up to 3000 Kva power. PT Hartekprima Listrindo plans to increase the production capacity by relocating its factories to a new place. The production capacity of the new plant is planned to achieve 20 generators/year in a 5184 m2 total land area of production. This relocation design uses Systematic Layout Planning (SLP) method, and the layout design is simulated. The SLP method is carried out by describing material flow in the production process using a Multi-Product Process Chart (MPPC), and then continued by using Activity Relationship Chart (ARC) which illustrates the relationship among the activities of the departments. The next stage of layout design is describing the Activity Relationship Diagram (ARD) and Area Allocation Diagram (AAD). The comparison layout design resulted in 2 alternative layouts that are better than the initial layout. The chosen layout design is alternative design 1 because it reduces transportation time and increases movement efficiency.

Keywords: Systematic Layout, Activity Relationship Chart, Activity Relationship Diagram, Area Allocation Diagram.

005

Book trolley design for Telkom university library using user Centred design (UCD) method

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Abstract. Telkom's library book trolley is a tool to help visitors and librarians returning and shelving books. There are still many complaints from the visitors about the library environment which is untidy and some discrepancies between the information about book's availability on the website and on the bookshelf. In addition, there are complaints from librarians about the visitor's habit which is not follow the guidance in the process of returning books and existing trolley books are small and difficult to control. The purpose of this study is to develop the design of Telkom library book trolley in accordance with the wishes of users using User Centred Design method as a concept to determine the design of Telkom's library book trolley parameters. Survey was conducted to identify user criteria and statistical analysis was used to test the developed hypotheses. The results of this study are the design of Telkom library book

trolley parameters that can represent the wishes of users and present Effective, Safe, Health, Comfortable, and Efficient designs. Based on the validation test using marginal homogeneity test, the design is valid in fulfilling the design criteria that the user want with the significance of 5%

Keywords: User Centred Design, Effective, Safe, Healthy, Comfortable, Efficient

006

Designing A Reading Chair Using Kansei Engineering Approach

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Abstract. Supporting facilities such as reading chair are often used as a scene to read books. However, the existing reading chair has not satisfied the user. This Research uses Kansei Engineering which purpose to design a reading chair that fulfil user needs. Kansei Engineering was chosen in this research because it can translate customer's impression, feeling, and demands on existing products or concepts to design concrete solutions and parameters into product design. This research is done on students in the Bandung area who use reading chair. Using a questionnaire as a tool to collect data that distributed online with google form to 347 respondents. Questionnaire data was processed using KMO statistical test and Barlett test, so from 23 Kansei word that had been obtained there was a reduction to 15 Kansei word would be used into designing reading chair in this research. The results of this research states, the implementation of Kansei Engineering could be done in the design of reading chairs, and there are innovations to meet user needs such as, armrest, headrest and footrest. Also USB port, lights, and book storage area. All of that can be used by users.

Keywords: Kansei Engineering, Kansei word, reading chair

007

The use of FMEA for the quality control analysis of *greige* fabrics (case study in the weaving department of PT. Unitex, Tbk

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Abstract. PT Unitex, Tbk, is a textile company in Bogor. The problem that is found in this company is the number of defects that occur in the weaving section, namely reaching. If conditions like this are allowed, it will cause losses to the company. With these conditions, PT Unitex wants to reduce the number of defects to a minimum. For this reason, the main problem raised in this study is how to control the quality of defective fabrics produced by PT Unitex, Tbk, to support and evaluate the quality control policies implemented by PT Unitex, Tbk by using Pareto diagram tools, and fishbone diagrams later in analysis using the Failure Mode And Effect Analysis (FMEA) method. The results of this research are obtained: In the period July - December 2018, 5 types of fabric defects were most dominant, namely OSA TOSHI, NIHON DOSHI, USUDAN, TATE GIRE, and ATSUDAN. Analysis of Failure Mode and Effect Analysis of the causes of failure obtained from the fishbone diagram obtained the highest severity value for human factors, the highest occurrence value for less precision and control, and the highest detection value for engine maintenance.

Keywords: Textile company, Defects, Weaving section, Failure Mode And Effect Analysis (FMEA) method

008

What is Effective Use of Big Data? The Consensual Definition of Effective Use of Big Data

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Abstract. Big Data has attracted significant attention in recent years due to its potential. The use of Big Data is believed to be another source of competitive advantage for organizations. A leading organization in the future is an organization that can use Big Data effectively. However, what constitutes effective use of Big Data remains elusive and evidence suggests that most Big Data projects fail to deliver on their expectations and that executives are slow to adopt Big Data. Existing Engineering Management and Information Systems research have explored effective use in a variety of contexts; however, it is yet to specifically consider the unique characteristics of Big Data. Accordingly, there is a need for rigorous study on what the core of the concept of effective use of Big Data. The aim of the study is to understand better the effective use of Big Data. A multiple case studies approach is followed in the investigation. Eight organizations from private and public organizations were investigated. Data were gathered primarily using semi-structured interviews and through document analysis. The study results show the core of the concept of effective use of Big Data.

Keywords: Big Data. Effective Use, Definition, Qualitative Research

009

Selection strategy implementation of cleaner production using ISM and AHP Method in Chemical Laboratory of Service Industries

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Abstract. The chemical analysis in the service industry cannot be separated from energy use, water, consumables, and chemicals related to the amount of waste produced. The number of hazardous solid waste generated in the CRS Chemical Laboratory division has increased in certain months, ranging from 400-600 kg. This shows the low implementation of green production in the company. Therefore, the purpose of this study is to analyze the key criteria and determine the best strategies to reduce waste. The method used in this study is Interpretive Structural Modeling to find key criteria and the Analytic Hierarchy Process method to determine the priority selection of clean production implementation strategies. This study uses a questionnaire distributed to four experts. The results showed that there were nineteen sub-criteria analyzed in determining key criteria. The sub-criteria for lack of awareness from both individuals and organizations regarding changes for the better is

a key criterion in the application of cleaner production. Furthermore, the best alternative calculation results using the AHP method obtained by the implementation of periodic green production socialization to employees has the greatest valuation of 0.57 with a Consistency Ratio (CR) of 0.09. Further research is needed to evaluate the alternatives chosen.

Keywords: Analytic Hierarchy Process (AHP), Interpretive Structural Modelling (ISM), Key Criteria, Priority, Cleaner Production

010

Improving Productivity and Quality of Medium Voltage Cable Production

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Abstract. A cable manufacturer has produced varieties of products, such as low voltage cables, medium voltage cables, telephone cables, and fiber-optic cables. The main goal this company is to achieve ultimate customers satisfaction through timely delivery, consistency in product quality, and best service. The company faces a problem where daily production cannot reach 6,000 meters/day as requested by management. Moreover, defects have been found in certain processes. A method of countering those problems is proposed by integrating OEE, SMED, and HFACS. Based on the analysis results, the OEE from insulation and screening machines are not meet the company target which is below 60%. In addition, visual defect shown as the most frequent type of defect that occurred in the medium voltage cable production process with 56%. SMED has been utilized to separate the internal task and external task, then the daily production can achieve 6,165 meters/day by reducing the setup time based on the simulation result. In addition, HFACS has been used to analyze the main problem due to human factor aspects, then it is recommended to add extra operator, extra material handling for lifting/moving products, and a re-data checking procedure in the business process.

Keywords: cable manufacture, OEE, SMED, HFACS, defects, productivity

Designing Information System for Student Practicum Assessment in the Laboratory

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Abstract. Practicum assessment process at the Laboratory in some university still uses conventional methods ranging from processing practicum value data to presenting assessment information. This certainly can cause various problems that can hamper activities and services in the laboratory. One of the efforts that can be done to improve the practicum assessment process is by designing a practicum assessment information system. The purpose of designing a practicum assessment information system is to identify the information system of current practicum assessments, analyze information system needs, design and build a practicum assessment information system in the Information Systems and Decision Laboratory. The method used in the design of information systems is the Framework for the Application of Systems Thinking (FAST) with the Model Driven Development Strategy model. The FAST method consists of several stages ranging from scope definition, problem analysis, requirements analysis, logical design, decision analysis, physical design, development and testing, implementation and delivery, system operation and maintenance. The design of the proposed improvement of the practicum assessment system in the process block using Data Flow Diagrams (DFD) to get the architecture processes in the practicum assessment system application. The data block uses the Entity Relationship Diagram to design a practicum assessment database system. The communication block uses the Use-Case Diagram design model to get the interface design from the practicum assessment system. The construction of a practicum assessment information system is carried out using XAMPP tools to access the Apache server and the MySQL database and Sublime Text is used to build application interfaces using HTML and PHP programming languages. So that the results of designing the information system for practicum assessment using information technology can be obtained which can be a medium for processing and presenting practical values in the laboratory, which are easily accessible to users and improve aspects of the PIECES framework including performance, information, economy, control, efficiency and service.

012

Analysis of Choice Shrimp Technology Based On Business Process, Productivity, Financial And Risk

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Abstract. The application of new technology in shrimp ponds, autofeeder, has many advantages, but carries a greater risk compared to conventional shrimp ponds, therefore a more structured analysis is needed to decide the best shrimp pond technology. The comparison is seen from business processes, productivity, financial and risk. The results of business process efficiency level with conventional worth 67.19% while for the autofeeder level worth 88.71%. The productivity results show FCR 1.34 (conventional) and 1.34 (autofeeder); SR 79% (conventional) and 90% (autofeeder); and productivity of 13 tons / ha (conventional) and 25 tons / ha (autofeeder). The financial shows an NPV of Rp 1,515,178.503 (conventional) and Rp 7,721,596,229 (autofeeder); IRR 38.24% (conventional) and 51.23% (autofeeder); payback period 2.68 years (conventional) and 2.17 years (autofeeder); BCR 1,696 (conventional) and 2,065 (autofeeder). Furthermore, for the calculation of risk consisting of production risk and revenue risk with a total risk of 6% for conventional and 31% for autofeeder. In the results of technology selection with an assessment of the 15 criteria above, the results obtained 4 criteria are better for conventional technology and 11 criteria are better for autofeeder technology. So between the two technologies, the selected shrimp pond system is the Autofeeder technology.

Keywords: technology selection, shrimp farms

013

Raw Materials Inventory Planning in Automotive Industries by EOQ Method Consider with the Contract Agreement

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Abstract. One of industrial sector that currently continuous growing up is automotive industry. Safety glass is a kind of automotive component that always has improvement and development. To support production running well, raw materials supply inventory has to be considered and managed as well. Poly Vinyl Butyral (PVB) as raw material is purchased from 2 suppliers and both of them have a contract agreement. Inventory shall be set up to fulfill the demand and follow the contract. By use Economic Order Quantity (EOQ) Method, inventory is calculated to minimize the cost. So the research objective is to determine inventory system of PVB and inventory cost by optimum. Then researcher got the result is EOQ Method can reduce the inventory cost around 52% than last period by keep consideration with the contact agreement.

Keywords: Inventory, Planning, EOQ, Automotive

014

Analysis of textile dye production scheduling using FCFS, CDS and Heuristic Pour methods

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Abstract. PT. X is a company engaged in the chemical industry that produces various types of textile dyes for several garment companies in Indonesia and abroad. The manufacture of various dye textiles has a different processing time because it is influenced by the quality and parameters of each product. The production scheduling system used by the company is First Come First Served (FCFS). Companies often experience delays in the timely delivery of orders due to the production scheduling system that is used by the company was not optimal. This research was conducted to schedule a sequence of textile dye processing in PT. X by using the FCFS, Campbell Dudek Smith (CDS) and Heuristic Pour to get shorter makespan and minimize delivery delays. The results of research at PT.X showed that the scheduling method which had the fastest makespan was the Heuristic Pour scheduling method with a total makespan of 562.4 hours (23 days) and could save time by 47.96 hours or 7.86% compared to the FCFS method.

Keywords: production scheduling methods, makespan, textile dye, delivery delay

Greedy Heuristics for The Maximum Covering Location Problem: A Case Study of Optimal Trashcan Location in Kampung Cipare – Tenjo – West Java

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Abstract. Having a rapidly growing economy without proper waste handling system and infrastructure has made Indonesia one of the top contributors of plastic marine debris in the world: 3.22 million metric tons of mismanaged plastic waste per year. The mismanagement of waste is worse in the rural area where the number of available public trashcan is limited and the people have no idea where their trash actually ends up. In this research, a case study of waste management in Kampung Cipare - Tenjo, a small village 80 kilometers away from Jakarta, is conducted. The biggest purpose of the research is to educate people about sanitation and waste management, initiated by computing the most optimum number and locations of the public trashcans. The problem is addressed as Maximum Covering Location Problem (MCLP) to determine a set of facility locations that maximizes the total demand population served by the facilities within a prespecified maximum service distance. Two greedy heuristics algorithms: Greedy Adding Algorithm (GAA) and Greedy Adding with Substitution Algorithm (GAAS) are utilized to solve the problem. A sensitivity analysis is also done to check the result on the effect of trashcan number and maximum service distance to demand coverage. Out of the 26 location candidates, it is concluded that the final 10 locations are the most optimum in terms of demand coverage and service distance. The result of the research has been implemented in Kampung Cipare- Tenjo.

Keywords: Maximum Covering Location Problem, Greedy Heuristics, waste management, trashcan location optimization

Three-Level Supply Chain Considering Direct and Indirect Transportation Cost and Carbon Emissions

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Abstract. Managing sustainable supply chains has become a challenge for most industries primarily because environmental, social, and economic aspects must be taken into account, and the difficulty in satisfying customer demands for sustainability and environmental protection has been increasing globally, making sustainability the focus of numerous studies on green supply chains. Previous studies are usually only applicable to a specific product supply chain. Therefore, this paper review model that focuses on a general three-level supply chain considering direct and indirect transport and industrial carbon emissions and costs. Specifically, the model involves joint economic lot sizing considering a single set-up-multiple-delivery (SSMD) policy.

Keywords: carbon tax, single set-up-multiple-delivery, supply chain, sustainability

Determining optimum eco paving block compositions by using factorial design method

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Abstract. Some plastic waste processing into economically valuable recycle products has been done. By using a plastic waste processing machine, a variety of products made from plastic waste can be made, one of which is a paving block that is commonly used as building material. This paving block is called as eco paving block to show the ecology side by using plastic waste as raw material. It has been produced with various

compositions and type of plastics, but the optimal composition is not yet known to produce good quality. So, this experiments were carried out using the factorial design as one of the Design of Experiment (DOE) methods to determine the effect of type of plastics and compositions ratio to the eco paving block compressive strength and also it can be obtained optimal composition of the eco paving block. The result showed that the ratio of composition is 2:3 of sand and plastic can produce optimum eco paving block based on compressive strength. This paving block has an average compressive strength 9.91 MPa. It can be classified into D quality classification that can be used for yards, parks, and others.

Keywords: factorial design method, eco paving block, plastic, compressive strength

020

Designing a Device for Measuring Human Reaction Time

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Abstract. Human reaction time is the time needed for someone to take action shortly after the person receives information. Not many measuring devices that can measure the time or speed of human reactions in detail, which are regarding the cognitive (thinking) and the motoric (action) aspects. Therefore, this research aims to design a reaction time measuring device for a simple activity. The device should calculate the speed of human reactions from the cognitive and motoric aspects. A series of product development phases was conducted, i.e user requirements identification, concept development, embodiment design, construction, and testing. As a result, the selected concept used stimulus from light to measure reaction time, considering the difference of light color, flash rate, and intensity. A series of trials proved that those characteristics could be used to measure and distinguish reaction time ($p\text{-value} < 0.05$), considering cognitive and motoric time. The device was also proven can differ reaction time normal and fatigue condition.

Keywords: Reaction time, a cognitive, motoric, product development phase

Risk Mitigation Strategies on *Supply Chain* PT. X

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Abstract. Every supply chain activity in a company is not separated from risk, therefore risk management in a company is strongly required for risk handling. PT. X is a manufacturing company that produces food flavors. Dependence with suppliers and consumers causes uncertainty in the company's supply chain flow. This uncertainty can lead to adverse effects called risk. Risk can be minimized by carrying out risk management. This study aimed to design a risk management by identifying risk events from the company's business processes based on Supply Chain Operation Reference (SCOR), to determine the causes of priority risks and then identifying risk mitigation strategies using House of Risk stage 1 (HOR1), and ranking risk mitigation strategies by considering company criteria in determining risk mitigation strategies using the Analytical Hierarchy Process (AHP). From the results of the study, 21 risk events dan 13 priority risk causes' identified, and 9 risk mitigation strategies' determined. Risk mitigation strategies' rank sequentially were conducting briefings and evaluations every day, coordinating with suppliers continuously, making signboards at the warehouse, tightening the implementation of Standard Operating Procedures (SOP), providing ongoing training, evaluating supplier performance, monitoring more frequently, demand management with considering safety stock and service levels, and had supplier reserves. So, this study suggests PT.X to implement the risk mitigation strategies for minimizing the risks in the company.

Keywords: Analytical Hierarchy Process (AHP), House of Risk (HOR), Mitigation, Risk Management, Supply Chain

Integrated ISM-ANP Method For Supplier Selection Criteria Analysis : A Case Study Of Construction Company

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Abstract. Supplier is one of the most important parts in supply chain. Supplier ensures the availability of materials for company's continuity. Supplier selection using several criteria is needed to get a reliable supplier. Therefore, selecting key criteria for supplier selection is essential. This study discussed the relationships between criteria to obtain supplier selection key criteria in a construction company with interpretive structural modeling (ISM) and selecting supplier with analytic network process (ANP). Data used in this study are initial criteria, the relationships between criteria, the grouping of criteria, and pairwise comparison are obtained from interviews and questionnaires. Using ISM method, 19 key criteria are identified, such as availability and integrity. The best supplier based on key criteria is obtained from ANP method. The result of integrated ISM and ANP method shows that the key criterion with the highest weight is availability, and supplier 1 is the best supplier based on key criteria. Availability refers to the availability of materials in supplier, and this key criterion is considered as very important thus having spare suppliers must be considered.

Keywords: Supplier Selection, Interpretive Structural Modeling, Key Criteria, Analytic Network Process, Construction Company

025

Warehouse Layout Designing of Cable Manufacturing Company Using Dedicated Storage and Simulation Promodel

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Abstract. PT. XYZ is a cable manufacturing company that has several types of cables produced. Goods produced are stored in finished goods warehouses with two types of packaging, namely haspel and roll. Laying of goods in open goods warehouses in the form of randomly arranged haspels is mixed between each type of haspel. The purpose of this study was to evaluate the layout of finished goods warehouses for haspel types so that they can be grouped and minimize displacement time. This study uses a simulation design that is implementing a real system using a ProModel simulation and provides improved layout evaluation with a dedicated storage method approach, i.e.

goods or materials placed in a fixed location. The first step is to collect and identify the real system and then implement using a ProModel simulation resulting in a total displacement time of 140.27 hours. Improvements to the layout of the finished goods warehouse using a dedicated storage method to group haspels. From the calculation results, there are two scenarios, the first is the application of haspel grouping from the calculation of a dedicated method with displacement time of 139.21 hours and the second scenario adds material handling from the first scenario, the displacement time is 128.08 hours. The results of scenario two resulted in a decrease in displacement time of 8.69% by grouping the haspel and adding material handling.

Keywords: warehouse layout, simulation, dedicated storage, displacement time

026

Quality Satisfaction of Academic Service Industrial Engineering in Private Higher Education KOPERTIS VII Surabaya Area

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Abstract. Higher education is always required to provide the development of Science and Technology. In order to realize the climate of quality education, higher education must actively build internal quality assurance system. To prove that the internal quality assurance system has been implemented properly and correctly, higher education should be accredited by external quality assurance BAN-PT institution. In fact from 13 technical programs of private higher education industrial Engineering in higher education accredited A by 24%, accredited higher education B by 38% and accredited higher education C by 38%. therefore higher education should continue to improve the quality of academic services. This study intends to determine the level of student satisfaction and know the attributes that affect service satisfaction. There are many methods used to measure the quality of service to consumers. One method is SERVQUAL and Importance Performance Analysis. Based on customer satisfaction index result, user satisfaction level on service quality at surabaya university is 54,8%, University of WR Supratman equal to 58% and institute of adhitama technology is 60%. Based on the IPA analysis there is a main priority attribute that needs to be repaired the university.

Keywords: Service Quality (SERVQUAL), Importance Performance Analysis (IPA), customer satisfaction index (CSI)

Lean Service Applications Using FMEA and VSM Approaches (Case Study:Public Healthcare Unit In Jakarta)

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Abstract. This research aims is to design a proposed improvement in service at the public healthcare unit that is in accordance with the concept of Lean Service. The method used in this research are FMEA and VSM approaches. This research begins by finding the level of customer satisfaction using the Customer Satisfaction Index (CSI) method. The results of CSI processing showed that the speed of service was the highest element of dissatisfaction. Then proceed with focusing on the waste categories found in the system including waste defects, excess processing, and waiting. Furthermore, through FMEA analysis it is known that improvement in patient waiting time is a top priority for improvement. Then the activities in the service process after improvement are described through future value stream mapping. Before improvement, it is known that the service cycle time is 102.88 minutes. After making suggestions for improvement, the cycle time decreased to 81.89 minutes for manual registration and 76.73 minutes for online registration. Service time measurement and customer satisfaction analysis can be used as a reference for improving and evaluating the performance of public health units.

Keywords: Customer Satisfaction Index, Lean Service, Value Stream Mapping, FMEA

Services Marketing Mix Services Satisfaction Hotel in Luwuk

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Abstract. The existence of hotels in Luwuk as part of the development of tourism is expected to continue were able to make improvements in order to meet customer satisfaction. Competition is carried out for hotels is also a travel promotion for the

region Banggai as part of improving the economy. The ability of the company or hotel to deserve their services for customer satisfaction with the services provided by the hotel management is essential for the realization of the purpose of moving company on the basis of this profit. The purpose of this study was to determine the marketing mix to the satisfaction of hotel services in Luwuk. The method used in this research is quantitative research methods and uses IBM SPSS Statistics 24 as a data processing tool validity, reliability, correlation and linear regression. The results showed that the marketing mix to the satisfaction of hotel services in Kota Luwuk spread evenly, where none of the hotels mastering seven aspects of customer satisfaction assessment (marketing mix)

Keywords: mix, marketing, service, hotels, satisfaction, customer

029

Design of facility location for new model of medical pharmaceutical refrigerator production area on PT. XYZ

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Abstract. *PT. XYZ is a manufacturing company that produces medical devices. The company has planned to develop a new product called Medical Pharmaceutical Refrigerator (MPR). Based on research, the company has provided an area for MPR production of 648 m². After analyzing the process, 5 areas are used in conjunction with other products, but one area called Polyurethane Injection produces a product flow mismatch in the PU area. This problem is solved by designing a layout using the Industrial Facilities method and Systematic layout planning with the Product layout approach. Based on the results of the study, proposed two alternative layouts which then analyzed the weight of material transfer using the From-to-chart method. Layout design 1 has a weight transfer material of 9322.09 per day, while the proposed layout design 1 produces a weight transfer material of 5750.5 per day. So, the MPR production layout is determined using the layout design 2. By determining this layout, a biomedical warehouse area was moved at of 49.42 m².*

Keywords: Facilities layout, Facilities Industry Method, Systematic Layout Planning, Product Layout, From to Chart.

Performance measurement using Balance Score Card and Analytic Network Process in Elastomer Switch Keypad Manufacturer Indonesia

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Abstract. Elastomer Switch or rubber keypad are manufactured from silicon rubber properties to make button on cars, cellphone seals and TV remote buttons. From the sales analysis report show that trends that occur in company's sales volume are declining in recent years with an average of 204 complaints per year, so the measurement of company performance needs to be done. In this study, company performance is measured by applying the Balance Scorecard which provides a multi-dimensional evaluation framework and weighting calculations based on the Analytic Network Process (ANP). A KPI Performance Application Design is generated from this research to help companies know what perspectives affect the company. The results of performance measurement using the Balance Scorecard Method show that the total performance of the company has a value of 2.741 which means that the company's performance is still not good, but it is almost close to good enough value. So it needs some improvement for the future

Keywords: Performance Measurement, Balanced Scorecard, ANP

Managing Internal Bullwhip Effect to Plan Product Distribution in a Garment Factory

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Abstract, XYZ is a family garment business established in 2004. XYZ produces and sells garments for 6-12 year old boys with brands like Forboys, Wellboy, Nashkid, Yepao,

and Kid Dreams. The types of garments are oblong, setelan and wangky. XYZ has three garment Cut-make-trim (CMT) partners in Rangkas, Serang and Pandeglang. The three CMT partners has been giving XYZ neat and tidy garment products, ready to compete in Tanah Abang wholesale center. Based on the demand forecast calculation XYZ sends its order for production to the CMTs. In return, based on the quantity ordered, the CMTs order the raw materials from XYZ. This study attempts to measure the “internal” bullwhip effect which is observed as the fluctuations of orders sent by the CMTs to XYZ, based on the production orders from XYZ to the CMTs. XYZ experienced high inventories and its mounting costs due to this internal bullwhip effect. Further, the method used in this study investigate the appropriate forecasting method. The best forecasting method is the Double Exponential Smoothing, which also results in the reduction in the Bullwhip effect ratio, and improvement of scrap factor (around 10.60%). The reduction of BE ratio is quite significant from 0,344, 0,242 and 0,717 for oblong, setelan and wangky product types respectively.

Keywords: Garment business, Cut-make-trim, Internal bullwhip effect, Scrap factor.

032

Production quality improvement of yamalube bottle with six sigma, fmea and data mining in PT. B

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Abstract. PT. B is one of the manufacturing company engaged in the field of plastic packaging. One of the products produced by companies that bottle Yamalube to customer PT. Yamaha. Based on daily reports of production companies, found that the percentage of disability have an average of 14% per month in which the company standard is 5% per month. It is necessary for Six Sigma to improve the quality of the bottles with the steps Define-Measure-Analyze-Improve-Control (DMAIC). In the define phase diagram created SIPOC and Quality Plan Yamalube bottle production process. In the measure phase createxd Sigma level. At this stage the known value of 0.16 DPU, DPMO of 250,000 and the results showed that the conversion DPMO sigma level Yamalube bottle production process is equal to 2.17. In the analyze phase using a decision tree is known that bottles attributes that influence the decision of rejection is the position of the label, the number of labels, colors and perforated. By using FMEA

method is known that improvements will be prioritized on the label of disability are not two sides to the root cause of the wear rubber. Repairs carried out by making the inspection SOP rubber, checksheet and proposals in the form of anti-static vacuum tool.

Keywords: Six Sigma, DMAIC, Decision Tree, FMEA

033

Retailer's EOQ model considering demand and holding cost of the defective items under carbon emission tax

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Abstract. This paper presents a retailer's inventory model considering imperfect production process and material handling that cause some defective items. The defective items possess a fraction of its original utility. Therefore, after a quality inspection, the retailer holds them in a different area until they are sold entirely. The proposed model considers the demand and holding cost of the defective items. It also incorporates carbon emission costs from transportation and storage activities. The objective function is to maximize the expected total profit, which simultaneously minimizes the total carbon emissions. A numerical example illustrates the model implementation. From this data set, the optimum order quantity is 1770.1 units, and the backorder quantity is 580.3 units, which give an expected total profit of \$ 1,227,945 per year and expected total emissions of 0.765 tonCO₂/year. Further analysis shows a trade-off between economic and environmental performance. Incorporating carbon emission costs into an EOQ model will reduce the expected total carbon emissions. However, it also causes a reduction in the expected total profit.

Keywords: EOQ, defective items, demand, carbon emission

A conceptual framework for servitisation of the manufacturing companies to deliver Product–Service Systems solutions: A study case of the Indonesian motorcycle industry

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Abstract. This study develops a framework for the servitisation of manufacturing that covers area of upstream and downstream supply chain to provide a bundling of product and service. An integration of upstream and downstream supply chain is essential to support the Product–Service Systems. However, a research of integrating the upstream and downstream supply chain is still nascent. A Dynamic capability is used as underpinning theoretical framework for this research. Six hypotheses are developed to build the conceptual framework particularly to investigate the relationship between the supply chain capabilities and sustainability performance of Product–service systems in the Indonesian motorcycle industry.

Keywords: Product–Service systems, supply chain capabilities, servitisation, sustainability performance.

Risk Impact Analysis Using House of Risk Method and Probability Impact Matrix in Double-Double Track (DDT) Project PT. Hutama Karya

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Abstract. Probability Impact Matrix and House of Risk have been the ultimate framework for indentifying potential and critical hazards, also prioritizing risks in infrastructure projects. PT. Hutama Karya, bonafide state owned company, underwent prestigious Double-Double Track Project. It potentially encountered failures due to various riks on the field. The objective of this study is to identify risk factors and

prioritize risk impacts by using House of Risk Method and risk mapping by using Probability Impact Matrix. Datas were gathered through interviews and questionnaires. From the risk agent it was found that the level of risk value measures as many as 4 high-value risk agents through the Probability Impact Matrix. Furthermore, in the Phase 2 House Of Risk in risk management strategy, 12 actions were taken to handle the overall risk agents in the Double-Double Track (DDT) project.
Keywords: House of Risk, Risk Identification, Risk Mapping, Probability Impact Matrix, Double Track Infrastructure Project

037

Ergonomic Intervention to Improve The Productivity of Brick Press Tool in Small and Medium Enterprise (SME) Akheng Kobar

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Abstract. Akheng Kobar is one of the small and medium enterprises (SMEs) that is growing, which produces concrete blocks manually. The brick making process has an ergonomic problem, because the posture of workers in a squatting and bending position for a long time during work. Based on interviews with workers, there were complaints of pain in the back, arms, wrists, calves and thighs. Other complaints include the neck, hands and ankles. In this study, an analysis of initial working conditions, tool design, implementation and results analysis were carried out. Analysis of current conditions using REBA (Rapid Entire Body Assessment), obtained a score of 11, and the JSI (Job Strain Index) analysis score was 39. The results indicate that the process of bricks production must be changed and improved. Furthermore, it was carried out to design a concrete brick press, with the aim of reducing the level of ergonomic risk and increasing productivity. Tool design based on operator complaints, body posture analysis and anthropometric data. Of the several alternatives, obtained the best design alternatives and then made a prototype. Implementation results show a decrease in REBA Score from 11 to 7. Ergonomic Risk Factor decreased from 9 to 5, Job Strain Index scores decreased from 39 to 6.8, and standard time of process decreased by 44,38%.

Keywords: ergonomic, intervention, productivity, REBA, JSI, brick

039

Design of Multicriteria Decision Making Tools for IT Project Selection: A Case from Software House

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Abstract. Information Technology as an enabler helps organization to improve business by gaining more competitive advantage, it plays a significant role for organization to compete. Many organizations sense the pressure to leverage their investment towards information system. Selecting the optimal portfolio of IT projects is becoming increasingly important as the dependency on IT for organizational performance increases. The purpose of this research is to design tools for IT project selection tools in the software house. Combination of Delphi, AHP, and Factor rating method is used to gain the prioritize of the projects. Agile method is used to develop the application. The application is built in web platform to help the organization decision. Future research can be done to considered more variables for choosing the right project for the organization.

Keywords: Agile Method, AHP, Factor Rating, Project Selection, Software House

040

Comprehensive Framework of Customer Loyalty in Fixed Broadband Industry

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Abstract. The use of internet has been growing rapidly over the last decade. One of the developments of internet technology is broadband which provides its users with higher speed than the dial-up technology. Previous researches showed that broadband technology has positive effects on productivity and economic growth which makes it to become an important structure especially in developing countries such as Indonesia. Indonesia's fixed broadband industry has been facing slower penetration rate compared with mobile broadband and suffering from high customer churn rate. This condition causes companies struggling to maintain their customer loyalty. There

have been many researches about broadband customer loyalty but only a few focused on fixed broadband industry and this area still needs a comprehensive study on internal and external factors affecting its customer loyalty. This study was developed to fulfil those gaps. This study aims to evaluate factors affecting fixed broadband customer loyalty both from company's internal and external environment. The originality of this study resides in security and privacy, customer demography and switching barriers as additional factors to the model proposed by previous studies. This study concludes four internal factors and two external factors affecting fixed broadband customer loyalty with customer value as mediating factor.

Keywords: Broadband, Fixed Broadband, Customer Loyalty, Customer Churn

041

Inventory and Order System Development at PT.X

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Abstract. PT X is Indonesian cutting tools importer, which sells various kinds of cutting tools, such as Carbide End Mill and Reamer. This company is facing two problems. The first is inefficient order process. As an importer, company must update the price based on exchange rate, so the catalogue is often updated. On the other hand, customers often write wrong price on PO, and thus Sales Manager needs to check each PO detail. This activity usually takes about four minutes. The second problem is inefficient inventory update, which takes about eight minutes. Logistic Manager double checks the product quantity by counting physical product, to make sure that the quantity is updated. This process affects both order and procurement process. The objective of this study is to propose a new system, which will be able to perform simpler business process and reduce completion time. Modified Waterfall Approach of System Development Life Cycle (SDLC) is chosen as the methodology, as it is suitable for well – understood processes, where doing overlapping phases is permitted. This study develops UML Diagrams, also medium and high-fidelity prototypes. User Interface Testing, which consists of learnability, error, memorability, and satisfaction measurement, are done to see whether the system is easy to use. Result shows that the proposed system performs better than current system. The completion time of create order activity is reduced 27.51% to 3.11 minutes, availability check is reduced

75.99% to 2.3 minutes, incoming inventory update is reduced 99.67% to 7.69 seconds, and outgoing inventory update is reduced 94.95% to 12.46 seconds.

Keywords: inventory, order management , system , SDLC

042

Prototype Design of Plastic Waste Processing Equipment

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Abstract. Garbage is the remnants of human daily activities or natural processes that are solid or semi-solid, in the form of organic or inorganic substances, and are biodegradable or non-biodegradable which are considered to be no longer useful and thrown into the environment [2]. Therefore, it is necessary to develop a plastic waste processing device in order to produce an effective output and use of time efficiently. In this research, the development of plastic waste processing equipment products is done by integrating the chopper and heating machine into one tool, then can produce various kinds of recycle products. This plastic waste processor can process thermoplastic plastic types. Thermoplastic is a type of plastic that can be recycled or reprinted by reheating processes, such as Polyethylene (PE), Polystyrene (PS), ABS, Polycarbonate (PC), High Density Polyethylene (HDPE) and Polypropylene (PP). To make a prototype design of a plastic waste processing device, a product architecture is carried out for the arrangement of the functional parts of a product in the form of a scheme, then an industrial design is carried out to see the level of importance of the product based on the application of aesthetic and ergonomic art. Product design was designed using Autodesk Inventor software. Then the last process, which is making prototypes of plastic waste processing equipment in accordance with consumer needs. By doing this research it is hoped to be one alternative in dealing with the problem of plastic waste through the creativity of its users in producing recycle products in order to be useful and have a sale value.

Keywords: plastic waste pollution, plastic recycle process, kano, quality function deployment

043

Mitigation Of Supply Chain Risk Using HOR Model at PT. Sumber Karya Indah

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Abstract, In supply chain activities has always been a potential risk arising, therefore risk management is very necessary for the handling of risk. In the company that produces women handbags such as PT. Sumber Karya Indah, in its supply chain activities, has the opportunity to arise risk. Therefore, it is necessary to do risk analysis and design of mitigation action, to reduce the risk of interference that is likely to arise in its the supply chain. The research was conducted using a house of risk model consisting of 2 phases. The first phase is risk identification and risk agent, which is then done a measurement of severity and occurrence level as well as a calculation of aggregate risk priority (ARP) value. The second phase is risk mitigation planning. Data retrieval methods are performed by interviews, observations, and historical data as supporting data. After the research has been obtained results that there are 28 risk events and 32 risk agents. There is 7 mitigation action that can be used and expected to mitigate risk in its supply chain. The result is the House of Risk Assessments Management Template using VBA Macro Excel.

Keywords: Supply Chain, ARP, HOR, Risk Mitigation

044

Quality Control Analysis of Tube Sandwich Using Six Sigma Method in PTXYZ

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Abstract. Quality is one of the key aspects in every production activity. This research aims to improve the quality of the product on tubing machines used Six Sigma method with DMAI phases. At phase of define, the problem is found at tubing machines with

defects glue, printing, improper size and paper extension. In the measure phase, DPMO value is 3691 and sigma value is 4,18. In the analyze phase, the most dominant problem type of defects are glue and printing, will be analyzed according to machine, material and method factors. In the improve phase, the cause of problem will be sorted from the highest to the lowest uses FMEA method. Causes of glue problems are paper rolls are from many suppliers, the extruder needs time to be stable, the age of machine is old, piece of paper tucked in the knife bearing and not optimal material handling. The priority order of printing problems is not optimal material handling, piece of paper tucked in the knife bearing, the paper stuck in the printing unit, and ink are from several suppliers. Proposed improvements with 5W1H can be given according the order of root problems from the largest to the smallest.

Keywords: 5W1H, Defect Per Million Opportunities (DPMO), Failure Mode and Effect Analysis (FMEA), Quality, Six Sigma.

045

Determination Of Multi-Product Distribution Using Capacitated Vehicle Routing Problem (CVRP) and Product Cubication Dimensions Restriction

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Abstract. CVRP is one of the transportation problems with the characteristic of the limited capacity of the vehicle. PT. Triaksa Mitra Utama experienced transportation problems in the distribution of 3 types of paint products to 12 consumers, with 2 different units of vehicles. This research discuss how to determine the distribution route of paint products by considering the capacity of the vehicle based on weight and different cubication dimensions of the product. The method used for this problem is the Saving Clarke and Wright method besides that the Cube IQ software is used to loading products on the vehicle based on cubication dimensions. Besides being able to influence the process of preparing transportation routes, the results of the optimum loading process will also be used as a plan for product preparation in vehicle. The routes formed from the calculation results are classified into 3 clusters. Cluster 1 with route 0-H-K-D-I-L-O, cluster 2 with route 0-G-F-J-E-C-O, cluster 3 with route 0-A-B-O gives a total mileage of 288 km and a travel time of 695 minutes using the same vehicle by *colt diesel engkel (CDE)*.

Keywords: CVRP, Saving Clarke and Wright, cubication dimension, loading process, Cube IQ.

046

Allocation of Maltodextrin Raw Material Orders by Fuzzy Analytic Network Process (FANP) and Goal Programming Methods (Study Case: PT. Neopangan Selaras Indonesia)

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Abstract.PT. Neopangan Selaras Indonesia is a food company that produces seasoning. One of the raw materials with the most frequent problems with delays and wrong allocation is maltodextrin, which is 72%. To determine the need for evaluation for each maltodextrin supplier using the Fuzzy Analytical Network Process (FANP) and Goal Programming methods. The existence of a method of merging these two studies. Determination of the proportion of the criteria and sub-criteria in the company by minimizing changes in each assessment. The FANP method in this study produced criteria and assessments of each supplier that could be considered in the allocation of the purchase of raw materials. The best supplier of weights was obtained by PT. Indo Asia Tirta Manunggal (0.4421). The Goal Programming method provides a solution by minimizing total costs by considering the price of each supplier, maximizing the purchase value by considering the weight generated. This method produces a solution that produces a total cost of 0.134%, increasing the purchase value of 1.143%.

Keywords: Fuzzy-ANP, Goal Programming, Order Allocation, Supplier Selection

Integration of conjoint analysis and QFD for new product development in manufacturing small and medium enterprises (case study: a food company)

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Abstract. Basically, small and medium enterprises (SMEs) in Indonesia are weak in innovating product development in accordance with customer's needs, making it difficult for SMEs to penetrate the market. This paper discusses the application of integration between Conjoint Analysis and QFD in the development of a new product from SME. The research was conducted at a medium-sized company, which produces a variety of "dimsum" frozen food products. Finally, the integration of the two provides a double benefit in the research and development stage of the manufacturing SME so that a new product that is developed can really be realized. The final design results obtained two new product segments according to its target market, namely for the economic and premium segments.

Keywords: Integration, Conjoint Analysis, QFD, New Product Development, SME.

Reducing Waste in Manufacturing Industry Using Cost Integrated Value Stream Mapping Approach

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Abstract. In recent years, every manufacturing industry has tried to eliminate various wastes in its operations. The effect of wastes will have a direct impact on increasing costs. Therefore, the cost approach is integrated into the value stream mapping to obtain an illustration of the cost losses incurred. This paper describes how to apply integrated value stream mapping with the cost approach. Finally, this approach is

considered effective in mapping the amount of cost losses incurred due to the wastes that occur along the value stream.

Keywords: waste, integration, value stream mapping, cost approach

049

Measurement of Feasibility and Risk Level on Modern Embroidery Kebaya Boutique Establishment in Jakarta

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Abstract. Business X is a creative business in Kebaya clothing, fabrics, and modern embroidered batik. The survey states that many medium business category turn into micro businesses due to the increasing number of imported textile products, resulting in a narrower market share. Under this condition, the company decided to create a Business X boutique considering that the products were not sold alone but at department stores that has a very high competition because of the large apparel industry continued to expand its business. In this paper, a feasibility analysis and the risk level measurement of the opening of this boutique are carried out. The market aspect begins with the distribution of questionnaires to obtain the demand and income projections. The technical aspects is for determining location using factor rating, layout and funding needs. Financial aspects estimate sales revenue and cashflow. The calculation results show $NPV > 0$, PBP in 2,989 years, and $IRR(40\%) > MARR(10.99\%)$, it can be concluded that the Business X boutique establishment is feasible. The risk is 21.7% and with a MARR (10.99%), the rate is 32.69%. Based on the rate value that is smaller than the IRR(40%) and $NPV > 0$, then by observing the level of risk, this business is feasible.

Keywords: Feasibility Analysis, Risk Level, NPV, IRR, PBP

Integrated model for multi-criteria supplier selection and order allocation problem

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Abstract. This paper discusses an integrated model of selecting suppliers and order allocation for a company that wishes to decide the quantity to be ordered from each supplier on the basis of some qualitative criteria. Since each supplier may have a different performance with respect to these criteria, an integration of analytical hierarchy process and linear program model is proposed to solve the problem in two stages. In the first stage, suppliers are evaluated based on qualitative criteria to consider both tangible and intangible factors in choosing the best suppliers. The output of this stage is the final score of each supplier. In the second stage, a linear programming model is proposed to placing the optimum order quantities among them such that the total final scores of suppliers become maximum. The mathematical programming model is validated through numerical analysis, and the computation result shows that the model is effective and applicable.

Keywords: supplier selection, order allocation, multiple criteria decision making, analytical hierarchy process, linear programming.

The Effects of Sleep Quality on Vigilance and Driving Performance in a Train Simulator

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Abstract. Train driving activity requires high vigilance to prevent human errors that can lead to accidents. One factor mentioned to reduce vigilance is poor sleep quality. But so far, not many studies have proven the effect of sleep quality on vigilance. Previous researches did not clearly conclude this effect. In addition to being vigilant, sleep quality is also thought to effect driving performance because of the close

relationship between vigilance and driving performance. Based on those backgrounds, this study aimed to prove the effects of sleep quality on vigilance and driving performance through experiments in a train simulator under monotonous condition, which in some studies is also proved to reduce vigilance. This study involved eight male subjects who experienced two good and poor sleep quality treatments. Through vigilance measurements with Psychomotor Vigilance Task (PVT) and electroencephalograph (EEG) using Multivariate Analysis of Variance (MANOVA) with significant value 0.05, it showed that there were effects of sleep quality on mean reaction times, minor lapses, mean relative band powers for theta, and speeding simultaneously (p -value = 0.015). The results of paired sample t-tests also showed the effects of monotonous driving conditions that affect mean reaction times (p -value = 0.01 on good sleep quality; p -value = 0.000 on poor sleep quality) and minor lapse (p -value = 0.000 on good sleep quality, p -value = 0.045 on poor sleep quality) at the beginning and the end of the experiment. From this study, it can be concluded that the quality of sleep affects vigilance and driving performance, so that poor sleep quality decreases vigilance.

Keywords: vigilance, sleep quality, monotonous, Psychomotor Vigilance Task, electroencephalograph

052

Web-Based Application of Reliability Availability Maintainability and Cost of Unreliability Method to Analyze Performance of the Machine

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Abstract. Maintenance is important to do in order to maintain or improve the function of the equipment to work optimally. One factor that support the maintenance activities is machine reliability. Higher reliability can reduces process costs. Conversely, engine failure can reduce production output also the business benefits for the community. In business terms, the problem of controlling the Cost of Unreliability (COUR) of equipment and process failure is just a waste of money. Unreliable index costs are simple and practical reliability tools for converting failure data into costs. A

long stage in manual calculation of COUR and RAM analysis with more than one applications used as work tool, therefore designed a web-based application with more complete features that can be used to analyze COUR and RAM. This application will simplify the calculation process, analysis, and results management, so it will help maintenance analysts in doing their work. This application can determine the maintenance policy, predict the performance of machine's reliability, availability and maintenance capabilities. As well as calculating costs from reliability issues.

Keywords: Application, reliability, COUR, RAM

053

Feasibility analysis and website design of Najwa Collections fashion products

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Abstract. E-commerce is one of the economic activities supported by Internet infrastructure with extensive segmentation and implementation. With data showing Internet users and shopping interest of Internet users, of course, this will be an opportunity for Small and Medium Enterprises (SMEs) to use information technology for business progress so that they can do marketing towards the global market. Najwa Collection is one of the women's clothing industries in Bandung and has been established for ten years. It will conduct online business development with e-commerce systems to increase profits and develop market potential in the meantime. The purpose of the feasibility calculation on the development of this system is to find out whether the business that will be developed from offline to online is feasible to run. Besides, there is a website system design from benchmark results for the online sales process. Next, the feasibility analysis calculation is obtained based on the financial, technical and market aspects developed. The final result of the feasibility analysis is NPV of Rp. 945,048,053. PBP values obtained are four years with an IRR of 32%, which is feasible to run because of $IRR > MARR$ (10.50%).

Keywords: E-Commerce, Feasibility Analysis, NPV, IRR, PBP, System Design

Evaluation of Effectiveness and Cost of Machine Losses Using Overall Equipment Effectiveness (OEE) and Overall Equipment Cost Loss (OECL) Methods, A Case Study On Toshiba CNC Machine

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Abstract. In a manufacturing company, the machine is one of the most important elements in their production process because machine failure can stop the production process. Therefore, the initial step to minimizing losses caused by machine failure can be done by evaluating the machine condition. Evaluation of machine performance is carried out by measuring the effectiveness of the machine with the Overall Equipment Effectiveness (OEE) method. Based on the calculation result, the OEE value of the machine is 68.63% and this value still under the Japanese Institute of Plant Maintenance standard. Six big losses analysis is performed to determine the biggest loss that affects the effectiveness of the machine. The result of six big losses calculation shows that the most influential factor for the low OEE value of the machine is Reduced Speed Loss (39.12%). Causal analysis with a fishbone diagram is done to find out the causes of the highly reduced speed loss. To calculate the equipment cost loss use the Overall Equipment Cost Loss (OECL) methods. The total of the overall equipment cost loss is IDR 849,839,947.53.

Keywords: OEE, OECL, six big losses, fishbone diagram, machine performance.

The NPD Process Design Canvas: Tool for NPD Process Creation

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Abstract. New Product Development (NPD) is important for the growth and sustainability of companies. One of the most important factors in NPD is the management of the NPD process. NPD process is believed to be a crucial factor in NPD

success. NPD process may vary between organizations. Companies must be able to implement the most suitable NPD process. Therefore, the design of NPD process is crucial. This article proposes a tool that can support organizations to design their NPD process. The tool is conceptualized based on the sequence of NPD design method. The tool is based on the form of 'space of elements' and called the NPD Process Design Canvas. The concept has been tested and several feedbacks identified. Some of the pros are its ability to capture the risks and elements of process design. Some of the cons are the variation of detail and inability to describe the existing process. Based on the feedbacks, improvements proposed are the addition of specific 'iterations' and 'reviews' analysis in the canvas, and the paradigm of the canvas as the integrator of several analyses carried out based on the sequence of NPD design method. Further research may focus on the testing of a more sophisticated canvas implementation and how the tool considers the position of companies' existing NPD process.

Keywords: New Product Development, Process, Design, Tools

057

Preparation for the Implementation of ISO 21001: 2018 Using Assistance Program: Case Study of Telkom Vocational High School

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Abstract. As a private school, Telkom Tourism Vocational High School must have competitive advantages that can increase the trust of prospective students and the community. One of the efforts to build excellence in education services is to implement a Quality Management System standard that has been widely proven and recognized. Currently, the school plans to use a standard that relevant for the educational organizations, ISO 21001:2018. The school has tried to start preparations, but the process has many obstacles to establish and implement the right strategy. Assistance Program is given as a strategy for the successful preparation of the implementation of ISO 21001. The questionnaire is used to measure the school readiness index through measuring the Implementation Team's availability for understanding and meeting the requirements in ISO. The measurement results will be analyzed using the modified Importance Performance Analysis method. The results of the analysis are mapping the level priority of clause factors that will influence the implementation of ISO 21001. Clauses 4, 6, and 9 have critical priority because of its'

low readiness and understanding. Treatment in the form of training and practice and consultancy to deepen the Context of the Organization, Planning, and Performance Evaluation is needed as further action.

Keywords: Vocational School, ISO 21001, Quality Management System, Importance Performance Analysis

061

Safety stock analysis of ship fuel in shipping company (Case study: white oil ship PT. Pertamina (Persero))

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Abstract. Currently, fuel supply of PT. PERTAMINA (PERSERO) SHIPPING for each trip with a predictive safety stock to supply as much as 40% of the total fuel provided. The fuel that is stored for too long will also affect the sediment, thereby reducing the performance of the ship's engine in the long run. Optimization was conducted by using the safety stock formula which influenced by the uncertainty of demand and the uncertainty lead time (sailing time) of the ship. Calculations are based on demand from three distance routes that have the highest frequency assignment. Calculations are performed by comparing the safety stock in the four conditions, namely: (a) the condition of safety stock with combination of three routes (heterogeneous); (b) the condition of the safety stock by successively using the distance 286 NM; (c) 320 NM; and (d) 536 NM. The results obtained by calculating safety stock with the heterogeneous condition was 81.44%; homogeneous conditions within the 286 NM; 320 NM; 536 NM were 15.2%; 7.3%; and 29.2% of the total fuel supplied. Thus, the safety stock application is done by plotting trend charts to get an increase of 0.056% for each NM.

Keywords: Fuel Supplies, Safety Stock, Voyage, and Storage.

Designing Templates to Support and Monitoring the Activities of Material Requirement Planning (MRP)

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Abstract The main purpose of this paper is to design a template based on Excel as a support and monitor the operation of the MRP system, as well as optimize inventory value.

The methodology done by identifying the MRP Objective targets that exist in the company and the raw material planning system process flow and comparing the achievement of the company's MRP objects with the results of calculations using templates.

The results of comparison between the achievements of 2015 and 2016, then it can be concluded that the *Excel template* can be used to help the SAP system to delete junk data (*fake*) due to indisciplin *user* in inputting data can provide better performance. From the comparism result with using Template Excel company can achieve CSL > 95%, CSL Infull > 95% and Warehouse Inventory Value reduce until less than IDR 300 billion.

Keywords: Material Requirement Planning, Inventory, MRP Objectives, Safety Stock

EPR Approach for Better Waste Management System for Mobile Phone Design in Indonesia

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Abstract. The influence of toxic electronic waste or electronic goods will occur if it is disposed of carelessly or managed in the wrong way. Open dumping and crude waste handling in landfill sites in Indonesia creating even more miserable situation (Damanhuri, 2010). Mobile phone or cell phone is considered as one of the fastest growing device in global society. More than 60% of global population have mobile phone, end even an individual may have more than one device. EPR could be taken as strategy in order to find better e-waste management of renewable and non-renewable resources specifically for Indonesia situation. EPR related action of WEEE in Indonesia is still uncertain especially for mobile phone product. It is observed that many used mobile phones are still disposed improperly by unauthorized party and may danger the people and environment. This study will observe how the mobile phone waste is handled by unorganized organization, how EPR is taken into account in mobile phone waste management system and what kind of solution that is based on EPR that could enhance environmentally save property of mobile phone design in the future, especially for Indonesia situation. It is important by considering Indonesian situation; the producers need to employ new design strategy not merely in order to meet regulation compliances but should extend the responsibility for better waste management friendly product design that is more suitable with Indonesia situation with minimum waste management infrastructure by involving End-of-Life Design Solution; better collection, separation, recyclability, reuse and ease of manufacture

Keywords: EPR, waste management, product design

064

Vehicle Routing Problem with Heterogeneous Fleet, Split Delivery, Multiple Product, Multiple Trip, and Time Windows: A Case study in fuel distribution

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Abstract. The distribution of fuel in Pertamina co. Ltd Yogyakarta region is carried out using three types of vehicles, namely vehicles with a capacity of 32 kl, 24 kl, and 16 kl. In determining the distribution route, the operator chooses the gas station based on the first order and the type of vehicle determined based on the vehicle's ability to maneuver at the gas station. The determination of the route has not taken into

account the time that affects the distribution, such as average speed, loading time, discharging time, and the time limit for completing the tour. So when in the high demand for fuel distribution, three gas stations are delayed from 29 gas stations in cluster I. This study analyzes the distribution of fuel in cluster 1 for Premium and Bio-Solar products. In determining the distribution route and distribution time using the VRP method by considering Heterogeneous Fleet, Split Delivery, Multiple Products, Multiple Trips, and Time Windows. The calculation is done using sequential insertion, where the selected customer is based on the smallest CT. The results of this study indicate that after processing, it was found that late customers were reduced to 1 in 3 late customers. Total mileage was reduced to 693.3 km from 701.5 km. The total tour completion time was reduced to 71,819 hours from 81,819 hours, and distribution costs increased to Rp. 20,754,119,875.00 from Rp. 18,511,210,625.00.

Keywords: Fuel Distribution, Vehicle Routing Problem, Sequential insertion, Heterogeneous Fleet-Split Delivery-Multiple Product-Multiple Trip-Time Windows.

067

Life Cycle Cost Analysis In Construction Of Green Building Concept, A Case Study

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Abstract. Based on data from the Green Building Council of Indonesia, more than one-third of CO₂ gas emissions worldwide are generated by buildings, it has an impact on the environment such as global warming, ozone layer depletion, and accumulation of waste. The concept of Green Building is considered very necessary to overcome global warming and improve energy and resource efficiency. In the process of building a building that is Green Building requires a relatively high cost when compared to conventional buildings. Therefore, the Life Cycle Cost (LCC) method is used to determine the total cost needed, the optimal cost of the building, the economic age of the building, the number of crew maintenance and the level of energy efficiency. The analysis using the Life Cycle Cost method requires several related costs such as Initial Costs, Maintenance Costs, Energy Costs, Replacement Costs, and Utility Costs. The analysis was conducted using the Present Worth method within a period of 8 years

from the start of building construction. Based on data processing using the Life Cycle Cost method, the optimal cost of a green building concept building is IDR 232,296,615,337 with the economic life of the building being 8 years, the optimal number of maintenance crews is 1 person and the level of energy consumption intensity is very efficient.

Keywords: Green Building, Life Cycle Cost, Economical Age, Present Worth Analysis, Energy Efficiency, Global Warming.

068

Analysis of socio-technical approach and Socio User Experience Network Analysis (SNA) to address objections ergonomic loom in the village of Lumban Suhi-Suhi

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Abstract. Technological change is a good thing, but not necessarily be accepted by users. There are several factors that can cause rejection of the technology by a community. This paper aims to present a socio-technical analysis of rejection looms with ergonomic design in the village of Lumban Suhi-Suhi, Samosir Island and efforts should be made so that the tool can be accepted by the community. To achieve this objective, conducted a socio-technical approach using Socio Network Analysis (SNA) and the analysis of User Experience (UX). Data on the UX include effectiveness, efficiency, ease of use, usability, satisfaction, and attractiveness used to assess the performance of looms and looms ergonomic long as a technical comparison. While the relationship between the individual craftsmen were also collected to determine the most influential figures in the environment craftsmen as materials for SNA. The results showed that there are some gaps UX values between the two types of tools. Recommended strategy is to change the seat backrest ergonomic loom and perform social approach on three key figures in the community.

Keywords: User Experience, Socio Network Analysis, Ulos, Ergonomic Looms, Technology Rejection

The design and implementation of a performance measurement system to pursue school excellence: the integration of Indonesian National Accreditation Standard into Baldrige Education Criteria

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Abstract. In order to measure the school performance, Indonesian educational institutions used to pay attention only to the result of National Accreditation by the Government. However, it is not sufficient if they want a higher performance achievement. In pursuit of excellent school, educational institutions also need to make continuous improvements to enhance its performance and strive to deploy any initiatives that can help the schools to reach their excellent performance. This research aimed to develop an assessment tool for measuring the performance of excellent school, in which the design integrated the current measurement system (i.e. National Accreditation System) into the existing performance excellence model (i.e. Malcolm Baldrige Education Criteria for Performance Excellence). The integration is necessary due to the needs that the current measurement system should be upgraded with any performance excellence models, but the design itself will retain the local content that exists in National accreditation System. The first outcome of this research was a performance measurement model which is packaged into an online software called *KiSekul v.1.0* (first edition). Then, the implementation of the design was done in two Indonesian high school institutions, namely SMAN 15 Surabaya and MAN Lamongan. The results showed that both schools have performance at advanced stage level. In terms of maturity level, SMAN 15 Surabaya was at the stage of benchmark leader, whereas MAN Lamongan was categorized as a world leader. As the final result, the evaluation was also made to the design and results of the implementation, hence its revision, *KiSekul v.2.0* (second edition) was designed as a form of continuous improvement to revise the initial design of *KiSekul*.

Keywords: performance excellence, excellent school, National Accreditation Standard, Baldrige Education Criteria, Indonesian high school institution

Determinants of Donation Behaviour on Flood Disasters in Indonesia

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Abstract. This study used Structural Equation Modeling to apply Theories of Planned Behavior to flood disaster donation by adding attitude factors to charitable organizations, advertising, and flood victims. The proposed framework is tested to investigate the relationship between factors in forming intentions and in influencing behavior. This finding found that subjective norms, attitudes toward advertising and attitudes towards charitable organizations contributed to the intention of donations, while the flood victims and perceived behavioral control did not have a significant effect on donation behavior.

Keywords: Donation, Intention, Natural Disaster, Flood

Blueprint of Perceived Convenience Indicators towards the Quality of Infrastructure of Banking Company

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Abstract. Every company is required to have good management to achieve vision and mission by breaking down the step and approach into various segment and roadmap. The service infrastructure function is an important milestones in the company's business continuity because it is directly related to the customer, which must be carried out strictly and considerably with the existing business and IT needs. In general, enterprise architecture become the popular method that can be used to harmonize business strategies with information technology leading to the sustainability of company existence based on optimized satisfaction level, expected result of profit and proper degree of growth. The framework used in this study is TOGAF due to its flexibility so that it can be used with various other methods. In this case, through

matrix satisfaction as an improvement of logical model to accelerate and advance the identification phases of information system, business and technology. The questionnaire was used by implementing ServQual dimension with a total sample of 100 respondents. IT Roadmap and blueprint will produced regarding the description of the target conditions proposed to optimize service infrastructure function and the design of EA blueprint will be used as a guideline in adjusting to the business needs.

072

Designing the Smart Health Function towards Puskesmas (Citizen Health Centre) based on Smart City Concept

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Abstract. According to Regional Regulation No.23 of 2014 Article 386 until 390 which requires all institutions to adopt architectural designs to bring up architectural innovations. A smart city is a concept of the application, development, and implementation of technology that is applied to a region (especially urban area) as a complex interaction between the various systems in it. One important development area to be developed is the health sector. In Indonesian constitution of article 28 H and 28 I that the state must guarantee the lives of all its citizens, include by providing appropriate services such as health services. This study aims to design an enterprise architecture in health functions within Citizen Health Centre management system based on the Smart City based on the TOGAF ADM framework, so that it is expected to help the city government work program in realizing smart city and business activities that currently run can be supported by information systems so as to increase satisfaction Bandung City communities. Based on the results of research on public health functions at the Bandung City Health Office obtained a design or blueprint that focuses on the preliminary phase, architecture vision, business architecture, system architecture, information technology, opportunities and solutions, and migration planning.

Scheduling and Allocation of Airport Service Manpower by Considering Time and Work Constraints using M-MAPTWTC Method: a Case Study

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Abstract. Airport Service workforce scheduling and allocation is important because the handling of ground handling jobs is also increasing. The system and allocation of workforce scheduling in the company that is currently being carried out is based on trials only (trial and error), this causes frequent shortages or excess labor. This can happen because in scheduling and allocating workforce has not considered the time span between the preparation time and flight time, as well as the work team constraints. To overcome the weaknesses of the system of scheduling and allocation of labor previously in this thesis, scheduling and allocation of labor is done by considering the time span between preparation time and flight time. The method used is using the m-MAPTWTC method. The results of a case study in a company using the m-MAPTWTC method show that the number of jobs done in the period 04.00 - 12.00 WIB as many as 80 flights can be done by 20 teams whereas previously the same number of jobs required 24 teams. With the m-MAPTWTC method it is also obtained the team allocation and work order for each job by each team.

Keywords: Scheduling and allocation of labor, job-teaming constraints, time span, m-MAPTWTC method.

Investigating Supply chain issues in the food processing industry

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Abstract. With the recent increase in the complexity of food industries, numerous issues including rapid changes in taste and demand for food supplies are on the rise, particularly in developing countries. **Aim:** This research study was aimed at investigating supply chain management issues in food processing industries and influence of these factors on business performances. **Methods:** Research data from respondents was collected using online social platforms and Statistical Package for Social Sciences (SPSS) was employed to analyses the data. **Results:** Research findings indicated that factors including human resource management, technology, facility issues, and customer relations negatively influence business performance. **Conclusion:** Findings also reflect that human resource management issues represent a significant driver for improving performance of the food industries. This research study offers insight regarding barriers and drivers influencing the operations of food processing industries and what measures should be taken accordingly.

Keywords: Supply Chain Management Problems, Business Performance, Food Industry

075

Productivity analysis stevedore a descriptive analysis method with integration, importance performance analysis, quality function deployment (Case study: PT. Port Indonesia III (Persero) Branch Gresik)

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Abstract. Gresik port is a port with a very strategic location in the region Gresik industrial area, productivity can be achieved with the implementation of a better way of working, organized, effective, efficient, creating something better. the productivity of loading and unloading the target of service to satisfaction of stakeholders, how to determine the factors that influence and by improving the productivity of loading and unloading at the port of Gresik. With descriptive analysis method to know the level of EF: BT is still yet to be achieved was based stevedoring productivity director general of sea transportation standards already achieved. Methods importance performance analysis is used to determine the perception of the services to be improved the speed in the process of loading and unloading, the availability of facilities and port equipment, fleet readiness ocean going ship expeditions, circumstances and facilities yard, competency officers loading and unloading, the speed of completing complain, system lighting port. Methods of quality function deployment used to determine

priority in handling an increase in productivity of loading and unloading at the Port General Gresik

Keywords : Productivity Stevedoring, Descriptive Analysis, IPA and QFD

076

The Challenges of System Usability Scale (SUS) for Testing the Interface of Android Mobile Application of Hiking

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Abstract. E-commerce or online marketplaces are increasingly popular and raise high attention from audience, which has been shown through large number of transaction, comparison, collection and many more interaction in the online activity. Due to the huge benefit and potential income, many startup see the opportunities to be part of it by establishing online service and product in the form of web application. It is very important to take note that user acceptance become the essential factors that influence the successes of product or service implementation, which mostly indicated through good design of UI (User Interface) and UX (User Experience) of the applications. Thus, this study want to explore the user acceptance by utilizing usability testing with five scale mechanism through 8 (eight) participant from various background. The result indicated good level of acceptance with average score of 80.3 from ten type of question about the characteristics of usability.

Factors influencing customers' satisfaction: A case study of SMEs from Pakistan

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Abstract. With the recent advancements, the organizations are gradually shifting their focus on business growth and profitability via improved customer satisfaction. This study aimed to investigate factors influencing customers' satisfaction in small and medium enterprises in the context of a developing country. Based on a questionnaire survey, research data was collected from 516 respondents. SPSS based Structural Equation Modelling (SEM) was utilized to analyse the collected data. Research findings from hypotheses testing reflected that all six factors affect customers' satisfaction. However, personal experience, attitude and inconsistency significantly influence customers' satisfaction, whereas, expectations and performance have a relatively less significant influence on satisfaction of the customers. Results obtained from this research study can be utilized to better understand the perspective of customers.

Keywords: Customer Satisfaction, SMEs, SEM, Developing Country

A Multi-objective model for a Chemical Industry considering economic risk and environment

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Abstract. The research proposes a multiple objective model considering economic risk and environment in the chemical industry. The economic order quantity (EOQ) model is used for the economic aspect which considers the transportation modes and all unit quantity discount. The objective of this research is to optimize economic, safety and green performance in terms of cost minimization, risk control, and carbon emission reduction. A solution approach to obtain the optimal solution is proposed. A numerical example is performed to demonstrate the applicability and efficacy of the procedures. **Keywords:** EOQ model, transportation, quantity discount, multi-objective optimization, chemical industry.

079

Development of waiting time predictor based artificial neural network

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Abstract. Queue is a part of our daily life. Everyday people have to wait in queue for services such as waiting for train, buying a cup of coffee. Unfortunately, it is difficult to eliminate waiting time in queue because it is very costly to do. Some business provides queue-length to each customer for reducing customer anxiety, but the given queue-length is often larger than the actual queue-length. Customers estimated the waiting time from the given queue-length and decide to leaves the queue, so the business may lose customer to their competitor. This paper aims to propose the design of the system that can provide the accurate estimated waiting time to each customer. The proposed system constantly updates queue-length and service rate. The updated queue-length and the updated service rate are used as the input of Artificial Neural Network (ANN) which is the waiting time predictor in the system. ANN with the proposed system is compared to the other predictors such as linear regression, the historical based predictor, Queue-Theory predictor. The result shows that ANN with the proposed system outperforms the others, and more than 95% of predicted waiting time by ANN is accurate within 5 minutes tolerances.

Keywords: queuing system, queuing theory, waiting time prediction, artificial neural network, delay estimation

Development Strategy of The Virgin Coconut Oil Industry and Coconut Farmers Partnership System in Padang Pariaman Regency

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Abstract Coconut is a superior commodity in Padang Pariaman Regency, which is spread in almost all districts. The area of the plantation of coconut is 40755 ha, with the level of productivity of 1,363 tons/ha are cultivated by 97094 farming families. The purpose of this study is to formulate a VCO industry development strategy and a partnership system for coconut farmers in Padang Pariaman area, that designed with a system approach through the integration of the coconut farming sub-system and coconut processing sub-system to maximize the profits from the coconut farming business and ensure the fulfillment of capacity VCO production. Determination of the VCO industry development strategy using SWOT analysis and AHP techniques. Based on the IFE and EFE matrix, the position of the VCO agroindustry is in cell 5 (2.95; 2.59). The strategy that can develop is a growth strategy through horizontal integration, namely establishing a partnership between the VCO industry and coconut farmers as suppliers of raw materials to ensure smooth production. The coconut farmer's partnership was designed through a systems approach using the Interpretive Structural Modeling method. The purpose of the partnership system is to increase mutual trust and mutual benefit between the VCO industry and coconut farmers. Increased consistency of farmers in planting coconuts and the availability of quality coconuts is a measure of the success of the partnership system.

Keywords: VCO, SWOT, AHP, Partnership, ISM

Development of Low-Cost Multi-Input Automated Storage and Retrieval System (AS/RS) for Educational Purposes

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Abstract. Nowadays, learning about automation technology in higher education is important to produce graduates who are ready to work. However, in developing countries, this learning is often constrained by the problem of limited costs and places to procure practice tools. To overcome this problem, this research focuses on developing automation technology learning tools that are inexpensive and less space. The object is Automated Storage and Retrieval System (AS / RS) which is commonly used in various industries for material handling but is too expensive and large for learning. The AS / RS developed is an Arduino based AS / RS with multi-input modes that are pendant, coordinate, and RFID. The AS / RS is designed to facilitate students to learn the work system, electrical circuit, and programming algorithm. The research was held in several stages: problem identification, electrical hardware design, mechanical design, algorithm and programming design, prototyping and testing. The AS / RS prototype only costs \$ 230 and requires 600 x 400 x 550 mm space. The testing was carried out on functionality, usability, and educational ability using task completion and essay post-test method. Based on the test, the three aspects of the designed AS / RS were very satisfying.

Keywords: Automation, Low Cost, Multi-input, Automated Storage and Retrieval System, Higher Education

082

Business feasibility analysis and website based e-commerce system design using system usability scale on Zauber Denim Company

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Abstract. Zauber Denim Company (Zauber) is a business that initiated by 3 (three) students from a private university in Bandung. This business is engaged in men's clothing with the main product is jeans. Zauber uses selvage denim for raw material to produce the jeans. Currently, Zauber has a location that will be an office and a warehouse of raw material and product, but Zauber can't determine how big is the demand and what kind of operational activities that can support the continuity of this business. The product will be sell using online platforms such as websites and other social media. Therefore, Zauber needs to analyst the feasibility and designing websites for this business. The feasibility analysis is carried out based on market analysis and

technical and operational design. Methods used for calculated the feasibility are Net Present Value, Internal Rate of Return, and Payback Period. While for the website design, usability testing is done using the System Usability Scale. Based on the result of the feasibility analysis, this business is feasible to run by Zauber with the NPV value is 71,563,355 IDR, IRR value is 20.44%, PBP value is 4.50 years, and SUS score value is 68.92.

Keywords: Feasibility Analysis, Website Design, Usability Testing

083

Workplace Design Process at Indonesian Manufacturing SMEs

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Abstract. The workplace design process must not be ignored to get a good workplace. A good workplace can support occupational health and safety and comfort of workers while doing work so that it is expected to increase their work productivity. Unfortunately, the environmental conditions of workspaces in most SMEs (small and medium enterprises) in Indonesia do not meet the standards. Besides, production machinery, raw materials, and finished goods are placed irregularly which has the potential to inhibit material transfer. This study is aimed at obtaining an overview of the workplace design process carried out in Indonesian manufacturing SMEs as a first step to finding a suitable workplace design process model for manufacturing SMEs in Indonesia.

Keywords: Occupational Safety and Health, Productivity, Small and Medium Enterprises, Workplace, Workplace Design Process

A System Performance Analysis of Ship to Shore Operation Considering Crane Availabilities using Simulation Approach

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Abstract. Indonesia which consists of many islands has difficulty in establishing national distribution logistics. Because of the sea traffic expansion in Eastern part of Indonesia, the existing port is limited and cannot handle such a problem. To accommodate this problem, new port is built in Surabaya, East Java, Indonesia. However, the new port usually faces to handle an unlimited demand with limited resources. This paper evaluates the port productivity of container loading and unloading activities. Equipments used in container loading and unloading at this port include cranes and other equipments. Because of many complexities in the observed system, discrete event simulation is used to evaluate the terminal operation performance. The simulation results show that STS crane quantities and formations for loading and unloading activities are affecting the new port productivity.

Keywords: Container Terminal; Discrete Event Simulation; Port Logistics; Ship to Shore Crane;

Comparison analysis of tajuk's onion production efficiency (allium ascalonicum) in Rejoso sub-district – Nganjuk

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Abstract. Nganjuk is one of production area for Tajuk's onion. This research aimed to compare the results of technical and allocation efficiency from Tajuk's onion production in rejoso sub district, whether there are any differences or not. In addition,

it will be used by the researcher to determine the factors which cause inefficiency and find sorts of way to fix the problems. The method used in this study was DEA and would be continued by conducting comparative test. The results in this study showed that there was difference between technical efficiency and allocation efficiency of Tajuk's onion production in Rejos Sub-District on June-September, 2019, showed that W value on Mann Whitney test met 67,94 percent, contained sig value 0,000. The three main factors which caused technical inefficiency were pesticide, water flow, and the land area. Meanwhile, allocative inefficiency is caused by certain main factors; pesticide, seeds, land area, and working hour. The pesticide usage can be dealt by conducting studies and comparative study among farmers, remeasured the land area of sewer and flowerpot along with plants gap; making new irrigation; using stored up seeds only before the harvest time, and allocating the numbers of labors that arranged by land capacity.

Keyword: Onion, Data Envelopment Analysis, Efficiency, Production.

086

Assessment Of Safety Culture Maturity Level In Production Area Of A Steel Manufacturer

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Abstract. Safety culture is widely known to have the ability to encapsulate all factors including perception, psychology, and attitude. This ability serves as an important role for organizations in occupational safety and health. Further, this ability is used as an effort to reduce the risk of accidents. One of the efforts made is to measure the level of maturity of the safety culture in the steel manufacturer production area by involving the variables of safety culture, namely commitment, leadership, responsibility, competence, engagement & involvement, information & communication, risk, and organizational learning. This study aims to measure the level of safety culture maturity in the activities production area of steel manufacturers. Data collection was carried out by distributing questionnaires with a purposive sample of 107 workers. Two expert judgments are involved as determinants of the safety culture variable weights using the AHP (Analytical Hierarchy Process) method. The results showed that the level of safety culture maturity in the production area of steel manufacturer was 3,64, which falls in the proactive category. The priority for improvement of safety culture variables starts from the leadership to the information & communication.

Keywords: Analytical hierarchy process, Occupational safety and health, Safety culture, Safety culture maturity level

087

Using the Bees Algorithm to solve combinatorial optimisation problems for TSPLIB

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Abstract. The Bees Algorithm (BA) is a metaheuristic algorithm to find good solutions to optimisation problems in reasonable computing times. This paper is the first to report on the use of the BA to solve 9 combinatorial optimisation problems (COP) with more than 100 cities from TSPLIB rigorously to test the performance of the algorithm. The work employed a basic version of the BA for COP and TSPLIB datasets involving between 100 and 200 cities. The results obtained show that deviations from the best-found tour lengths for the datasets with 100 cities and 200 cities were approximately 2.5% and 7.5%. The reason for this jump in deviations was that the number of iterations was kept constant for all experiments while the solution space increased factorially with the number of cities. This research can be replicated and modified through Google Colab.

Keywords: bees algorithm, combinatorial optimisation problem, metaheuristics algorithm, travelling salesman problem.

089

Stress and Cross Browsing Testing for Educational Start up Website Application

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Abstract. Education is a primary need to fulfill needs in a whole among people to improving acknowledges, and binding skill. Facilities to improve acknowledges have been varied, for example, program lesson, online learning video, and formal education in every schools that have been implemented. But there are weaknesses to improve, such as undistributed educational, unreachable economic, less learning atmosphere that's made less attractive students, and a system educational non formal with a manually technical. Sinau Yo developed a website to help those problems, in terms educational administration. Sinau Yo has segmented user, there are students and teachers. The Sinau Yo product offers the main feature to creating contract between students and teacher, in a place student had been choose called Sinau Offline. Sinau Offline was developed to help with pleasant learning problems, and prices that can be reached by students. Sinau Yo used a prototype model as an application development and BMC to develop the Sinau Yo business model. Tests carried out include stress tests to measure system capabilities, cross browser tests to measure website suitability in each browser, and a test scenario to measure each process that occurs.

090

Integrated FMEA-MCDM For Prioritizing Operational Disruption in Production Process

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Abstract. The more complex the production system of a company, definitely makes it sensitive of change or known as disruption. Disruptions always occur in production process and also cause productivity decrease. If there are any kind of disruptions occur, so the decision maker have to prioritize it appropriately. The risk is going to be greater as a consequence when the priority made is false. FMEA is one method that is often used for evaluation and prioritization, especially failure as one type of disruption to minimize risk which can be adopted to assess and evaluate disruptions. The FMEA has some shortcomings including it is not considering the importance of each factor, not considering uncertain information from expert, not considering the cost as one of the criterion considered, and the level of severity is hard to measure, because on different objects can be measured by different aspect. Therefore, this research aims to develop FMEA model for prioritizing disruptions in production process. The model

can improve some shortcomings of conventional FMEA. In achieving this goal, several methods are integrated including Analytical Hierarchy Process (AHP) which aims to determine the importance weighting of RPN element factors. In addition, this study uses the Technique for Order Preference by Similarity to an Ideal Solution for prioritizing disruption. Rough set also uses as a method for aggregating opinion of experts, and also uses for improving uncertain information. The model also considers loss revenue as aspect to measure severity level of disruption in determining prioritization.

Keywords: FMEA, Loss Revenue, Uncertain Information, Operational Disruption

093

ITSM Analysis using ITIL V3 in Service Operation in PT. Inovasi Tjaraka Buana

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Abstract. PT. Inovasi Tjaraka Buana is a company in ISP (Internet Service Provider) sector that uses information technology to sustain activities the company. At this time the company is experiencing scaling-up, which is a drastic increase in the number of user of internet services, and coverage areas that make companies have to develop for various aspects of the company. The problem is that companies cannot at this time balancing service operations when handling an incident that occurs with drastic addition of the number of users and the amount of coverage area. To solve the problem, it is necessary to implement Information Technology Service Management (ITSM). The method used in this research is data collection by interview and observation techniques. This research will produce Incident Management Flow and Problem Management Flow. ITIL, which is a framework that illustrates best practices that focus on managing IT services, IT development and operations, which can help companies to overcome problems, so the company can apply it in order to balance service operations when handling incidents that occur.

Keywords: ITSM, ITIL, incident management flow, problem management flow.

Integration of Balanced Scorecard and Game Theory for Business Entity's Performance Measurement.

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Abstract. Business management faces serious challenges in a severe competition especially in the era of disruption. The development of television business in Indonesia is getting higher by years. Therefore, to be able to enter and to win in this business competition, improving company management is an important factor to consider. Companies need a new strategy to face this competitive competition. To be particular, performance measurement is a prominent tool to measure a company performance. In this study the authors propose a BSC and Game Theory, hereinafter is referred as GT, integration model that assumes a measure of disputes between decision makers in making decisions. The main process of integration is within the process of determining the weight of each perspective by using Analytical Network Process or in short ANP to evaluate and measure performance in the company. Collaboration between decision makers or a number of different players is expected to help find the best strategy by comparing the choice of strategies in the relevant BSC perspective. Moreover the aim of this task is also to determine the most accommodating and representative strategies to the preferences of the players involved in performance measurement. The results of performance measurement from each strategy of the decision maker have analysed in the GT matrix payoff. It is shown that the Nash Equilibrium value for each decision maker with a relative score of performance measurement is 81.05% after integrating BSC and GT. This is a win-win solution for systematically finding strategies in performance measurement that involves more than one decision maker.

Key words: Balanced Scorecard, Game Theory, Performance Measurement, Analytical Network Process

User Interface Design in Supply Chain Risk Assessment Of Excel-Based Wooden Toy Industry Using WFMECA Method

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Abstract. The supply chain is a system in which the flow of materials, information and money moves from suppliers to end customers. Therefore, its role is very important in a company. However, the many entities involved in the supply chain make it easily exposed to various internal and external problems (Saras, 2018). Risk is an event that can occur and can occur in a decrease in performance in the supply chain system. This causes the need for supply chain risk management to minimize the impact due to increased performance and competitiveness of the company. This study seeks to facilitate users in conducting supply chain risk management (SCRM) discussions in the traditional educational toy industry which is a small-scale industry with a fairly broad marketing scope. The SCRM settings are carried out using the Weighted Effects Failure Mode and Critical Analysis (WFMECA) methods. WFMECA method is an integration method of AHP and FMECA, this method is used in financial statements to determine the risk that has a high potential to occur. While OOP-based user design that determines system design oriented systems designed to discuss problems and systems (software systems, information systems, or other systems. Based on data processing and analysis conducted. Based on the results of data processing, strategies that can be used in mitigating the risk of fluctuations in raw material prices by converting raw material prices.

Keywords: wooden toy industry, supply chain, risk, weighted failure mode effect and criticality analysis, User Interface, Object Oriented System Design Approach

Information system design in supply chain risk evaluation of excel based wooden toy industry using fuzzy house of risk (fhor)

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Abstract. In the continuity of a business process, a company cannot avoid the possibility of disruptions that come in its supply chain lines. This disorder is referred to as risk. The problem that is often faced by companies today is a poor internal control system in the production process on the supply chain line. In a supply chain there is no certainty. This uncertainty is caused by various factors, including aspects of demand and supply aspects. Therefore it is necessary to propose solutions in the form of new procedures that meet all the criteria of good internal control at the company. To minimize risk events, an analysis and design of supply chain risk information systems has been made using a DFD based approach. Analysis is done by observing the production process and company data collection. In this study, an observation of risk in the supply chain line of one of the wooden toy industries, namely CV. Atham Toys. Aims to minimize the risks that occur by creating a DFD-based information system to identify priority risks that occur in the company. The data used are qualitative data in the form of interviews with experts related to risk assessment. Based on observations, there were 25 risk agents that could cause 6 risk events. Then the priority risk chosen by using the Fuzzy House of Risk method is price or cost risk with an ARP value of 499.

Keywords : Supply Chain Risk Management, Fuzzy, House of Risk, Information Systems

Determinants of Donation Intentions on Flood Disasters in Indonesia

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Abstract. This study used structural equation modelling technique to adapt the theory of planned behavior to flood disaster donation by adding attitudes factors to charitable organizations, advertising, and characteristic of flood victims. The proposed framework was tested to investigate the relationship between factors in influencing intentions. The finding found that subjective norms, attitudes towards advertising and attitudes towards charitable organizations contributed to intentions of donation, while characteristics of flood victims and perceived behavioral control did not have a significant effect on intentions to donate

Keywords: Donation, Intentions, Flood disasters, Flood, SEM

100

Optimizing production layout and capacity via FlexSim- A case study of Y factory

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Abstract. Production capacity maximization and cycle time reduction are considered two of the most important issues for general factories. The paper applies Systematic Layout Planning (SLP), process balance, and system simulation to a small condense units manufacturer to enhance its production capacity and reduce cycle time. The developed solution shortens the total traveling distance by 81.25% and reduces the original travel time by 61.76%. In addition, we calculate the number of machines needed by process balancing and decrease the original cycle time by 64%. It is found that the proposed approach improved both cycle time and travel distance, and free up considerable capacity for manufacturing of other condensing units product types.

Keywords: FlexSim; system simulation; Systematic Layout Planning; cycle time reduction; process balance

ERP Implementation in Crisis Management: A Case Study of Government-Owned Electricity Company

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Abstract. Enterprise Resource Planning plays an outstanding role in integrating business functions and facilitating the exchange of information and communication. Through the ERP system integration, significant speed and productivity gains become the objective that the company wants to achieve directly and comprehensively. One of the companies in the public service sector that potentially implements ERP is the state-owned company in the electricity sector. Unfortunately, until now there are still problems that often occur such as mass power outages, electricity supply crises, and other technical and nontechnical problems. By adopting ERP for crisis management, the company can categorize and meet the time to resolve (TTR) incidents and problems that are set to analyze access management to determine the level of security of the company's location, so the company can determine the equipment in each location including access rights. This research will identify the implementation of ERP that is suitable for company crisis management implementation.

Keywords: ERP, crisis management, incidents, problems.

Economic Feasibility Study of Onshore Exploration Oil Field Development Using Gross Split Contract

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Abstract. The condition of the oil and gas world economy is not good and the cost recovery is too large and the results obtained are not comparable to those obtained by the contractor. Thus, the change in the new contract system with the addition of split rules for contractors considers in managing the oil and gas fields. To restore the situation and restore the spirit of the contractor to continue investing in Indonesia, the

Indonesian government provides contractors with incentives and other alternatives to change the existing PSC Contract with the Gross Split PSC based on the Minister of Energy and Mineral Resources Regulation No. 52 of 2017. Field X is one of the onshore Exploration fields in the South Sumatra Basin. The field is a commercial field that has potential oil reserves to be managed. To conduct field X development, it is necessary to conduct an economic study of field X development using a Gross Split contract to determine the feasibility level. Based on calculations using the Gross Split Contract field development X has a contractor NPV value of \$ M 192,63, Government NPV = 415,235 and Contractor IRR = 41.04%, Government Take = 72.3% and Contractor Take = 27.7%. Based on this, the Government and Contractors will benefit from using the Gross Split PSC Contract because it is economical to develop.

Keywords: oil field, gross split, petroleum economic, exploration

105

Discrete Event Simulation Modelling for Classifying the Container Yard Availability Considering Dock Unloading Activity

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Abstract. The development of systems and technology in the industry especially in the supply chain sector currently has a significant influence on the speed and accuracy along the supply chain. This is one of the reasons to build a container loading and unloading service company located in Surabaya. Terminal Teluk Lamong is the one and only Indonesian company that applies the green port concept with renewable loading and unloading equipment technology. One of the unique and prominent renewable concepts is the docking station, which aims to speed up unloading activities. Because the condition of container unloading activities is more common, this research focuses on container unloading activity only. Currently, the port has five yards available with 30 docking gates on the unloading side. The problem is the yard occupancy ratio (YOR) in unloading activity which has a low percentage value (27%). Even though the percentage value should be around 60%, therefore the value of yard utility didn't optimal yet. A discrete-event simulation (DES) aims to help classify which yards are suitable for unloading activities and the rest for loading activities. The model verification is obtained "no error" and model validation is less than 5%. For all scenarios conclude that the best scenario is to use three-yard containers with six gates of docking for each yard.

Keywords: Discrete-event Simulation, Docking Station, Container Yard.

Dynamic Pricing in a Coffee Shop

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Abstract. We develop an optimization model for dynamic pricing in a coffee shop that seeks to maximize total contribution. Based on the random utility maximization theory, the preference-based demand function is derived from choice data using sequential processes of estimating individual utilities and simulating and aggregating individual choices. Individual utilities are estimated using the hierarchical Bayes method, while individual choices are estimated using the randomized first choice simulation. We implemented the approach in a coffee shop in Jakarta, Indonesia, and considered only one product i.e. milk coffee, which constituted two-third of total sales. To avoid complexity in the implementation, we considered two fare-classes and developed three time-based pricing scenarios. The solution to the mixed-integer nonlinear programming problem was obtained using enumeration. We came up with optimal prices for a cup of milk coffee of Rp15,000 in the morning, and Rp23,000 in other time of day. Using this pricing policy, the monthly total contribution was estimated to increase by 11%, from Rp71.9 millions to Rp79.8 millions.

Keywords: dynamic pricing, preference-based demand function, hierarchical Bayes, randomized first choice.

Lean Startup Approach on Product Design and Manufacture Facility Planning in Uncertain Business Climate

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Abstract. Successful companies can provide the products that suit to consumer desire. There are two approaches in the product manufacturing process which are Product Development Process and Lean Startup. This study aims to demonstrate the conception of Lean Startup and its application in product design particularly in uncertain business climate. After comparing the two methods, Lean Startup approach

is appropriate since the validation process in each product development process will certainly increase the possibility of products that suit to the consumer desires and reduce the time needed starting from product design to the market. In order to support Lean concept in the whole processes, there are two techniques that might be applied to support lean operational system, which are the formation of one worker multiple machine (OWMM) cells and Group Technology (GT) cells.

Keywords. Facility Planning, Flexible Business Model, Lean Startup, Product Design

108

Design of Mobile and Integrated Tyre Repair Tools for Motorcycle

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Abstract- Tyres are a very important component of a motorcycle. Not only vehicle driving components, tyres also play a role in safety, passenger comfort, fuel consumption efficiency, endurance components of car legs and so forth. So, the condition of the tyre must receive special attention from the owner of a motorized vehicle. When riding on a motorcycle, tyre leakage is one of the problems that is often encountered. Not only because of sharp objects, tyres can also leak due to several other reasons. If problems are not immediately sought, leaks in tyres can cause loss of control, endangering the safety of motorists and other road users. And the place and timing of leakage events that cannot be predicted are often a scourge for motorists. After a leak, motorists, especially motorcycle riders, are very dependent on the existence of patched tyre entrepreneurs. With helps from IoT application based in advance, the design of this tool will be an opportunity for tyre patch entrepreneurs to be able to "Pick Up the Ball" to every customer / driver who has a leak. The design of this tool is quite concise and integrated thru Programmable Logic Control (PLC) with each main component making easier for entrepreneurs for patching tyres and can reduce downtime repair / replacement of the tyre.

Keywords: Tyres, Automatic Controller, Market opportunity, Motorcycle, Repair.

Optimisation of Mechanical Cassava Peeling System Parameters

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Abstract. This study focused on investigations of effects of mechanical parameters (peeling speed, cutter length) and handling parameter (cassava tuber length) of a cassava peeling machines on the machine output (peeling and recovery efficiencies) with the view of optimizing the parameters. The serious issues of existing techniques of peeling cassava are moderately low peeling and recovery efficiencies because of the irregular shape and size of cassava tubers. The results of the trial of the machine utilizing the cassava tubers revealed that all the parameters have significant effects on the peeling and recovery efficiencies of the machine. The cutter length had a more significant impact on the peeling and recovery efficiencies. Maximum values of 83.5 % and 97.2% for peeling and recovery efficiencies respectively, with an attractive quality of 0.864 were achieved from peeling cassava tuber of 50 mm length with cutter length of 2 mm at a speed of 328 rpm. The investigation's discoveries give the standard machine input parameters which are equipped for improving quality, peeling and recovery efficiencies of a mechanical cassava peeling system.

Keywords: cassava, cutter length, machine, optimum, peeling

Influence of moisture dependent physical properties of fluted pumpkin vital to development it's processing equipments

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Abstract. Knowledge of physical and mechanical properties of seeds is an important factor for designing agricultural machines and equipment. A fluted pumpkin is a very important vegetable crop as well known for its high nutritional, medicinal and

economic values, but the data on its physical and mechanical properties is still lacking. The aim of this study is to determine the effect of moisture content on the physical (basic dimensions, porosity, bulk and true densities, coefficient of friction, repose angle and sphericity) and mechanical properties of fluted pumpkin seed. These properties were evaluated as a function of moisture content at 45, 50, 55 and 60%. The results revealed that length, width and thickness increased with increasing moisture content. Similarly, an average mass of the seed, volume, surface area, sphericity, angle of repose all increased with increasing moisture content. Bulk density decreased as the moisture content increases. The parameters obtained from this study could be used as a reference data for the design of fluted pumpkin seed handling and processing equipment.

Keywords: fluted pumpkin, physical, mechanical, properties.

111

Preventive maintenance scheduling for sifter machine in flour mills

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Abstract. PT. Indofood Sukses Makmur Tbk, Divisi Bogasari Flour Mills is one of biggest food factory especially for producing flour. In this flour mills division has several machines which are composed from several components, so that the maintenance division has to keep all the machines in a good performance. The factory has three sifter machines which were composed 3 critical components which are motor, bearing, and sifter and they were experienced 133 breakdowns in the last 6 months in 2019. The maintenance was conducted by determining a Mean Time to Failure (MTTF) value and conducted a preventive maintenance. The calculations result showed for 3 critical components were motor has a replacement interval time at 781 hours (day 98th) with the availability value was 0,99914, bearing has a replacement interval time at 994 hours (day 124th) with the availability value was 0,999255, and sifter has a replacement interval time at 575 hours (day 72nd) with the availability value was 0,998729.

Keywords: preventive maintenance, MTTF, breakdown, replacement, interval, availability

Performance Evaluation Of An EWMA p Chart Based On Improved Square Root Transformation To Detect Small Shift Process Variation.

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Abstract. A control chart was used to detect whether the unexpected variation due to special causes was happening. Generally Shewhart control chart was used, while this chart was not a good one to control the process with small variation. EWMA p chart was one of the alternative used to monitor small shifts in the process mean. Traditionally, attribute Shewhart p chart has been developed for charting the binomial data or using the normal approximation when percent defective was low and sample size was small. In 100% inspection, these assumptions was not valid. For this reason, EWMA p control chart was modified by improving square root transformation. In this research, the implementation of the modified EWMA p control chart based on Improved square root transformation (ISRT p EWMA chart) was studied. This chart was used to monitor the actual production process where the process has shifted. The research found that. The ISRT p EWMA chart detects the shift twice, while Shewhart p chart does not detect any shift. The research also found that at $\lambda = 0.25$, the shift is detected 2 times, at $\lambda = 0.5$, the shift is detected once while at $\lambda = 0.75$, no shift is detected. The larger the value of the λ parameter, the worse the ISRT p EWMA control chart performed.

Keywords: Shewhart Control Chart, EWMA p Chart, Small Shift, Square Root Transformation

Workload and Fatigue Assessment on Air Traffic Controller

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Abstract. Workload experienced during certain work periods may cause fatigue. In Air Traffic Control work, a high air traffic rate may increase the workload and fatigue, especially during rush hour and may lead to risky situations. This study intended to

estimate the value of the mental workload and fatigue of an Air Traffic Controller (ATCo) in airport X during their work period. The NASA-TLX and Samn Perelli Scale were used to quantify mental workload and fatigue. The questionnaires were distributed to ATCo and 257 questionnaires were obtained. Results showed the value of the mental load at airport X tended to be higher than other airports (average 66.53), especially for mental demand, time pressure, and effort. The value of fatigue before and after work also increased (average 1,749 to 3,506) included in the safe category. However, there was no convincing evidence that differences in mental load values affect the value of fatigue. These results indicated that although the workload of ATCO was relatively high, the ATCo in Airport X still can handle it and did not cause excessive fatigue.

Keywords: Air Traffic Controller, fatigue, workload, Samn Perelli scale, NASA-TLX

114

Development of Electronic-based Investigation Management (EMP) of POLRI

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Abstract. This paper discusses the development of an investigation system at the National Police Headquarters based on an information system named EMP (Electronic Investigation Management). This system is very useful for the Indonesian National Police in managing the investigation process which is a major part of law enforcement. Through this system, the investigation process can be carried out transparently, accurately and in a timely manner. The method used is the SDLC (System Development Life Cycle) method, which consists of 5 stages namely Plan, Design, Develop, Test and Deploy. Curently the system has begun to be implemented. With this system, the law enforcement process can be carried out properly, especially, legal certainty can be created for all parties. Another advantage is the investigation process can be carried out properly and in a controlled manner. Therefore POLRI can carry out their duties properly based on the principles of clean government and good governance.

Keywords : e_ Investigation Management, clean government, good governance, SDLC

Optimization of Interest Income by Determining Interest Rate of Revolving Credit Line

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Abstract. Banking has strategic role as an intermediary institution that will fund from parties who have excess funds to those who need funds. The bank will provide revolving credit line to meet short-term liquidity needs. The revolving credit line provides the flexibility of the company as a debtor to use credit facilities and debtor must pay interest expense based on the utility of the credit line. This flexibility will affect the achievement of interest income. This study was conducted to determine effect of credit line characteristics, companies as debtors, and banks as creditors on utility of revolving credit line and create regression modeling to predict credit line utilities (UCL). Based on the resulting equation, known that Line Age (LAGE), Asset, Return of Asset (ROA), and Equity to Asset (ETA) harm UCL. While the Non-Performing Loan (NPL) ratio has a positive effect on UCL. The method used in optimizing interest income is the linear programming method. Optimization of existing assets can achieve interest income at IDR 241,63 billion and achieve a yield target of 9,00%. Optimization interest income can be applied to plan credit expansion so creditor has reference the maximum range of credit distribution and also determine of interest rate's debtors.

Keywords: revolving credit line, utility, yield, interest rate, interest income, expansion

Solar Panel-based Wireless Battery Charging System Using Fuzzy Control Method

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Abstract. Rapid technological development leads to the growth of electronic devices powered by batteries. This requires a simple, fast and safe battery charging system. In this study, we have designed and realized a wireless battery charging system supplied by solar panel using the fuzzy control method. This system is equipped with solar tracking to produce optimal electric power. Furthermore, fuzzy control system is applied to determine the amount of charging voltage by taking into account the temperature of the battery. The experimental results show that the solar tracking system can improve the performance of solar panel. The system always detects the temperature of the battery and will reduce the voltage value during the charging process as the temperature increases. This battery charging system will also automatically decrease the charging voltage when the battery voltage approaches the maximum value. This system is expected to be used as a fast battery charging system without affecting the battery life.

Keywords: Fuzzy control method, Solar panel, Wireless battery charging.

117

Warehouse Improvement Evaluation using Lean Warehousing Approach and Linear Programming

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Abstract. Lean manufacturing tools have been applied for several years to improve company's internal logistic. Furthermore, a lot of factors such as globalization, competition and shorter life-cycle product force companies to create production process more efficient and cheaper. The acceptance of lean philosophy in the company means not only respecting the lean principles in the manufacturing area, but also in all the process that performed inside the company. The implementation of lean principles in the warehouse area is a certain step of improvement warehouse process and performance, but also the whole company. However, the implementation of lean principles in warehouse area is relatively new subject in logistics. Most of the research that has been done before only focused on eliminate waste and didn't count the cost that can be saved after lean implementation. This paper's objective is to identify waste that might be able to appear in warehousing process using value stream mapping. After the waste successfully identified, the next step is doing improvement using lean tool and count the implementation cost using linear programming. The result of this

paper is choose which tool that make lower implementation cost and higher time reduction

Keywords: Lean warehousing, value stream mapping, linear programming

118

The Proposed OEE-SIGMA Prediction for Increased Profits

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Abstract. Most of the organizations adopt methods to measure their operational performance based on timeframe and requirements. One of the most commonly used measures of performance against capability of the equipment is the Overall Equipment Effectiveness (OEE). Overall Equipment Effectiveness (OEE) metric application in industry has been facing a challenge of continuing advancement in industrial operations. A smart OEE is required for a quick response to the dynamism in industrial system. In this study, OEE metric is made smart by integrating sigma continuous improvement tool into it for the enhancement of dynamism required of the traditional OEE model measured basically on three factors-availability, performance and quality. System productivity dynamism is measured and predicted through sigma statistical variation of the production process defined as a ratio of delivered output (supply) to the expected (planned) output. In this research, the model was applied to made dynamics simulation for increased profits of many manufacturing organizations. The result obtained are increased elements in OEE in line with increased of profits. This indicated that smart OEE-sigma model is a better tool for enhancing continuous improvement which can accurately measuring the financial benefits of proposed improvement projects.

Keywords: overall equipment effectiveness, sigma metric, continuous improvement, production process

Analysis of Overall Effectiveness on Hall Separator Punching Machine at PT. DNIA

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Abstract. PT. DNIA is a company engaged in manufacture of automotive parts, one of which is condenser. Manufacture of condenser components requires small parts produced using a hole separator punching machine. However, it deals with high downtime of the machine, resulting in low production performance. This research aimed to identify the extent of hole separator punching machine performance using analysis of Overall Equipment Effectiveness (OEE) and to analyse six big losses which impact on machine downtime. Calculation results show that OEE value obtained, 48.54%, was still below the standard, and therefore continuous improvement attempt is essential to perform. The low OEE value was a result of low performance efficiency which was caused by idling and minor stoppages of 24.54%. In order to improve the performance and carry out idling and minor stoppages loss, it is important to perform improvement attempt in a number of aspects, such as man aspect by training operators to carry machine-related works, machine aspect by repairing abnormal ups and downs of dies, and material aspect by fixing inappropriate position of header tank (material).

Keywords: Overall Equipment Effectiveness (OEE), six big losses, down time, productivity

The Application of Soft System Methodology to Design The Conceptual Model for Intelligent Supply Chain Model of Natural Fibre Agroindustry

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Abstract. Soft system methodology in designing an intelligent supply chain is defined as a system-based method that is holistically constructed without reduction, according to representation from the real world, coming from stakeholders interacting one to another to gain value added and improve profits through data training and data saving on cloud presented from human to system of real-world database. This study aimed to apply a soft system methodology approach in designing an intelligent supply chain model of natural fibre agroindustry. A conceptual model was successfully developed and produced eight activities which were compared through assessment criteria of efficiency, efficacy, and effectiveness. The eight activities mentioned are productivity improvement, data mining to predict demand and stock, development of a collaborative planning forecasting and replenishment model, development of an intelligent decision support system, digital platform construction, value added improvement, enhancement of efficiency and response to buyers, as well as improvement in supply chain performance. This study has not yet carried out the stages of taking action to improve the problem situation, and will be carried out in further study.

Keyword: Collaboration, intelligent decision support system, performance, value added, data mining

Multi Sensor-Based Failure Diagnosis Using The Mahalanobis Taguchi System

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Abstract. Heavy equipment in the mining industry is an essential instrument in achieving the company's production targets. But on the other hand, heavy equipment is complicated and expensive equipment. These problems can be overcome by leasing the equipment to an external agent. In the lease contract between the lessee and lessor, it is discussed about the maintenance strategy of the equipment that will be rented by the lessee. This research presents a real-time monitoring scheme based on multi-sensor data installed on the machine. Case studies from this research were carried out on excavator units in heavy equipment rental companies. The Mahalanobis Taguchi System (MTS) method is used to handle multi-sensor data. Multi-sensor data is grouped into normal condition groups and abnormal condition groups. The variables used to monitor excavator conditions include vibration, pressure and temperature sensors. Based on the results of the calculation of the excavator threshold conditions using the Mahalanobis Distance (MD) measurement technique, the threshold of normal conditions is (-2.137 to 4.121). In contrast, in abnormal accumulator conditions (4,331 to 39,458), pump failure (40,956 to 138,048), valve failure (2708,104 to 3404,187) and the threshold in the condition of the cooler failure is (10736.160 to 11434.151). This research shows that the MD-based CBM scheme produced can detect, identify, and isolate the failure of excavator components under study..

Keywords: Condition Based Maintenance. Mahalanobis Distance, Mahalanobis Taguchi System, Leasing Equipment

Improved YM Laser Machine Performance With Overall Equipment Effectiveness And Fault Tree Analysis Methods Implementation At PT. XYZ

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Abstract. In the development of the shoe-making industry, demanding companies continue to improve the quality and quality of production. PT. XYZ responded by improving the performance of the YM Laser machine which is the main engine in the sports shoe production line. The approach is carried out using the entire Equipment Effectiveness Method and Error Tree Analysis. The purpose of this study is to measure the ratio of value availability, performance ratio, quality ratio, total value of OEE on YM Laser machines, identify the root causes of problems and make improvement plans to improve machine performance. YM Laser Machines have a Overall Average Equipment Effectiveness Value of 75.89%. After researching with the OEE method, it was found that the root of the problem was to reduce speed. Furthermore, the investigation using a cause and effect diagram, obtained the main cause is a machine factor. All problems found were solved using Fault Tree Analysis on engine factors and their improvement efforts to make standard lens replacement so that the lens is always in optimal condition, changing the quality of the switch so that it is not easily damaged again, and regularly updating software and replacing standard bolts.

Keywords: Overall Equipment Effectiveness, Performance Ratio, YM Laser Machines, Fault Tree Analysis

Quality improvement on common rail type-1 product using six sigma method and data mining on forging line in PT. ABC

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Abstract. PT. ABC is a manufacturing company engaged in the automotive sector that produces components of cars and motorcycles. This study aims to improve quality by using the six sigma method with the DMAIC stage (Determine, Measure, Analyze, Improve and Control) and analyze it using data mining techniques. At the definition stage 7 defects were identified Critical To Quality namely pockmarked, burry, dent, rust, lapping, marking and NG marking. The measure DPMO value is 28,810 and the sigma value is 3,399. In the analysis phase using data mining with the classification method with the decision tree algorithm, the company's decision in decision-making status of Type 1 Common Rail products agreed on the 10 most interesting parameters. Based on FMEA, it is known as the main cause of the Common Rail Type 1, which is the crust on the dies, marking the product that appears and the trajectory of the heating machine to the forging machine that is too far. The improve phase is using Lifetime Card Dies, the marking is concave inward, reducing the running distance of the heating-forging machine and Controlling Check Sheet Product. The DPMO value obtained after improvement is equal to 24095 and the sigma level is 3.476.

Keywords: Six Sigma, Data Mining, Classification, Decision Tree.

126

Analysing the cause of idle time in loading and unloading operation at Indonesian international port container terminal: Port of Tanjung Priok case study

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Abstract. Prior study shows that major Indonesian ports still need some improvements to achieve a better logistics performance. This study aims to analyze which variables can influence the present of idle time during loading and unloading process at Container Terminal Operation 2 Tanjung Priok Port Jakarta. The Tanjung Priok Port is chosen since the port is designed as the hub port in the national sea transport system of the country where it handles more than 50% Indonesia's trans-shipment cargo

traffic. This study uses service blueprint, multiple regression analysis, and one-way anova method. The findings show that at the existing Tanjung Priok Port Container Terminal has 17 (seventeen) failure spots, which are categorized into 6 (six) variables namely head truck, computer system, weather, stevedoring worker, equipment failure, and operator activities, that cause the idle time at the port service. Nevertheless, based on the multiple regression analysis, only 5 (five) variables have a significant influence on the cause of idle time excluding weather variable. Finally, with one-way anova test it is found that operator activities at the gate-in process is the most significant influence to the idle-time at the port service.

Keywords: Container, Idle Time, Service Blueprint, Regression Analysis, Tanjung Priok Port

131

Implementation Cognitive Ergonomic on Measurement Mental Workload (Case study : Marketing Employee of Insurance Company)

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Abstract. Employee marketing of insurance company (PT.X) met pressure because increasing work demands added to the mental workload. These pressure resulting in fatigue and increase absenteeism due to illness by 50% from the previous year. The data shows that the level of employee health has decreased, and it can be said that the quality of life is related to health in insurance marketing employees is also low. The purpose of this research are to apply te cognitive ergonomic in order measurement the level of mental workload and marketing employee quality of life. The measurement of the level of mental workload was carried out using the NASA-TLX method, while the measurement of the level of quality of life was carried out using the SF-36 method. Based on the measurement mental workload using cognitive ergonomic approach with the NASA-TLX method, the highest average mental workload fell on marketing work when overtime was 70.04, the value is in the high category. As for the measurement using the SF-36 method, the lowest average score fell to the Role Limitation Emotional dimension of 55.6. The results of the correlation test using Spearman Rho concluded that there is a relationship between the profile of respondents with mental workload, the profile of respondents with quality of life, and the relationship between mental workload with quality of life. The results of the

measurement shows that are used to redesign the work system in the form of proposals and improvements

Keywords : ergonomic cognitive, mental workload, quality of life, NASA-TLX, SF-36

133

Combination Of Value Stream Mapping and House Of Risk Methods To Eliminate Waste In Productivity Enhancement In Production Area Of Fertilizer Company

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Abstract. Success in ensuring agricultural production through fertilizer production is the key to strengthening national food security. PT X is a domestic company producing ZA fertilizer. In this study, the endeavor to implement lean manufacturing with a nine wastes (E-DOWNTIME) approach to eliminate waste, so productivity can be increased by relying on a combination of VSM and HOR methods to identify wastes to propose remedies to the risks arising from waste on the ZA production floor, through FGD. This research focuses on risks to waste each production process flow according to the business process adopted. The results showed a waste of waiting, defects, excess processing, and EHS on the ZA production floor. 28 risk events were identified and 28 risk agents were identified. After two alternative repairs were selected namely replacement of the drum filter shaft and replacement of the turbine rotor, the duration of the NVA was 79 minutes reduced. Corrosion, aging, and abrasion machines / tools are the selected risk agents, representing that operating machines have shown a decline in performance due to age, so that a gradual machine update is necessary.

Keywords: VSM, HOR, Lean manufacturing, E-DOWNTIME, Productivity

Designing E-Marketplace System for Agriculture Products using Object Oriented Method

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Abstract. Agriculture has an important role in food security and sustainability in every country. Agriculture products are one of the potential business in the present era. The producers of Agriculture products often have difficulty in introducing, marketing and distributing the results of their Agriculture products to consumers. The product marketing is also still done in a simple and limited scope, so that the use of information technology is needed to make it easier for producers to manage their Agriculture products from the process of production, marketing, distribution to the consumers in a system. The purpose of this study is to design a web-based e-marketplace system that will focus the producers of Agriculture products to join and market their Agriculture products and facilitate the online process of selling and purchasing products. The research method consists of collecting data through interviews and related literature studies; and the development of a marketplace system with the Rapid Application Development (RAD) method using object oriented analysis and design techniques and the Unified Modelling Language (UML) as a tool. The results of this study are the establishment of an online e-marketplace system, that can unite the producers of Agriculture products for facilitate the marketing, buying and selling transactions with consumers and manage sales and purchase data reports.

Keywords: agriculture products, e-marketplace, object oriented analysis and design, rapid application development, UML

Evaluating the importance of environmental education practice in the libyan schools in Al-Bayda city, Libya

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Abstract. This paper presents a study that evaluated the importance of environmental education practice in schools in the city of Al-Bayda. In general, many countries across the world faced various problems in implementing environmental education in their schools. A structured questionnaire was designed to serve as the instrument for the collection of data which was administered on 150 randomly selected in the city of Al-Bayda. Out of the 150 questionnaires sent out, only 97 were retrieved representing a response rate of 65%. The collected data were analysed using SPSS 22.0 involving descriptive and inferential statistics. Based on the findings, it was found that the majority of the participants (91.8%) agreed on integrating environmental education into school's curriculum. It was also found that a clear majority (88.7%) of the students claimed that they clearly understand what environment means to them. The study did provide few recommendations, one of them is that environmental education teachers need to have the necessary and relevant environmentally related content knowledge and skills.

Keywords: Practices, environment, education, practices, behaviors, Schools, students.

139

Quality Improvement for Product Body 2-1 at PT.X

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Abstract. Customer satisfaction is an important indicator for companies to improve the quality of products or services. And if the customer feels satisfied it will automatically increase sales so that it also impacts on the company profits. PT Y is one of the customers who are not satisfied with the product produced PT X, because based on data from January to December 2018, the average monthly defect is 2.34 % whereas the company target is 0.2 %. Therefore in this research it is necessary to minimize the level of defects with the Six Sigma. With five stages, *Define, Measure, Analysis, and Control*. The proposed improvement provided are installing pins on the stopper, making checklist form of dies checking, updating the SOP on the bending process, the results Defect per Million Opportunities (DPMO) before implementing is 19.268 after implementing is 18.229 or decrease (5.3 %) and Sigma level before implementing is 3.57, after implementing is 3.59 increase (0.5 %)

Keywords: Six Sigma, DMAIC, DPMO

Measurement of Physiological and Psychological Workloads of Mechanical Department Operator PT. XYZ

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Abstract. PT. XYZ is an electrical machinery repair services company. The amount and density of operator activity can affect worker fatigue. This research conducted to calculate the level of physiological and psychological workloads and ideal rest periods for operators in the Mechanical Department of PT. XYZ. The method to calculate physiological workload is direct measurement by measuring heartbeat, whereas the method to calculate psychological workload is NASA-TLX Method. The results show that the most severe physiological workload experienced by Mr. Nur who is a medium-sized lathe operator with a value of energy consumption of 8.497 Kcal/minute before a break and 7.602 Kcal/minute after a break, the ideal rest time for Mr. Nur is 112 minutes with work duration from 07.00-12.00 WIB and 66 minutes with work duration from 13.00-16.00 WIB, while Mr. Supardi and Mr. Didik requires a rest time of 103 minutes and 38 minutes with work duration from 07.00-12.00 WIB and the level of psychological workload for the 12 operators are high and very high. Therefore the company can minimize the level of physiological and psychological workload by calculating the workload of the operator in a balanced manner.

Keywords: physiological and psychological workload, energy expenditure, energy consumption, ideal rest time, NASA-TLX.

Forecasting For Steel Production Using Artificial Neural Networks And Feasibility Analysis Of Plant Regeneration Acid Development In PT. XYZ

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Abstract. PT. XYZ is a steel production industry company. The Acid Regeneration Plant (ARP) facility has now shown a decrease in plant availability. This study aims to determine steel demand forecasting and also conduct a feasibility study for the development and replacement of ARP technology. Artificial Neural Networks, Linear Regression and Decomposition are used for forecasting experiments. The choice of forecasting method is taken by looking at the smallest MAPE value of each method. Artificial Neural Networks have the smallest MAPE value of 2.58. Then the Artificial Neural Network is used in forecasting requests for 2019 to 2020. The chosen network architecture is 24-12-1 with the traingdx training function. The results obtained are an increase in demand for steel products from 2019 to 2020. The increase in demand is 1,329,398 tons, an increase of 4.59% from the previous 2 years. Then a feasibility study is conducted to assess the construction of new ARP facilities. The feasibility study covers technology selection and investment appraisal. After making a comparison, the technology used is Spray Roaster. Based on the results of the investment appraisal using the NPV, IRR PBP, the new ARP development investment is decent and can meet future steel demand in the period until 2020.

Keywords: Forecasting, Artificial Neural Network, Linear Regression, Decomposition, Feasibility Study

142

Clustering on Small-scale Food Manufacturing Industry in West Jakarta: A Fuzzy Analytical Hierarchy Process Approach

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Abstract. The small-scale food manufacturing industry has become the most dominant sector in Jakarta, in terms of number and manpower absorption. However, they are challenged with slow growth rates, indicated by their inability to meet national demands. The Government believes that the small-scale food manufacturing industry in Jakarta was formed without comprehensive planning, and yet, they are spread throughout Jakarta. This study aims to cluster the small-scale food manufacturing industry, which was focused on the West Jakarta area as a pilot project. By employing the Fuzzy Analytical Hierarchy Process (Fuzzy AHP), five criteria were considered during the assessment: availability of land, suppliers, facilities and infrastructure, labor, and markets. As a result, an area clustering map was proposed.

Keywords: small-scale industry, food manufacturing, clustering, fuzzy AHP.

143

Management of Plastic Waste Recycling by Value Stream Mapping

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Abstract. This study explains two recycling process category with plastic pellets and fuel as main products. Fuel can be utilized by vehicles and plastic pellets has economical value. Reduction of waste in plastic waste recycling process was conducted using value stream mapping approach. The research of plastic recycling was done through literature review and direct survey. In first stage, several analyses were made: plastic waste processing category, Value Added Time (VAT) and Non Value Added Time (NVAT), also process time per work station. As the result, current stream mapping was obtained. In the second analysis stage, comparison between two processing category revealed that the highest dissipation came from motion waste, waiting time waste, and movement waste. Big picture mapping was used to improve the quality of waste recycling process based on the procedures that has been established. Fore mentioned dissipation can be reduced by adding the number of operator equipped with safety gear in washing and drying.

Keywords: Plastic Waste, Fuel, Plastic Category, Value Steam Mapping

144

Assessing supply chain practices and how they are perceived to impact performance of firms in Sierra Leone: A Case Study in a telecommunication company (*Sierratel*)

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Abstract. As competition is no longer between organizations but among supply chain players, Supply chain practices have become a major strategy employed by many businesses to gained competitive advantage and improving organizational

performance. The research aimed at assessing Supply Chain Practices and how they are perceived to impact the performance of firms in Sierra Leone a case study in a Telecommunication Company (Sierratel). Two paradigms of the supply chain were developed for this research. Supply chain enablers (Organization, People, Technology, Plan, Source, Deliver, Information Sharing) and supply chain non-financial performance (Flexibility, Responsiveness, Reliability and Agility). Self-administered questionnaires were sent to thirty-four respondents through google form using a simple stratified random sampling technique. Descriptive statistics is applied to analyse the data through SPSS. The findings showed differences in various supply chain practices adopted and implemented by the company. People, Technology, Delivery, Responsiveness, Reliability and Agility did not create much impact on the company's performance. Further analysis also revealed that supply chain processes as one of the practices among the others adopted and implemented are almost in its right footpath as compared to strategy and performance but continuous improvement of supply chain practices will attain a sustainable competitive advantage and hence firm's performance.

Keywords: supply chain practices, supply chain strategy, enablers, performance, competitive advantage, continuous improvement

145

Investigating the impact of supply chain management on the performance of manufacturing industries in Sierra Leone: case study of Sierra Leone bottling company (SLBC)

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Abstract. Supply Chain (SC) is a series or network of companies who work collectively to make and deliver products and services to end-users. SC has become an important way of gaining competitive advantage and a way of improving companies' performance. The impact of supply chain management (SCM) on the performance of manufacturing industries is very important in gaining competitive advantage. A weakness in SCM has a negative impact on the profit and can seriously affect the production and delivery of products. This research conceptualizes and develops four main dimensions to improve the performance of SLBC on Strategy and design, enabling infrastructure, process, and performance. To investigate the impact of SCM on the performance, this research employed descriptive data which was tested base on the

available data through the use of software packaging for social scientists (SPSS) and Minitab. From the results, Process was found to have a strong correlation with performance (0.821), enabling infrastructure and performance (0.596) which shows that there is a cordial relationship between the variables. Also, performance has the highest mean (4.0760) which indicate it output factors have a very great impact on profitability, productivity and the entire performance. The company faced several setbacks in achieving its goals.

Keywords: Supply Chain Management, Supply Chain Impact, Performance Measurement, Customer Relationship Management, Implementation Strategies.

146

Analysis Of The Impacts Of Motor Vehicle Exhaust Emissions At Pancasila University On Health In Order To Create A Green Campus

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Abstract : The current carbon monoxide (CO) emissions are the main component of diseases, such as cough, dizziness, nausea, and shortness of breath for those who inhale them. Pancasila University is one of the colleges in the city of Jakarta that cares about the poor quality of air in the city of Jakarta; therefore, Pancasila University wants to apply the concept of green campus as a form of concern for the environment. This research was conducted at Pancasila University to discover the relationship between air quality in the campus, especially carbon monoxide (CO) substance, and its impact on the health of the university's academic community members. The methods used in this study are simple linear regression, HIRARC, and hierarchy of control. The results of this study show a relationship between CO substance variables and complaints about diseases suffered by members of the university's academic community due to the substance, with an R count value of 0.9519. There are substantial risks that the students can experience, including student activities that cause nausea and outdoor employee activities that cause dizziness and nausea. These big risks can be prevented by issuing a decision letter to reduce air pollution at Pancasila University.

Keywords: Air Quality, Motor Vehicle Exhaust Gas, Pancasila University, Green Campus

Implementation of backpropagation artificial neural network for early detection of vitamin and mineral deficiency

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Abstract. Basic Health Research data in 2018 show that around 95.5 percent of Indonesian people less consumption of fruit and vegetables. This condition then leads to the suspicion of vitamin and mineral deficiency in Indonesia people. Several methods have been used to detect vitamin and mineral deficiency, such as convolutional rule-based and certainty factor method. However, these methods are less adaptive to adapt to the changes in symptoms when detecting vitamin and mineral deficiencies. This paper proposes an artificial neural network (ANN) using backpropagation (BPN) to detect the vitamin and mineral deficiencies in the human body. Using 107 input of physical symptoms and 17 output of the type of vitamin and mineral, the architecture of the ANN consist of 107-50-17 neurons for the input layer, hidden layer, and output layer respectively. Based on some trial and error experiments, can be determined the epoch, the learning rate, and the error rate to produce the optimal result of the detection. This experiment using 623 epochs, 0.0517 error rate, and 0.1 for the learning rate. The performance measurement conducted using precision, recall, and F-score, for each class output. The experiment shows the proposed ANN using BPN reaches an accuracy level of 73%.

Keywords: Artificial Neural Network; Backpropagation; Deficiency Vitamin and mineral; Health Informatics.

Determination of Standard Time and Output Production of Spring Frame Mattress Components Using Work Sampling Method

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Abstract. PT.CMAP which is a company that manufactures mattresses with production process starts from making foam (foaming), mattress covers, spring frames and finishing. Based on observations, obtained that the process of spring frame has the lowest percentage of daily production results. The purpose of this research is to determine the percentage of productive activities, cycle time, normal time, standard time and daily output of the spring frame mattress production process at PT.CMAP. The method used in this research is work sampling method that begins with preliminary sampling, data uniformity test, data adequacy test, calculating cycle time, calculating normal time by including performance factors, calculating standard time by including allowance factor and calculating daily output. The results obtained from this research that the standard time for the process of spring frame mattress components at PT.CMAP which consists of the spring round process is 5.04 minutes with the daily output is 90 pcs, the semi-finished spring frame process is 10.99 minute with the daily output is 41 pcs, the list frame process is 14.81 minutes with the daily output is 31 pcs and spring frame shooting CL process is 13.40 minutes with the daily output is 34 pcs.

Keywords: work sampling, sampling, cycle time, normal time, standard time

149

Optimizing Schedule In Furniture Planning

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Abstract. The methodology for developing the production system schedules from a project management perspective is being investigated. System orders are considered to be potentially parallel projects that share the same resources. The mechanics of manufacturing controls are discussed in an existing project management package. Order input to the network is envisaged via the web and, after generation or re-generation of schedules, the estimated fulfilment period and delivery date for each order should be accessible via the internet again. Both ideas were described on the basis of real data from a security door supplier operating a make-from-stock, process-oriented production program. The system provides, on the one hand, the approximate (calculated) completion time of each task and, on the other, the assignment of daily work to assets. Nonetheless, it would have trouble performing more than 3000 activities with concurrent asset scaling.

Keywords: Scheduling, Flow Shop, Levelling, Flexibility

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Planning the New Factory Layout of PT Hartekprima Listrindo using Systematic Layout Planning (SLP) Method

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Planning the New Factory Layout of PT Hartekprima Listrindo using Systematic Layout Planning (SLP) Method

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Abstract. PT Hartekprima Listrindo is a manufacturer that produces silent, open and mobile/trailer types of diesel-powered generators, along with AMF/ATS panels and synchronous panels with the HARTECH brand. The generators produce eight Kva power variants up to 3000 Kva power. PT Hartekprima Listrindo plans to increase the production capacity by relocating its factories to a new place. The production capacity of the new plant is planned to achieve 20 generators/year in a 5184 m² total land area of production. This relocation design uses Systematic Layout Planning (SLP) method, and the layout design is simulated. The SLP method is carried out by describing material flow in the production process using a Multi-Product Process Chart (MPPC), and then continued by using Activity Relationship Chart (ARC) which illustrates the relationship among the activities of the departments. The next stage of layout design is describing the Activity Relationship Diagram (ARD) and Area Allocation Diagram (AAD). The comparison layout design resulted in 2 alternative layouts that are better than the initial layout. The chosen layout design is alternative design 1 because it reduces transportation time and increases movement efficiency.

Keywords: Systematic Layout, Activity Relationship Chart, Activity Relationship Diagram, Area Allocation Diagram.

1. Introduction

The recently tight competition pushes the companies to increase efficiency and productivity in all production process. These activities are carried out by reducing the production costs, improving the quality of goods or products and on-time delivery. With the increased demand from consumers, the company plans to do a factory facility layout that is more flexible, productive, effective and efficient in order to improve customer service. Re-layout activities also include designing new layout for work facilities and production by arranging the order of the process flow with the existing production facilities.

Facility layout is the design of plant layout as a planning and integration of the production flow for getting the most effective and efficient interrelation between operators, equipment, and the process of material transformation from receiving area to finishing area. [1]. The factory layout is a part of facility design, which consists of the allocation of the factory and the design of the building where the factory layout is closely interrelated with material handling [2]. The purpose of these activities is to arrange the layout of production facilities to be more effective and efficient so that production time is



minimal and produces a quantity of products of the highest quality. Facility layout is defined as the process of designing a facility, including analysis, planning, design and arrangement of facilities, physical equipment, and people which aimed for improving the production efficiency and services [3]. Setting the layout of facilities and work areas is a problem found in this industry.

The problems found in the production process of this company are because the layout does not match the order of the production process and many delays occur among the production processes. The purpose of this research is to produce a good factory layout which comply with the production flow with Systematic Layout Planning method to increase productivity.

1.1 Systematic Layout Planning (SLP)

Systematic Layout Planning is a systematic and organized approach to planning a layout [4]. The SLP method is applied because it can minimize the flow of material and consider the relationship between the room, the need for space and available space. In addition, the SLP method is also a simple and an easy method to implement.

Richard Muther developed a layout design method called Systematic Layout Planning (SLP) [4], with factory layout planning procedures such as:

- Conduct initial data collection, namely product design data, process design and production schedule design.
- Determine material flow (Flow Process Chart/FPC).
- Determine the relationship between activities or activities (Activity Relationship Chart/ARC).
- Create a relationship diagram of activity and flow (Activity Relationship Diagram/ARD).
- Determine the number of rooms needed and adapted to the available room size.
- Make a room relationship diagram (Area Allocation Diagram/AAD).
- Make modifications and limits in making alternative layouts.
- Make alternative layouts.
- Evaluate and choose alternative layouts.

The Systematic Layout Planning (SLP) method is included in the conventional analysis techniques. The SLP method is often used in designing layouts because it is done by following a sequence of interrelated (systematic) stages [5]. The SLP method also uses quantitative inputs such as distance and frequency of material movement and qualitative input such as the degree of relationship of activities in the stages of analysis, so that the analysis is done better. In addition, the condition of the company where the research was conducted also supports the application of the SLP method, which is not too large, have relatively simple layouts, and the irregularities in the flow of materials.

In addition, the SLP method also has detailed procedures in arranging layouts based on the sequence of processes, then building block diagrams, and ultimately making detailed layouts of each plant.

2. Methods

This research uses the SLP method, starting with Operation Process Chart, then continued with Multi Product Process Chart, From To Chart, Activity Relationship Chart (ARC), Activity Relationship Diagram (ARD), Area Allocation Diagram (AAD). After AAD, the research purpose 2 layout problem solutions. After testing the problem with distance criteria, then the research found the best solution for the problem.

3. Result and Discussion

3.1. Flow Process Chart (FPC)

Flow Process Chart is the most commonly used map for layout design which is based on the planning process. FPC is a complete operating diagram/chart that includes an analysis of the material flow of production for generator. In addition, FPC is also a tool for recording all of production activities and showing the distance of equipment from raw materials to finished goods [6]. Below is Figure 1, the FPC of PT Hartekprima Listrindo.

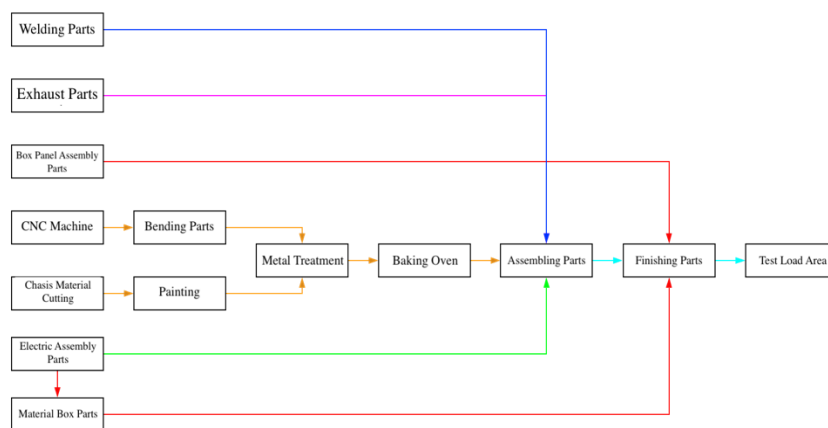


Figure 1. FPC of PT Hartekprima Listrindo

3.2. Operation Process Chart (OPC)

OPC is a diagram that describes the steps of the production process experienced from operations and quality checking [6]. Figure 2 shows the Operation Process Chart of Generator HT 80P (silent).

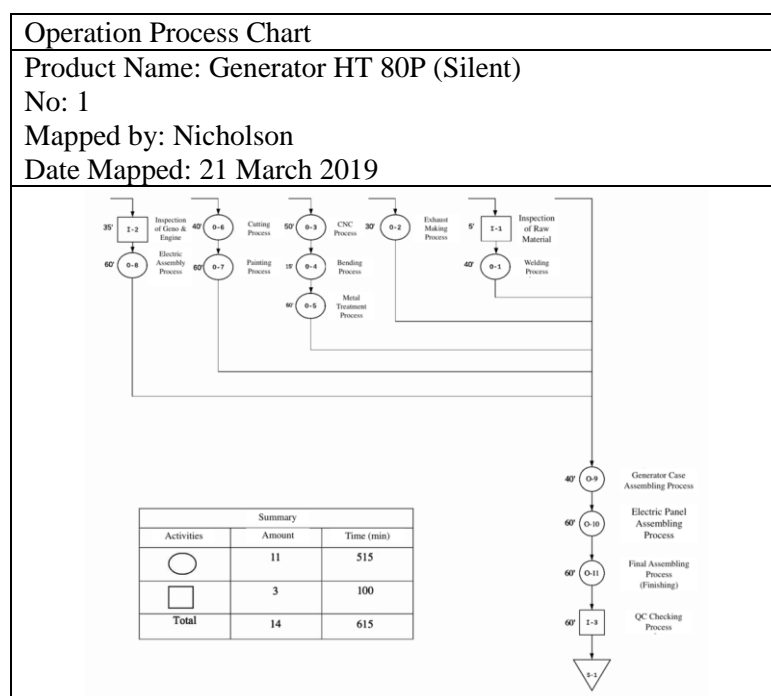


Figure 2. OPC Manufacture of Generator HT 80P

3.3. Multi Product Process Chart (MPPC)

Multiproduct process chart (MPPC) is the picture of a simple production process for making products from the beginning of the material to the end products based on the analysis of material handling and the occurrence of backflow [6]. Figure 3 shows the Multi Product Process Chart of generator set HT 80 P.

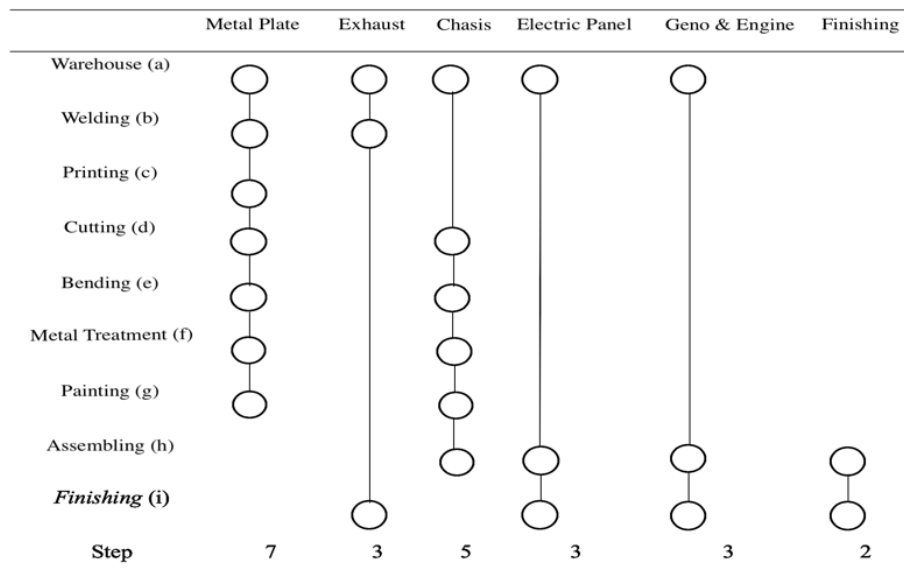


Figure 3. MPPC Generator HT 80 P

3.4. Activity Relationship Chart (ARC)

ARC is a simple method or technique in designing facility layout based on the degree of activity relations that are often stated in "qualitative" research and tends to be considered on subjective techniques from each facility or department [6]. Figure 4 shows the Activity Relationship Chart of PT Hartekprima Litrindo.

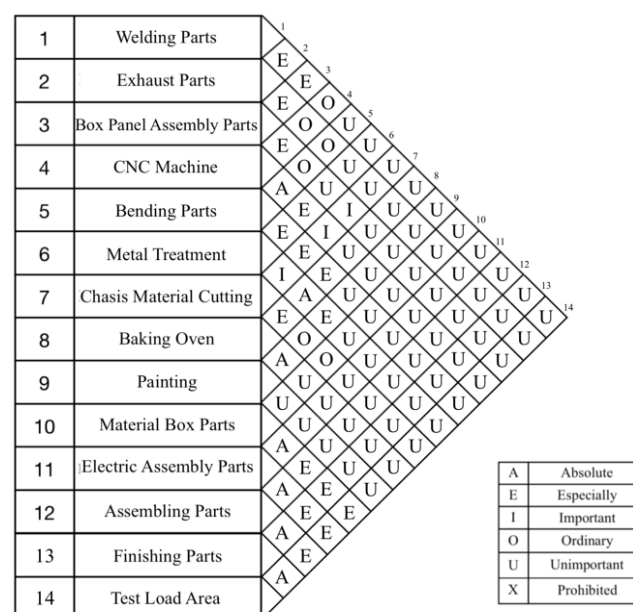


Figure 4. Activity Relationship Chart (ARC)

3.5. Activity Relationship Diagram (ARD)

Activity Relationship Diagram basically explains the relationship among material flow patterns, their location and each supporting department of the production [7]. Figure 5 shows Activity Relationship Diagram of alternative layout 1 and Activity Relationship Diagram alternative 2.

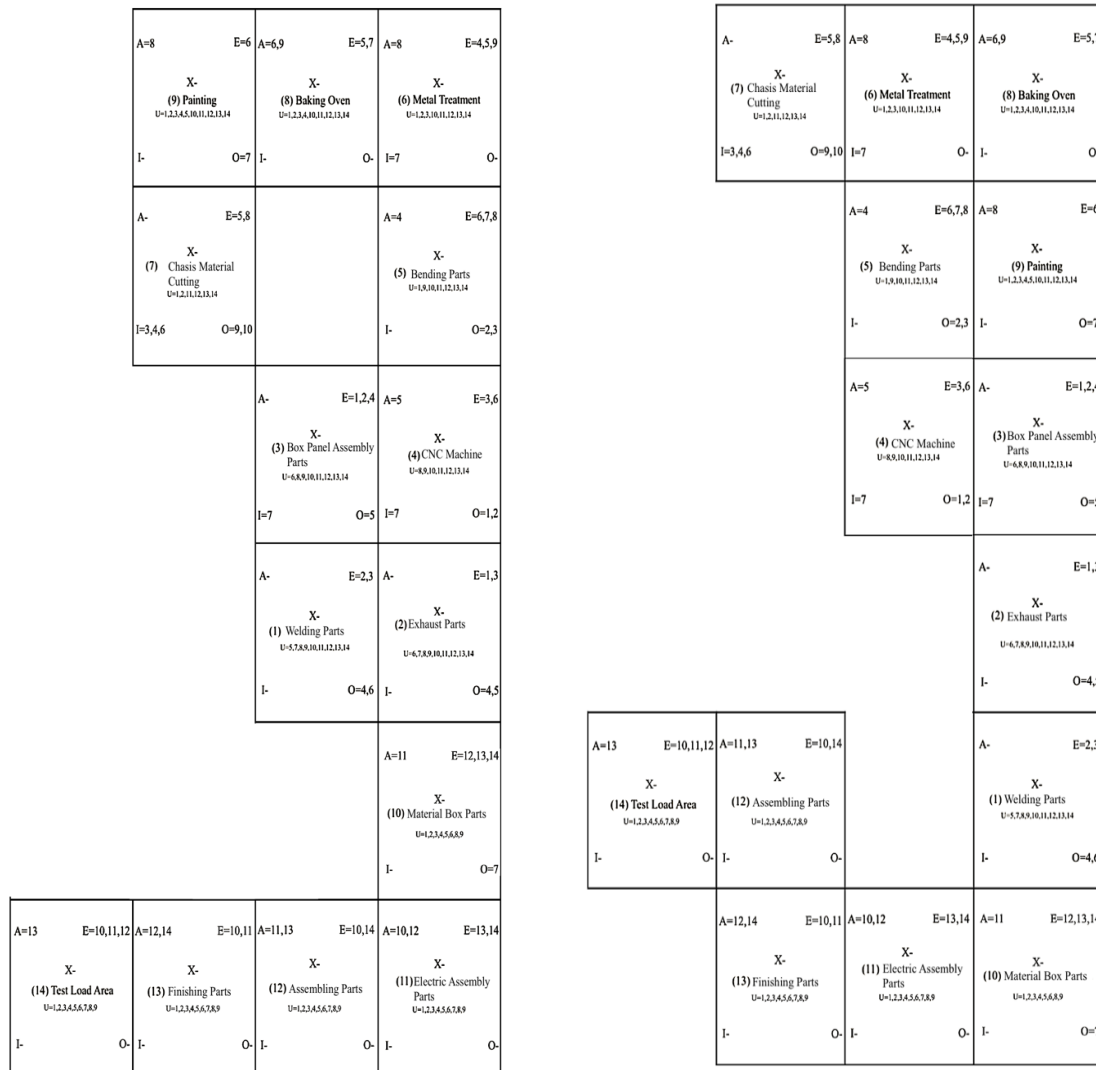


Figure 5. ARD Alternative layout 1 (left) and ARD Alternative layout 2 (right)

3.6. Area Allocation Diagram (AAD)

Area Allocation Diagrams (AAD) shows templates globally, the information only shows the placement of area, while complete visualization images can be seen in the final template/layout which is the final result of analyzing and planning factory layout [8]. Below is AAD which is based on the ARD that was designed in the section 4.5. Figure 6 shows the alternative AAD layout 1 and alternative AAD layout 2.

Remarks in Figure 7: 1 = Welding Parts, 2 = Exhaust Parts, 3 = Box Panel Assembly Parts, 4 = CNC Machine, 5 = Bending Parts, 6 = Metal Treatment, 7 = Chasis Material Cutting, 8 = Baking Oven, 9 = Painting, 10 = Material Box Parts, 11 = Electric Assembly Parts, 12 = Assembling Parts, 13 = Finishing Parts, 14 = Test Load Area.

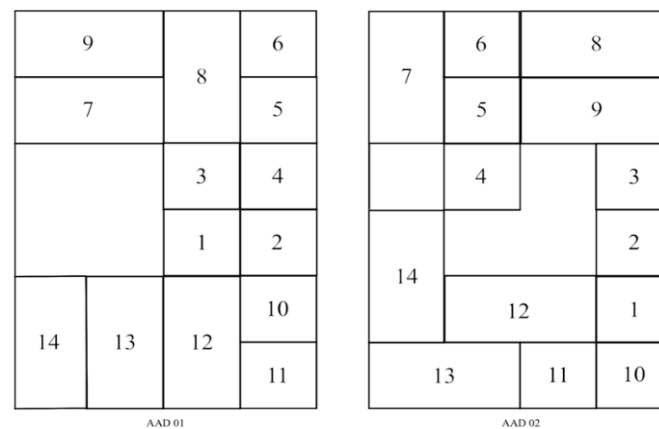


Figure 6. Alternative AAD layout 1 and Alternative AAD layout 2

3.7. Alternative Layout Designs

Alternative selection is based on the distance of material transportation and the placement of spaces for each part of production. The new lay out which is based on alternative layouts that have been chosen, alternative layout 1 and alternative layout 2, show different placements to the initial layout of the factory. The Figure 7 shows the initial layout of process flow.

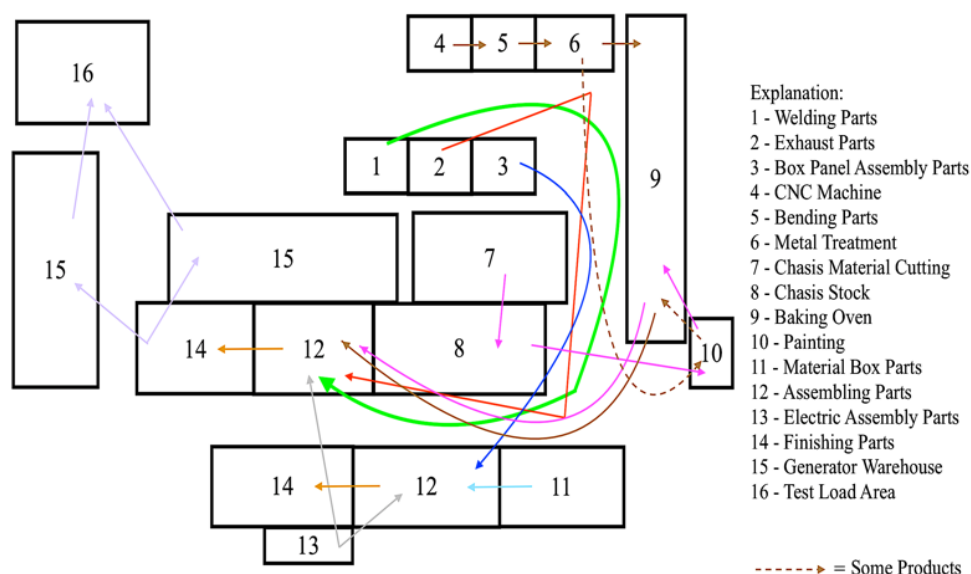


Figure 7. Initial Layout Flow Process

Therefore, the Alternative layout 1 and Alternative layout 2 process can be made by using the steps from the previous section. Figure 8 shows the flow production process of alternative layout 1 and layout 2.

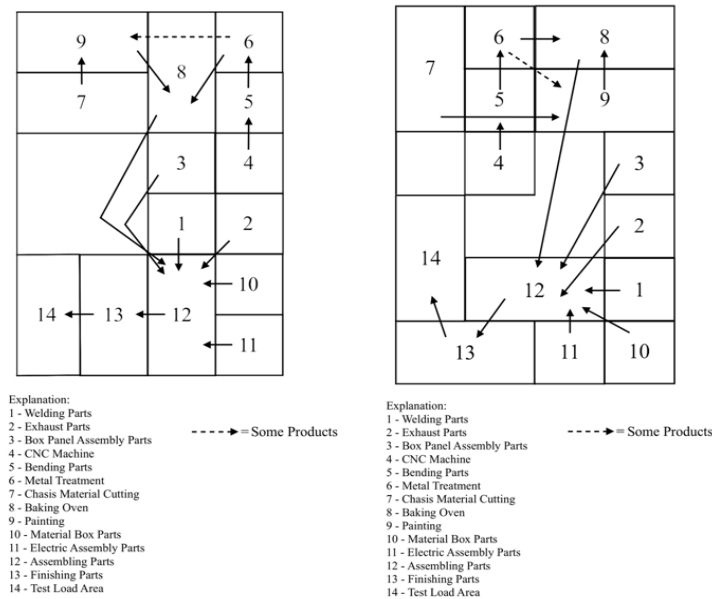


Figure 8. Flow Process Layout Alternative 1 (left) and Layout Alternative 2 (right)

Designing new layout for the new factory of PT Hartekprima Listrindo based on the method and techniques produced 2 alternative layouts. The alternative layouts are produced based on the production flow, which can reduce the distance of the excessive transportation and efficient movement. The results of the alternative layouts selected which has better movement and minimize distance. Figure 9 shows the selected alternative layout results.

LAYOUT PT HARTEKPRIMA LISTRINDO

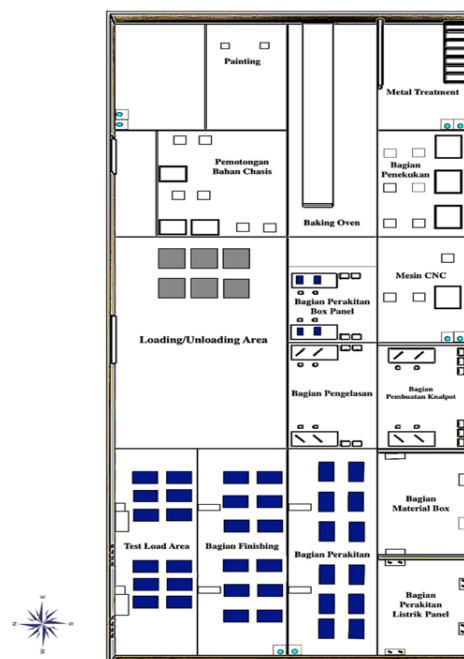


Figure 9. Selected Alternative Layout

4. CONCLUSION

The research's result at PT Hartekprima Listrindo shows the following conclusion:

This research applied the Systematic Layout Planning (SLP) method that result the better alternative layouts with ARC, ARD and AAD techniques. The recommendation of this research found 2 alternative layouts, alternative layout 1 and alternative layout 2. The best layout chosen is alternative 1 which has only 1 intersecting part and relatively short displacement distance, compared to alternative layout 2 which has 2 intersecting parts.

5. REFERENCES

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