

FACTORY PLASTIC BAG LAYOUT DESIGN IN ELITE RECYCLING INDONESIA EXTENSION

by Lina Gozali

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8th INTERNATIONAL SEMINAR ON INDUSTRIAL ENGINEERING AND MANAGEMENT (8th ISIEM)

*Technopreneurship as The Spirit of Innovation-Based
Industrial Development
Towards Global Competitiveness*



ISIEM

**Atria Hotel & Conference
Malang, East Java, Indonesia
March 17–19, 2015**

*Tarumanagara University, Trisakti University,
Al Azhar Indonesia University, Esa Unggul University,
Atma Jaya Catholic University of Indonesia,
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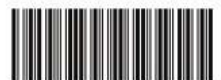
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PROCEEDING

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and Management (8th ISIEM)

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March 17 – 19, 2015

Organized by: **Industrial Engineering Department of**

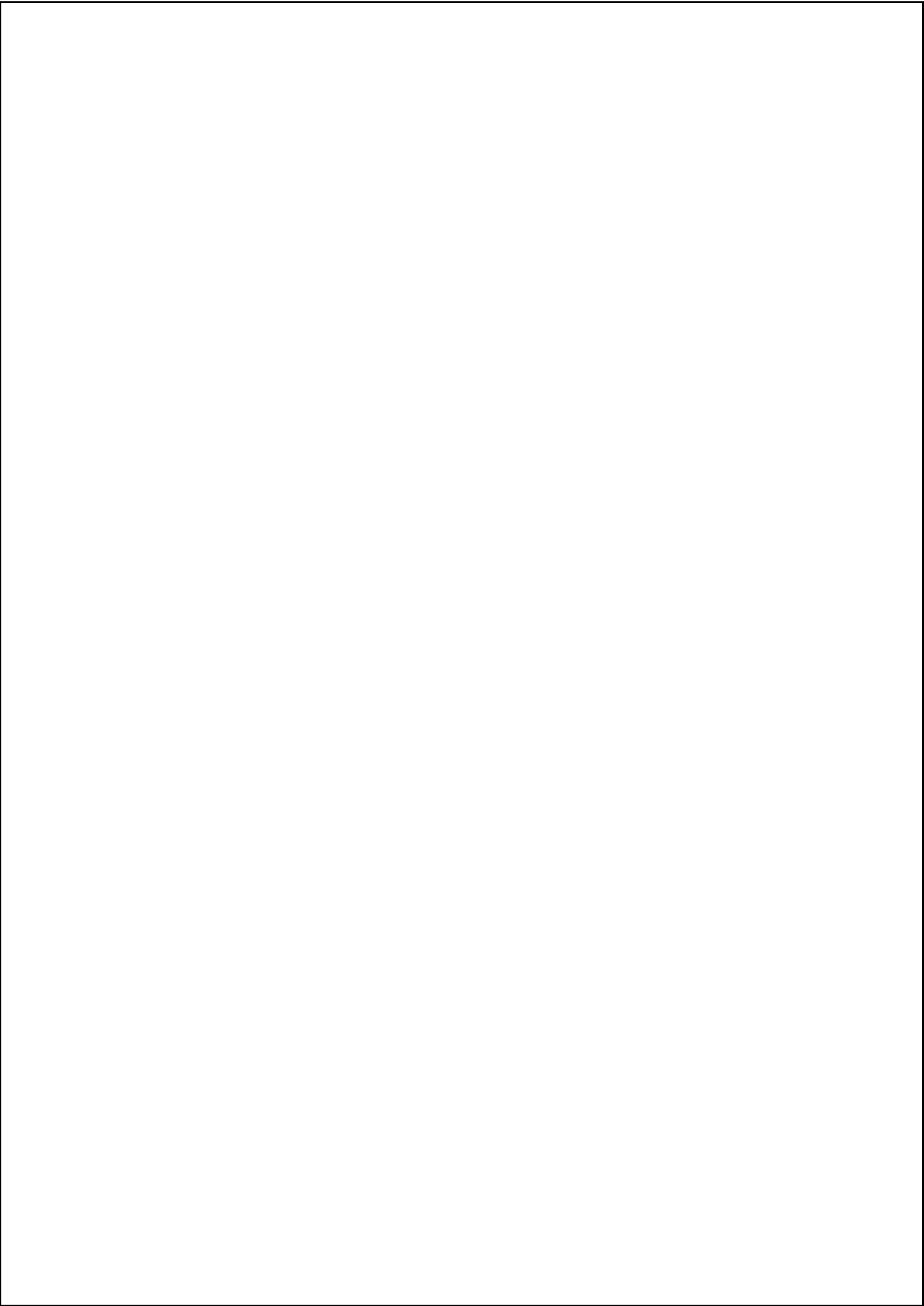
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PREFACE

Dear Presenters and Delegates,

On behalf of the Organizing Committee, I am honored to welcome you to the 8th International Seminar on Industrial Engineering and Management (ISIEM). This seminar is organized by the Industrial Engineering Department from eight Universities, namely Tarumanagara University, Trisakti University, Esa Unggul University, Pasundan University, Atma Jaya Catholic University of Indonesia, Al Azhar Indonesia University, Telkom University and University of Muhammadiyah Malang.


This seminar is held to provide an effective forum for distinguished invited speakers, academicians, engineers, professionals and practitioners from Universities, research institutions, government agencies and industries to share or exchange ideas, experiences and recent progress in Industrial Engineering and Management.

We are very convinced that our presenter and delegates will gain many shared ideas and great experiences from this conference. Furthermore, our participants will enjoy additional insights from our plenary sessions' speakers, i.e., Associate Prof. Dr. Montalee Sasananan from Thammasat University, Thailand and Prof. Younghwan Lee, Ph.D from Kumoh National Institute of Technology, South Korea.

Through this seminar, we are committed to promote sustainable innovation in industrial technology, information and management in order to increase industrial competitiveness in facing the global challenges in industrial environment. Once again, it is my great honor to welcome you to the 8th International Seminar on Industrial Engineering and Management (ISIEM) 2015 in the great cultural city of Malang, Indonesia.

Best wishes,

Chair of the 8th ISIEM 2015
Dr. Ir. Lamto Widodo, M.T.

 The 8th International Seminar on Industrial Engineering and Management (8th ISIEM)
Atria Hotel & Conference, Malang, Indonesia, March 17-19, 2015

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AGENDA

Day 1 (March 17, 2015)

- 18:00 - 18:30 Registration
- 18:30 - 19:30 Dinner
- 19:30 - 19:45 Opening Ceremony: Representation of Tarumanagara , Trisakti, Esa Unggul, Pasundan, Al Azhar Indonesia, Atma Jaya, Telkom and Muhammadiyah Malang University's greeting
- 19:45 - 21:00 Keynote # 1
Assc. Prof. Dr. Montalee Sasananan
(Thammasat University, Thailand)

Day 2 (March 18, 2015)

- 6:30 - 8:00 Breakfast and Registration
- 8:00 - 9:15 Keynote # 2
Prof. Younghwon Lee, Ph.D
(Kumoh National Institute of Technology, South Korea)
- 9:15 - 9:30 Coffee and Tea Break
- 9:30 - 12:00 Parallel session #1
- 12:00 - 13:00 Lunch break
- 13:00 - 15:30 Parallel session #2
- 15:30 - 15:45 Coffee and Tea Break
- 18:15 - 20:00 Dinner

Day 3 (March 19, 2015)

- 6:30 - 8:30 Breakfast
- 8:30 - 10:00 Parallel session #3
- 10:00 - 17:00 City Tour

PARALLEL SESSION

MARCH 18 SESSION 1 ROOM 1 (QM, ER)

Moderator : Budi Aribowo, S.T., M.Si.

Time	Paper	Code	Paper Code
9.30-9.45	DEVELOPMENT OF CREATIVE COLORING TECHNIQUE IN ELECTROPLATING Paryana Puspaputra, Kamariah Indonesia Islamic University	QM	32
9.45-10.00	QUALITY ANALYSIS USING FMEA METHOD ON ASSEMBLY PROCESSES OF WASHING MACHINE (CASE STUDY IN PANASONIC MANUFACTURING INDONESIA) Rifa Arifati, Ardika Rismayana University of Pembangunan Nasional Veteran Jakarta	QM	11
10.00-10.15	DESIGNING THE ATTRIBUTES OF FOOD PRODUCTS USING QUALITY FUNCTION DEPLOYMENT (QFD) PHASE II Muhamad Bazarado, Yurida Ekawati Ma Chung University	QM	22
10.15-10.30	CHROME RECYCLING PROCESS OF TANNERY LEATHER INDUSTRY WASTE USING LIMES Rosad Ma'ali El Hadi, Rino Andias A., Haris Rachmat Telkom University	QM	38
10.30-10.45	ANALYSIS OF HUMAN ERROR PROBABILITY USING HUMAN ERROR ASSESSMENT & REDUCTION TECHNIQUE (HEART) IN DYEING DEPARTMENT PT. XYZ Fildzah Amimah Abbas and Budi Aribowo Al Azhar Indonesia University	ER	91
10.45-11.00	IMPLEMENTATION OF POKA YOKE ON ADMINISTRATION OF THE PALM OIL MILL M. Hudori Citra Widya Edukasi Polytechnic of Palm Oil Bekasi	QM	41
11.00-11.15	QUALITY ENGINEERING OF CRUDE PALM OIL (CPO): USING MULTIPLE LINEAR REGRESSION TO ESTIMATE FREE FATTY ACID M. Hudori, Muhammad Citra Widya Edukasi Polytechnic of Palm Oil, Bekasi Malikussaleh University	QM	63
11.15-11.30	IMPLEMENTATION FAILURE MODE AND EFFECT ANALYSIS (FMEA) METHOD AND KNOWLEDGE MAP (CASE STUDY PT. GSB) Rina Fitriana, Dorina Hetharia, Vella Denisha Trisakti University	QM	64
11.30-11.45	ANALYSIS TO DETERMINE THE SUITABLE COATING MATERIALS FOR ENVIRONMENTAL FRIENDLY COMPOSITES FROM OIL PALM EMPTY BUNCH FIBERS Dorina Hetharia, Andy Cahyaputra Arya, Indra Surjati, Rully Ario Dewanto Soeriaatmaja, Doni Putra Almi Trisakti University	QM	80
11.45-12.00	WALL MOUNTED STORAGE FOR HOME APPLIANCE DESIGN Indra Gunara Rochyat, Geggy Gamal Surya Esa Unggul University	ER	100

MARCH 18 SESSION 1 ROOM 2 (PS)

Moderator : Dr. Ir. Tiena G. Amran

Time	Paper	Code	Paper Code
9.30-9.45	COMPARING ALTERNATIVE PLANT LAYOUTS BASED ON CRAFT AND BLOCPLAN ALGORITHMS Leonardo, Hotma Antoni Hutahaeen, Hui-Ming Wee Atma Jaya Catholic University of Indonesia Chung Yuan Christian University	PS	03
9.45-10.00	STORE LAYOUT FOR VIRTUAL RETAILING: A LITERATURE REVIEW Ilyas Masudin, Mukhlis Fuadi University of Muhammadiyah Malang	PS	13
10.00-10.15	OPTIMIZATION OF PREVENTIVE MAINTENANCE PROGRAM AND TOTAL SITE CREW FOR BASE TRANSCIVER STATION (BTS) USING RELIABILITY CENTERED MAINTENANCE (RCM) AND LIFE CYCLE COST (LCC) METHOD Rd. Rohmat Saedudin, Judi Alhilman, Fransiskus Tatas Dwi Atmaji Telkom University	PS	23
10.15-10.30	THE PRODUCTION PLANNING FOR PROFIT MAXIMIZATION (A CASE STUDY AT A COCOA PROCESSING INDUSTRY) Syamsul Anwar, Yunizurwan, Jasril Padang Industrial Technology Academic	PS	24
10.30-10.45	FRAMEWORK FOR E-LEARNING CONTENT DEVELOPMENT ON FACILITY PLANNING SUBJECT Muhammad Iqbal, Devi Pratami, Ika Arum Puspita Telkom University	PS	25
10.45-11.00	EMS-SCADA DESIGN OF AC USAGE ON A BUILDING Haris Rachmat, Rino Andias Anugraha, Tatang Mulyana Telkom University	PS	43
11.00-11.15	ELECTRICITY PLANNING THROUGH RENEWABLE ENERGY UTILIZATION IN NORTH KALIMANTAN Yudha Prasetyawan, Suparno, Imam Baihaqi Sepuluh Nopember Institute of Technology	PS	71
11.15-11.30	SAFETY STOCK DETERMINATION BASED ON DISTURBANCE CONTROL MODEL AT PT DEE Iveline Anne Marie, Fahmi M. Prasetyo, Nora Azmi Trisakti University	PS	55
11.30-11.45	IMPLEMENTATION OF QUEING THEORY AND HEURISTIC METHOD FOR SHCEDULING SYSTEM OF XYZ AUTO SERVICE CENTER Cut Fiarni, Sonna Kristina, Julia Rintjap Harapan Bangsa Institute of Technology (ITHB)	PS	62
11.45-12.00	COST BASED ELEVATOR SCHEDULING IN UNIVERSITY OF AL AZHAR INDONESIA Niken Parwati, Clamaya Arin Nurpraja, Firza Ibrahim Kartohadiprodjo, Ainun Jariyah, Dimas Ayu Mardhika Al Azhar Indonesia University	PS	89

MARCH 18 SESSION 1 ROOM 3 (DSS)

Moderator : Dr. Dadang Surjasa, S.Si., M.T.

Time	Paper	Code	Paper Code
9.30-9.45	APPLICATION ANALYTIC HIERARCHY PROCESS (AHP): A CASE STUDY OF E-WASTE MANAGEMENT IN SURABAYA, INDONESIA Dino Rimantho, Bambang Cahyadi, Denny Dermawan Pancasila University Surabaya Shipbuilding State Polytechnic	DSS	08
9.45-10.00	THE DESIGN OF KNOWLEDGE MANAGEMENT SYSTEM IN PT. ASMIN BARA BRONANG Dadan Umar Daihani, Riana Elisabeth Swastika Trisakti University Trisakti International Bussines School	DSS	19
10.00-10.15	PLANNING ROUTE DISTRIBUTION OF IKM DM USING THE METHODS VEHICLE ROUTING PROBLEM (VRP) AND SHORTEST-ROUTE ALGORITHM Nunung Nurhasanah, Syarif Hidayat, Devi Utami Agustini, Ajeng Putri Listianingsih, Faikar Zakky Haidar, Nida'ul Hasanati Al Azhar Indonesia University	DSS	20
10.15-10.30	DECISION SUPPORT SYSTEM FOR POTENTIAL SALES AREA OF PRODUCT MARKETING USING CLASSIFICATION AND CLUSTERING METHODS Evasaria M. Sipayung, Cut Fiarni, Randy Tanudjaya Harapan Bangsa Institute of Technology	DSS	42
10.30-10.45	ANALYSIS OF WEB-BASED INTEGRATED INFORMATION SYSTEM ON PRODUCTION PLANNING AND CONTROL FOR SMALL AND MEDIUM SCALE GARMENT INDUSTRY Nida'ul Hasanati, Dody Haryadi, Nunung Nurhasanah, Syarif Hidayat, Ajeng Listianingsih, Faikar Zakky Haidar, Devi Utami Agustin Al Azhar Indonesia University	DSS	70
10.45-11.00	KNOWLEDGE MANAGEMENT ACHIEVING STRATEGY BUSINESS ALIGNMENT IN HIGHER EDUCATIOAN Riya Widayanti Esa Unggul University	DSS	58
11.00-11.15	DEVELOPMENT OF EXPERT SYSTEM-BASED COMPUTER AIDED PROCESS PLANNING FOR PRODUCTION COST ESTIMATION Muhammad Ridwan Andi Purnomo Islamic University of Indonesia	DSS	60
11.15-11.30	MANAGEMENT INFORMATION SYSTEM FOR PRINTING MACHINE ASSIGNMENT PROCESS WITH TABU SEARCH ALGORITHM Evasaria M. Sipayung, Arief Samuel Gunawan, Teofilus Harapan Bangsa Institute of Technology	DSS	66
11.30-11.45	ASSESSING KNOWLEDGE MANAGEMENT SYSTEMS' SUCCESS BASED ON TECHNICAL AND SOCIAL FACTORS Amalia Yuli Astuti, Kadarsah Suryadi Bandung Institute of Technology	DSS	67
11.45-12.00	ICT ECOSYSTEM IN OPEN GOVERNMENT DATA INITIATIVE IN INDONESIA Meldi Rendra Telkom University	DSS	58

MARCH 18 SESSION 2 ROOM 1 (SCM)

Moderator : Ir. Arief Suwandi, M.T.

Time	Paper	Code	Paper Code
13.00-13.15	SUPPLIER SELECTION WITH THE INTEGRATION OF DEMATEL (DECISION MAKING TRIAL AND EVALUATION LABORATORY) AND AHP (ANALYTIC HIERARCHY PROCESS) : A LITERATURE REVIEW Wahyu Eko Setiawan, Ilyas Masudin, Fien Zulfikarijah University of Muhammadiyah Malang	SCM	05
13.15-13.30	THE APPLICATION OF GREEN SUPPLY CHAIN MANAGEMENT IN ELECTRONIC INDUSTRY INDONESIAN: A LITERATURE REVIEW Akhmad Jakfar, Fien Zulfikarijah, Ilyas Masudin University of Muhammadiyah Malang	SCM	09
13.30-13.45	THE ROLE OF MANUFACTURING SUPPLY CHAIN ANALYSIS IN MEETING CUSTOMER NEEDS OF BATIK SHIRT Sutarman, Refa Septiyanto Pasundan University	SCM	10
13.45-14.00	THE DRIVERS OF CHOOSING THIRD-PARTY LOGISTIC (3PL) PROVIDERS: A FRAMEWORK MODEL USING STRUCTURAL EQUATION MODELING Ilyas Masudin, Suci Dewi Ayurarasati, Dana Marsetya Utama University of Muhammadiyah Malang	SCM	14
14.00-14.15	SUPPLY CHAIN MODEL DESIGN FOR "WEDANG UWUH" SMALL AND MEDIUM ENTERPRISE (SME) IN DAERAH ISTIMEWA YOGYAKARTA (CASE STUDY ON PROGRESS JOGJA SME) Vembri Noor Helia, Dwi Handayani Islamic University of Indonesia	SCM	30
14.15-14.30	DETERMINATION OF SUPPLIER SELECTION CRITERIA USING ANALYTICAL HIERARCHY PROCESS IN THE FOOD COMPANY Winarno, Hendra Janaka, Suryani Karawang Singaperbangsa University, Karawang, Indonesia	SCM	36
14.30-14.45	THE STUDY OF THIRD PARTY LOGISTIC USAGE IN EAST JAVA Annisa Kesy Garside University of Muhammadiyah Malang	SCM	39
14.45-15.00	DESIGN OF COLD CHAIN THIRD-PARTY LOGISTICS (3PL) FOR HALAL FOOD IN INDONESIA Tiena Gustina Amran Trisakti University	SCM	51
15.00-15.15	ROUTE AND TRANSPORTATION COSTS ANALYSIS CONSIDERING THE CITY LOGISTICS SYSTEM FOR SINGLE DEPOT PROBLEM (CASE STUDY: JABABEKA INDUSTRIAL AREA COMPANIES) Yogi Yogaswara Pasundan University	SCM	52
15.15-15.30	RISK IDENTIFICATION OF CACAO AGROINDUSTRY SUPPLY CHAIN Iphov Kumala Sriwana, Yandra Arkeman, Dahrul Syah, Marimin Bogor Agriculture Institute Indonesia Esa Unggul Universitas	SCM	88

MARCH 18 SESSION 2 ROOM 2 (ER)

Moderator : Ir. Toto Ramadhan, M.T.

Time	Paper	Code	Paper Code
13.00-13.15	USER-DESIGNER INTERACTION IN CULTURE-BASED PRODUCTS : A REVIEW LITERATURE Ratih Setyaningrum, Andi Rahadiyan Wijaya, Subagyo Gadjah Mada University	ER	17
13.15-13.30	WARNING DISPLAY DESIGN FOR THE TRANSJAKARTA BUS COCKPIT TO MINIMIZE THE DRIVER'S ERROR BEHAVIOR Dian Mardi Safitri, Astari Malinda, Nora Azmi, Pudji Astuti Trisakti University	ER	26
13.30-13.45	DESIGN TOOL FOR TRANSFERING PATIENT TO IMPROVE NURSES WORKING POSTURE WITH ERGONOMIC APPROACH Muhammad Iqbal, Eva Zaliha S, Amanda Puspita P, I Gede Wisuda P Telkom University	ER	28
13.45-14.00	DESIGN OF KANSEI LAUNDRY BAG BY USING FIBER OF WATER HYACINTH (<i>EICHHORNIA CRASSIPES</i>) Hartomo Soewardi, Amarria Dila Sari, and Ginanjar Maulana Anom Islamic University of Indonesia	ER	74
14.00-14.15	THE ANALYSIS OF HEALTH AND SAFETY ASPECTS BY USING HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA) METHOD Dian Palupi Restuputri, Mochammad Fakhri University of Muhammadiyah Malang	ER	31
14.15-14.30	DEVELOPMENT STUDY OF SWAT SOFTWARE (<i>SUBJECTIVE WORKLOAD ASSESSMENT TECHNIQUE</i>) TO THE OPERATING SYSTEM WINDOWS-BASED 64-BIT (Case study at Ergonomic Labs Industrial Engineering Bandung Pasundan University) Erwin Maulana Pribadi, Agung Kurniawan Pasundan University	ER	37
14.30-14.45	FRAMEWORK DEVELOPMENT AND MEASUREMENT OF OPERATOR WORKLOAD USING <i>MODIFIED COOPER HARPER SCALE METHOD</i> (Case Study in PT Sinar Terang Logamjaya Bandung West Java) Rizki Wahyuniardi, M. Yani Syafei, Wahyukaton Pasundan University	ER	44
14.45-15.00	ANALYSIS OF NOISE LEVEL AND ITS EFFECTS ON WORKERS IN A CEMENT PLANT Syamsul Anwar, Musliyardi Ilham Padang Industrial Technology Academic	ER	46
15.00-15.15	DEVELOPMENT OF <i>COST-BENEFIT</i> CALCULATION MODEL IN HANDLING LOW BACK PAIN FROM THE ERGONOMIC PERSPECTIVE Istianah Muslim, Sri Gunani Partiwı Polytechnic of Caltex Riau Sepuluh Nopember Institute of Technology	ER	50
15.15-15.30	DESIGN OF SACHEL BAG FROM THE FIBERS OF PINEAPPLE LEAVES BY USING KANSEI ENGINEERING METHOD Hartomo Soewardi, Riska Aminatun Zahroh, Hudaya Islamic University of Indonesia	ER	75

MARCH 18 SESSION 2 ROOM 3 (IM)

Moderator : Lina Gozali , S.T., M.M.

Time	Paper	Code	Paper Code
13.00-13.15	DESIGN AND MAKING OF TELEVISION ADVERTISEMENT OF PD. BPR BANK JOGJA WITH <i>VISUAL EFFECT</i> Mei Parwanto Kurniawan, Agus Purwanto, Hafidh Rezha Maulana Informatics Engineering Master Program, STMIK AMIKOM Yogyakarta Informatics Engineering, STMIK AMIKOM Yogyakarta Yogyakarta, Indonesia	IM	12
13.15-13.30	THE ALGORITHM FOR NEGOTIATING PRICES IN A PALM OIL SUPPLY CHAIN Syarif Hidayat Al Azhar Indonesia University	IM	16
13.30-13.45	DESIGN OF IT GOVERNANCE MODEL IN XYZ COLLEGE Rizqi Sukma Kharisma, Anggit Dwi Hartanto STMIK AMIKOM Yogyakarta	IM	18
13.45-14.00	EBOLA VIRUS DISEASE PREVENTION - A PROBLEM SOLVING STRATEGY BASED ON SARS CASE STUDY FROM TAIWAN Simon Wu Chung Yuan Christian University	IM	27
14.00-14.15	FRUGAL INNOVATION CHARACTERISTICS: MARKET, PRODUCT AND BUSINESS PERSPECTIVE Teddy Sjafrizal Telkom University	IM	34
14.15-14.30	LABWORK MANAGEMENT INFORMATION SYSTEM SATISFACTION MEASUREMENT IN INDUSTRIAL ENGINEERING STUDY PROGRAM TELKOM UNIVERSITY Rayinda Pramuditya Soesanto, Amelia Kurniawati, Muhammad Iqbal Telkom University	IM	47
14.30-14.45	DESIGNING A MULTIDIMENSIONAL DATA WAREHOUSE FOR PROCUREMENT PROCESSES ANALYSIS USING BUSINESS DIMENSIONAL LIFECYCLE METHOD (CASE STUDY ON PT. ABC) Ari Yanuar Ridwan Telkom University	IM	57
14.45-15.00	BRAND EQUITY AS A HIGHER STANDARD OF LIVING AND WEALTH IN DEVELOPMENT COUNTRY: THE STRATEGIC ROLE OF INTEGRATIVE MODEL ON CONSUMER-BASED BRAND EQUITY TO REDUCE INDONESIAN POVERTY Maria Mia Kristanti Widya Mandala Catholic University	IM	59
15.00-15.15	CUSTOMERS CLUSTERING BASED ON RFM SCORE USING GENETIC ALGORITHM Muhammad Ridwan Andi Purnomo, Nur Riana Fajarwati Islamic University of Indonesia	IM	61
15.15-15.30	PROPOSED BUSINESS PROCESS USING BUSINESS PROCESS IMPROVEMENT AT EMERGENCY DEPARTEMENT OF DUSTIRA HOSPITAL Fadhila Rachmawati, Sri Widaningrum, Mira Rahayu Telkom University	IM	78

MARCH 18 SESSION 3 ROOM 1 (DSS, IM, PS, QM)

Moderator : Dr. Ir. Nofi Erni, M.M.

Time	Paper	Code	Paper Code
15.45-16.00	STUDY OF ABILITY TO PAY AND WILLINGNESS TO PAY FOR PASSANGER OF COMMUTER LINE JAKARTA-BOGOR Pudji Astuti, Vania Tertia Trisakti University	IM	101
16.00-16.15	KNOWLEDGE MANAGEMENT ENABLERS FOR THE ASSESSMENT OF KMS READINESS IMPLEMENTATION Gilang Ramadhan, Luciana Andrawina Telkom University	DSS	83
16.15-16.30	3D SOLAR SYSTEM VISUALIZATION WITH OpenGL Feby Fitria, Riri Safitri Al Azhar Indonesia University	DSS	90
16.30-16.45	DESIGN OF KNOWLEDGE ACQUISITION MODEL IN GLAUCOMA MEDICAL TREATMENTS RECOMMENDER SYSTEM Cut Fiarni Harapan Bangsa Institute of Technology	DSS	48
16.45-17.00	GROUP REPLACEMENT MODEL FOR SCHEDULING OF TOOLS REPLACEMENT CONSIDERING QUALITY COST, PREVENTIVE AND FAILURE REPLACEMENT COST Dadang Arifin, Rinto Yusriski, Dwi Putri Ramasari Ahmad Yani University	PS	35
17.00-17.15	CONTENT ANALYSIS SILICA (SiO2) IN PROCESS WATER DETERMERALISATION WITH 4M METHOD Sukanta, Hendra Janaka, Rian Arie Permana Karawang Singaperbangsa University	QM	82
17.15-17.30	THE HOLISTIC MODEL OF NEW PRODUCT DEVELOPMENT PROCESS Ronald Sukwadi Atma Jaya Catholic University of Indonesia	QM	94
17.30-17.45	DESIGNING QUALITY ASSURANCE SYSTEM FOR RAW MATERIAL ACCEPTANCE PROCESS IN BATIK INDUSTRIES USING BUSINESS PROCESS IMPROVEMENT METHOD Dida Diah Damayanti, Luciana Andrawina, Sri Widaningrum, HandaruJati Telkom University	QM	97
17.45-18.00	IDENTIFICATION OF KNOWLEDGE MANAGEMENT SYSTEM FOR QUALITY IMPROVEMENT OF NATURAL FIBER CRAFT INDUSTRY Nofi Erni, Iphov Kumala S., Riya Widayanti Esa Unggul University	DSS	92
18.00-18.15	RELIABILITY ANALYSIS OF BLOOD LEAKAGE DETECTION SYSTEM Pratondo Busono Center for Information and Communication Technology, BPPT Al Azhar Indonesia University	QM	77
18.15-18.30	PRODUCTION TARGET ACHIEVEMENT MODEL DEVELOPMENT USING BINARY LOGISTIC REGRESSION METHOD IN PT. HANSAE KARAWANG INDONESIA Ade Momon S., Ikbal Wijaya Karawang Singaperbangsa University	PS	72

MARCH 18 SESSION 3 ROOM 2 (ER, IM)

Moderator : Praty Poeri Suryadhini., S.T., M.T.

Time	Paper	Code	Paper Code
15.45-16.00	HABITUAL EFFECTS IN ELEVATOR Wulan Meiniar, Fitrah Azizah, Rifqi Muhammad, Korry Azrina, Dessy Indah Savitri Al Azhar Indonesia University	ER	65
16.00-16.15	INOVATIVE DESIGN OF WHEELCHAIR BY USING USER CENTERED DESIGN APPROACH Hartomo Soewardi, Bagus Tri Ajie, R.Abdul Jalal Islamic University of Indonesia	ER	73
16.15-16.30	SPRINKLER SYSTEM EVALUATION TO MEET FIRE PROTECTION FACILITY AT THE MAIN LABORATORY AT PT. PUPUK KUJANG CIKAMPEK Moh. Syarwani, Wahyukaton Pasundan University	ER	53
16.30-16.45	PROTOTYPE OF BOOK PREVIEW USING AUGMENTED REALITY ON ANDROID SMARTPHONES Riri Safitri, Aldi Oktavianto, Fahrul Rozi Al Azhar Indonesia University	ER	76
16.45-17.00	THE ERGONOMIC DESIGN OF A MINI HOTEL FOR INDONESIAN TRAVELLERS Lamto Widodo, Nashir Setiawan, Kevin Leo Winata Tarumanagara University	ER	87
17.00-17.15	PRODUCT DESIGN OF CHILI CUTTER Muhammad Iqbal, Hilman Syahir, Yogi Purnama Putra, Dian Ayu Aprianti, Fiky Ryan Damawan, Diki Elfan Reksawana Telkom University	ER	29
17.15-17.30	THE INFLUENCE OF FONT TYPE, FONT SIZE, LINE SPACING AND TEXT BACKGROUND COLOUR ON VISUAL SEARCH OF WEB PAGES Yanto, Chih-Wei Lu Chung Yuan Christian University	ER	04
17.30-17.45	ELEMENTARY SCHOOL STUDENT'S ANTHROPOMETRY FOR THE PURPOSE OF SCHOOL FURNITURE Yanto, Chih-Wei Lu Chung Yuan Christian University Atma Jaya Catholic University of Indonesia	ER	06
17.45-18.00	DEVELOPMENT OF ANTHROPOMETRY GAUGE Vivi Triyanti, Catherine Hadiwiyono Atma Jaya Catholic University of Indonesia	ER	93
18.00-18.15	BUSINESS PROCESS IMPROVEMENT USING QUALITY FUNCTION DEPLOYMENT Feliks Prasepta S. Surbakti,Rinakso Pramarta Atma Jaya Indonesia Catholic University	IM	07
18.15-18.30	ANALYSIS OF ORGANIZATIONAL PERFORMANCE WITH 360 DEGREE FEEDBACK METHOD (CASE STUDY: DEPARTMENT OF INDUSTRIAL ENGINEERING UNIVERSITY OF XYZ) Ahmad Chirzun, Zahra Fitria Al Azhar Indonesia University	IM	104

MARCH 18 SESSION 3 ROOM 3 (IM, PS, SCM)

Moderator : Andre Sugioko, S.T., M.T.

Time	Paper	Code	Paper Code
15.45-16.00	SPINNING MACHINE MAINTENANCE SCHEDULING AND COST PLANNING UNIT USING MARKOV CHAINS METHOD AT ARGO PANTES Puspa Puspitasari, Ahmad Juang Pratama Al Azhar Indonesia University	PS	103
16.00-16.15	BUSINESS MODEL GENERATION AND LEAN STARTUP METHOD AS THE BASIS FOR BUSINESS DEVELOPMENT FEASIBILITY STUDY, CASE STUDY OF PO. GAJAH MUNGKUR SEJAHTERA Wisnu Sakti Dewobroto, Julisa Siagian Trisakti University	IM	79
16.15-16.30	DESIGN OF PERFORMANCE MEASUREMENT SYSTEM IN ENGINEERING DEPARTMENT BASED ON MAINTENANCE SCORECARD FRAMEWORK AND OMAX MODEL: A CASE STUDY OF GLOBAL SANITARY WARE COMPANY Wilson Kosasih, Silvi Ariyanti, Nathan Sukamto Tarumanagara University	IM	81
16.30-16.45	FACTORY PLASTIC BAG LAYOUT DESIGN IN ELITE RECYCLING INDONESIA EXTENSION Lina Gozali, Iveline Anne Marie, Prisca Andriani Tarumanagara University; Trisakti University	PS	01
16.45-17.00	IMPROVEMENT OF KANBAN SYSTEM USING CONSTANT QUANTITY WITHDRAWAL SYSTEM TO FULFILL BUFFER STOCK REPLENISHMENT ON SINGLE AISLE PROJECT AT PT. XX Hadi Muqti, Praty Poeri Suryadhini, Widia Juliani, Dida Diah D. Telkom University	PS	45
17.00-17.15	DESIGNING BUSINESS PROCESS TO SUPPORT BALANCED SCORECARD-BASED PERFORMANCE MEASUREMENT (CASE STUDY: FACULTY OF ENGINEERING, ATMA JAYA CATHOLIC UNIVERSITY OF INDONESIA) Vivi Triyanti, Nixon William Kumala Atma Jaya Catholic University of Indonesia	IM	99
17.15-17.30	REVIEW OF CURRENT RECRUITMENT PROCESS (CASE STUDY : PT. X) Mellisa Taswin, Marsellinus Bachtiar, Vivi Triyanti Atma Jaya Catholic University of Indonesia	IM	96
17.30-17.45	LEAN AND GREEN APPROACH IN DEVISING OPTIMIZATION PROGRAM TO DETERMINE DISTRIBUTION ROUTES BY USING TABU SEARCH METHOD Christine Natalia, Andre Sugioko, Clara Anne Atma Jaya Indonesia Catholic University	SCM	98
17.45-18.00	SYSTEM DYNAMIC FOR ACCELERATION MODELING POLICY IN DISADVANTAGE AREAS DEVELOPMENT Fajar Kurniawan, Iphov Kumala Sriwana Saint Mary's University, Hong Kong; Esa Unggul University	IM	95
18.00-18.15	ANALYSIS OF INFORMATION SHARING IMPACT IN TWO LEVEL SUPPLY CHAIN WITH MULTIPLE RETAILERS (CASE STUDY IN TWO MANUFACTURING COMPANIES, PT XY AND PT YZ) Nurul Chairany, Imam Baihaqi, Noerhayati Amirullah YAPPI; Sepuluh Nopember Institute of Technology	SCM	69
18.15-18.30	LEAN MANUFACTURING APPROACH WITH PARTICLE SWARM OPTIMIZATION-LINE BALANCING Rahmi Maulidya, Parwadi Moengin, Nisa Andama Trisakti University	PS	102

TABLE OF CONTENT

Preface
Committee
Reviewer
Agenda
Parallel Session
Table Of Content

DSS-Decision Support System and Artificial Intelligence

No	Paper code	Title and Author	Page
1	08	Application Analytic Hierarchy Process (AHP): a case study of e-waste management in Surabaya, Indonesia Dino Rimantho, Bambang Cahyadi, Denny Dermawan	DSS-1
2	19	The Design Of Knowledge Management System In PT Asmin Bara Bronang Dadan Umar Daihani, Riana Elisabeth Swastika	DSS-11
3	20	Planning Route Distribution of IKM DM Using The Methods Vehicle Routing Problem (VRP) And Shortest-Route Algorithm Nunung Nurhasanah, Syarif Hidayat, Devi Utami Agustini, Ajeng Putri Listianingsih, Faikar Zakky Haidar, Nida'ul Hasanati	DSS-21
4	42	Decision Support System for Potential Sales Area of Product Marketing using Classification and Clustering Methods Evasaria M. Sipayung, Cut Fiarni, Randy Tanudjaya	DSS-33
5	48	Design of Knowledge Acquisition Model in Glaucoma Medical Treatments Recommender System Cut Fiarni	DSS-40
6	58	Knowledge Management Achieving Strategy Business Alignment in Higher Education Riya Widayanti	DSS-47
7	60	Development of Expert System-Based Computer Aided Process Planning for Production Cost Estimation Muhammad Ridwan Andi Purnomo	DSS-56
8	66	Management Information System for Printing Machine Assignment Process with Tabu Search Algorithm Evasaria M. Sipayung, Arief Samuel Gunawan, Teofilus	DSS-61
9	67	Assessing Knowledge Management Systems' Success Based on Technical and Social Factors Amalia Yuli Astuti, Kadarsah Suryadi	DSS-67
10	68	ICT Ecosystem in Open Government Data Initiative in Indonesia Meldi Rendra	DSS-75
11	70	Analysis of Web-Based Integrated Information System on Production Planning and Control for Small And Medium Scale Garment Industry Nida'ul Hasanati, Dody Haryadi, Nunung Nurhasanah, Syarif Hidayat, Ajeng Listianingsih, Faikar Zakky Haidar, Devi Utami Agustin	DSS-81

DSS-Decision Support System and Artificial Intelligence

No	Paper code	Title and Author	Page
12	83	Knowledge Management Enablers for the Assessment of KMS Readiness Implementation <i>Gilang Ramadhan, Luciana Andrawina</i>	DSS-88
13	90	3D Solar System Visualization With OpenGL <i>Feby Fitria, Riri Safitri</i>	DSS-94
14	92	Identification of Knowledge Management System for Quality Improvement of Natural Fiber Craft Industry <i>Nofi Erni, Iphov Kumala S., Riya Widayanti</i>	DSS-100

ER-Ergonomics

No	Paper code	Title and Author	Page
1	04	The Influence of Font Type, Font Size, Line Spacing and Text Background Colour on Visual Search of Web Pages <i>Yanto, Chih-Wei Lu</i>	ER-1
2	06	Elementary School Student's Anthropometry for The Purpose of School Furniture <i>Yanto, Chih-Wei Lu</i>	ER-9
3	17	User-Designer Interaction in Culture-Based Products : A Review Literature <i>Ratih Setyaningrum, Andi Rahadiyan Wijaya, Subagyo</i>	ER-15
4	26	Warning Display Design for the Transjakarta Bus Cockpit to Minimize the Driver's Error Behavior <i>Dian Mardi Safitri, Astari Malinda, Nora Azmi, Pudji Astuti</i>	ER-23
5	28	Design Tool for Transferring Patient to Improve Nurses Working Posture with Ergonomic Approach <i>Muhammad Iqbal, Eva Zaliha S, Amanda Puspita P, I Gede Wisuda</i>	ER-28
6	29	Product Design of Chili Cutter <i>Muhammad Iqbal, Hilman Syahir, Yogi Purnama Putra, Dian Ayu Aprianti, Fiky Ryan Darmawan, Diki Elfan Reksawana</i>	ER-34
7	31	The Analysis of Health and Safety Aspects by Using Hazard Identification and Risk Assessment (HIRA) Method <i>Dian Palupi Restuputri, Mochammad Fakhri</i>	ER-37
8	37	Development Study of SWAT Software (<i>Subjective Workload Assessment Technique</i>) To The Operating System Windows-Based 64-Bit (Case study at Ergonomic Labs Industrial Engineering Bandung Pasundan University) <i>Erwin Maulana Pribadi, Agung Kurniawan</i>	ER-45
9	44	Framework Development And Measurement of Operator Workload Using <i>Modified Cooper Harper Scale Method</i> (Case Study in PT Sinar Terang Logamjaya Bandung West Java) <i>Rizki Wahyuniardi, M. Yani Syafei, Wahyukaton</i>	ER-49
10	46	Analysis of Noise Level and Its Effects on Workers in A Cement Plant <i>Syamsul Anwar, Musliyardi Ilham</i>	ER-55
11	50	Development of <i>Cost-Benefit</i> Calculation Model in Handling Low Back Pain from The Ergonomic Perspective <i>Istianah Muslim, Sri Gunani Partiw</i>	ER-61

ER-Ergonomics

No	Paper code	Title and Author	Page
12	53	Sprinkler System Evaluation to Meet Fire Protection Facility at The Main Laboratory at PT. Pupuk Kujang Cikampek Moh. Syarwani, Wahyukaton	ER-71
13	65	Habitual Effects in Elevator Wulan Meiniar, Fitrah Azizah, Rifqi Muhammad, Korry Azrina, Dessy Indah Savitri	ER-76
14	73	Inovative Design of Wheelchair by Using User Centered Design Approach Hartomo Soewardi, Bagus Tri Ajie, R. Abdul Jalal	ER-81
15	74	Design of Kansei Laundry Bag by Using Fiber of Water Hyacinth (<i>Eichhornia Crassipes</i>) Hartomo Soewardi, Amarria Dila Sari, Ginanjar Maulana Anom	ER-87
16	75	Design of Satchel Bag from The Fibers of Pineapple Leaves by Using Kansei Engineering Method Hartomo Soewardi, Riska Aminatun Zahroh, Hudaya	ER-92
17	76	Prototype of Book Preview Using Augmented Reality on Android Smartphones Riri Safitri, Aldi Oktavianto, Fahrul Rozi	ER-97
18	87	The Ergonomic Design Of A Mini Hotel For Indonesian Travellers Lamto Widodo, Nashir Setiawan, Kevin Leo Winata	ER-103
19	91	Analysis of Human Error Probability Using Human Error Assessment & Reduction Technique (HEART) in Dyeing Department PT. XYZ Fildzah Amimah Abbas and Budi Aribowo	ER-108
20	93	Development of Anthropometry Gauge Vivi Triyanti, Catherine Hadiwiyono	ER-111
21	100	Wall Mounted Storage For Home Appliance Design Indra Gunara Rochyat, Geggy Gamal Surya	ER-119

IM-Industrial Management

No	Paper code	Title and Author	Page
1	07	Business Process Improvement Using Quality Function Deployment Feliks Prasepta S. Surbakti, Rinakso Pramarta	IM-1
2	12	Design and Making of Television Advertisement of PD. BPR Bank Jogja With <i>Visual Effect</i> Mei Parwanto Kurniawan, Agus Purwanto, Hafidh Rezha Maulana	IM-6
3	16	The Algorithm for Negotiating Prices in A Palm Oil Supply Chain Syarif Hidayat	IM-12
4	18	Design of It Governance Model in XYZ College Rizqi Sukma Kharisma, Anggit Dwi Hartanto	IM-21
5	27	Ebola Virus Disease Prevention - A Problem Solving Strategy Based On Sars Case Study From Taiwan Simon Wu	IM-27
6	34	Frugal Innovation Characteristics: Market, Product and Business Perspective Teddy Sjafrizal	IM-38

IM-Industrial Management

No	Paper code	Title and Author	Page
7	47	Labwork Management Information System Satisfaction Measurement in Industrial Engineering Study Program Telkom University Rayinda Pramuditya Soesanto, Amelia Kurniawati, Muhammad Iqbal	IM-44
8	57	Designing A Multidimensional Data Warehouse for Procurement Processes Analysis Using Business Dimensional Lifecycle Method (Case Study on PT. ABC) Ari Yanuar Ridwan	IM-49
9	59	Brand Equity as A Higher Standard of Living and Wealth in Development Country: The Strategic Role of Integrative Model on Consumer-Based Brand Equity to Reduce Indonesian Poverty Maria Mia Kristanti	IM-55
10	61	Customers Clustering Based on RFM Score Using Genetic Algorithm Muhammad Ridwan Andi Purnomo, Nur Riana Fajarwati	IM-66
11	78	Proposed Business Process Using Business Process Improvement at Emergency Departement of Dustira Hospital Fadhila Rachmawati, Sri Widaningrum, Mira Rahayu	IM-74
12	79	Business Model Generation and Lean Startup Method as The Basis for Business Development Feasibility Study, Case Study of Po. Gajah Mungkur Sejahtera Wisnu Sakti Dewobroto, Julisa Siagian	IM-80
13	81	Design of Performance Measurement System in Engineering Department Based on Maintenance Scorecard Framework and Omax Model: A Case Study of Global Sanitary Ware Company Wilson Kosasih, Silvi Ariyanti, Nathan Sukamto	IM-90
14	95	System Dynamic for Acceleration Modeling Policy in Disadvantage Areas Development Fajar Kurniawan, Iphov Kumala Sriwana	IM-102
15	96	Review Of Current Recruitment Process (Case Study : PT. X) Mellisa Taswin, Marsellinus Bachtiar, Vivi Triyanti	IM-107
16	99	Designing Business Process to Support Balanced Scorecard-Based Performance Measurement (Case Study: Faculty of Engineering, Atma Jaya Catholic University Of Indonesia) Vivi Triyanti, Nixon William Kumala	IM-116
17	101	Study of Ability to Pay and Willingness to Pay for Passanger of Commuter Line Jakarta-Bogor Pudji Astuti, Vania Tertia	IM-123
18	104	Analysis of Organizational Performance with 360 Degree Feedback Method (Case Study: Department of Industrial Engineering University Of XYZ) Ahmad Chirzun, Zahra Fitria	IM-128

PS-Production System

No	Paper code	Title and Author	Page
1	01	Factory Plastic Bag Layout Design In Elite Recycling Indonesia Extension Lina Gozali, Iveline Anne Marie, Prisca Andriani	PS-1
2	03	Comparing Alternative Plant Layouts Based On CRAFT and Blocplan Algorithms Leonardo, Hotma Antoni Hutahaeen, Hui-Ming Wee	PS-10
3	13	Store Layout For Virtual Retailing: A Literature Review Ilyas Masudin, Mukhlis Fuadi	PS-15
4	23	Optimization of Preventive Maintenance Program and Total Site Crew for Base Transceiver Station (BTS) Using Reliability Centered Maintenance (RCM) and Life Cycle Cost (LCC) Method Rd. Rohmat Saedudin, Judi Alhilman, Fransiskus Tatas Dwi Atmaji	PS-21
5	24	The Production Planning for Profit Maximization (A Case Study At A Cocoa Processing Industry) Syamsul Anwar, Yunizurwan, Jasril	PS-28
6	25	Framework for E-Learning Content Development On Facility Planning Subject Muhammad Iqbal, Devi Pratami, Ika Arum Puspita	PS-35
7	35	Group Replacement Model for Scheduling of Tools Replacement Considering Quality Cost, Preventive And Failure Replacement Cost Dadang Arifin, Rinto Yusriski, Dwi Putri Ramasari	PS-41
8	43	EMS-SCADA Design of AC Usage on A Building Haris Rachmat, Rino Andias Anugraha, Tatang Mulyana	PS-45
9	45	Improvement of Kanban System Using Constant Quantity Withdrawal System to Fulfill Buffer Stock Replenishment on Single Aisle Project at PT. XX Hadi Muqti, Pratya Poeri Suryadhini, Widia Juliani, Dida Diah Damayanti	PS-50
10	55	Safety Stock Determination Based on Disturbance Control Model at PT DEE Iveline Anne Marie, Fahmi M. Prasetyo, Nora Azmi	PS-59
11	62	Implementation Of Queing Theory And Heuristic Method For Shceduling System of XYZ Auto Service Center Cut Fiarni, Sonna Kristina, Julia Rintjap	PS-66
12	71	Electricity Planning Through Renewable Energy Utilization in North Kalimantan Yudha Prasetyawan, Suparno, Imam Baihaqi	PS-71
13	72	Production Target Achievement Model Development Using Binary Logistic Regression Method in PT. Hansae Karawang Indonesia Ade Momon S., Ikbal Wijaya	PS-76
14	89	Cost Based Elevator Scheduling in University of Al Azhar Indonesia Niken Parwati, Clamaya Arin Nurpraja, Firza Ibrahim Kartohadiprodjo, Ainun Jariyah, Dimas Ayu Mardhika	PS-83
16	103	Spinning Machine Maintenance Scheduling And Cost Planning Unit Using Markov Chains Method at Argo Pantes Puspa Puspitasari, Ahmad Juang Pratama	PS-88

PS-Production System

No	Paper code	Title and Author	Page
15	102	Lean Manufacturing Approach with Particle Swarm Optimization-Line Balancing Rahmi Maulidya, Parwadi Moengin, Nisa Andama	PS-94

QM-Quality Engineering and Management

No	Paper code	Title and Author	Page
1	11	Quality Analysis Using FMEA Method on Assembly Processes of Washing Machine (Case Study In Panasonic Manufacturing Indonesia) Rifa Arifati, Ardika Rismayana	QM-1
2	22	Designing The Attributes of Food Products Using Quality Function Deployment (QFD) Phase II Muhamad Bazarado, Yurida Ekawati	QM-6
3	32	Development of Creative Coloring Technique in Electroplating Paryana Puspaputra, Kamariah	QM-11
4	38	Chrome Recycling Process of Tannery Leather Industry Waste Using Limes Rosad Ma'ali El Hadi, Rino Andias A., Haris Rachmat	QM-17
5	41	Implementation of Poka Yoke on Administration of The Palm Oil Mill M. Hudori	QM-21
6	63	Quality Engineering of Crude Palm Oil (CPO): Using Multiple Linear Regression to Estimate Free Fatty Acid M. Hudori, Muhammad	QM-26
7	64	Implementation Failure Mode And Effect Analysis (FMEA) Method and Knowledge Map (Case Study PT. GSB) Rina Fitriana, Dorina Hetharia, Vella Denisha	QM-34
8	77	Reliability Analysis of Blood Leakage Detection System Pratondo Busono	QM-41
9	80	Analysis To Determine The Suitable Coating Materials For Environmental Friendly Composites From Oil Palm Empty Bunch Fibers Dorina Hetharia, Andy Cahyaputra Arya, Indra Surjati, Rully Ario Dewanto Soeriaatmaja, Doni Putra Almi	QM-46
10	82	Content Analysis Silica (SiO ₂) in Process Water Determinalisation with 4M Method Sukanta, Hendra Janaka, Rian Arie Permana	QM-51
11	94	The Holistic Model of New Product Development Process Ronald Sukwadi	QM-57
12	97	Designing Quality Assurance System for Raw Material Acceptance Process in Batik Industries Using Business Process Improvement Method Dida Diah Damayanti, Luciana Andrawina, Sri Widaningrum, Handarujati	QM-64

SCM-Supply Chain Management

No	Paper code	Title and Author	Page
1	05	Supplier Selection with The Integration of DEMATEL (Decision Making Trial And Evaluation Laboratory) and AHP (Analytic Hierarchy Process): A Literature Review Wahyu Eko Setiawan, Ilyas Masudin, Fien Zulfikarijah	SCM-1
2	09	The Application of Green Supply Chain Management in Electronic Industry Indonesian: A Literature Review Akhmad Jakfar, Fien Zulfikarijah, Ilyas Masudin	SCM-6
3	10	The Role of Manufacturing Supply Chain Analysis in Meeting Customer Needs Of <i>Batik</i> Shirt Sutarman, Refa Septiyanto	SCM-12
4	14	The Drivers of Choosing Third-Party Logistic (3PL) Providers: A Framework Model Using Structural Equation Modeling Ilyas Masudin, Suci Dewi Ayurarasati, Dana Marsetya Utama	SCM-18
5	30	Supply Chain Model Design For “Wedang Uwuh” Small and Medium Enterprise (SME) in Daerah Istimewa Yogyakarta (Case Study on Progress Jogja SME) Vembri Noor Helia, Dwi Handayani	SCM-27
6	36	Determination of Supplier Selection Criteria Using Analytical Hierarchy Process in The Food Company Winarno, Hendra Janaka, Suryani	SCM-34
7	39	The Study of Third Party Logistic Usage in East Java Annisa Kesy Garside	SCM-41
8	51	Design of Cold Chain Third-Party Logistics (3PL) for Halal Food in Indonesia Tiena Gustina Amran	SCM-49
9	52	Route and Transportation Costs Analysis Considering The City Logistics System for Single Depot Problem (Case Study: Jababeka Industrial Area Companies) Yogi Yogaswara	SCM-56
10	69	Analysis of Information Sharing Impact in Two Level Supply Chain With Multiple Retailers (Case Study in Two Manufacturing Companies, PT XY And PT YZ) Nurul Chairany, Imam Baihaqi, Noerhayati Amirullah	SCM-62
11	88	Risk Identification of Cacao Agroindustry Supply Chain Iphov Kumala Sriwana, Yandra Arkeman, Dahrul Syah, Marimin	SCM-71
12	98	Lean and Green Approach in Devising Optimization Program to Determine Distribution Routes by Using Tabu Search Method Christine Natalia, Andre Sugioko, Clara Anne	SCM-76

CERTIFICATE

Presented to:

LINA GOZALI

as

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FACTORY PLASTIC BAG LAYOUT DESIGN IN ELITE RECYCLING INDONESIA EXTENSION

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ABSTRACT

Plastic bags help people in everyday life. PT. Elastis Reka Aktif (ERA Plastik) is one of the industry engaged in manufacturing plastics. In 2014, PT. ERA plastik wants to expand to meet the needs of the market by opening a new plant with a capacity of 300 tons per month located at Jl. Raya Gema Lapik, South Cikarang which has a land area of 6000 m² and a building area of 2200 m². To meet this need, this research aims to design the layout of a new plastic bag factory based approach Systematic Layout Planning (SLP). Based on the data input activities planned for the plant, the routing calculation sheet to determine the needs of the number of machines on the production floor, followed by the determination of manufacturing activities as well as facilities to support the needs of area calculation for each manufacturing facility. Next, performed linkage analysis between overall plant facility designed in Activity Relationship Chart (ARC) Plant. Based on the close relationship ARC Factory, design layout is done by using an algorithmic approach Relationship diagramming method to get the draft Activity Relationship Diagram (ARD) as a basis for designing factories Area Allocation Diagram (AAD) Plant. Because of the available land has limited, the design of the layout of the factory developed into three alternative layouts drawn using Autocad software 2010. Alternative layout will be evaluated quantitatively by calculating the values of closeness scores and use the checklist Material Handling Evaluation Sheet. Alternative selected layout will be created in the form of templates and 3 dimensions.

Keywords: Plant Layout, , SLP, Relationship Diagramming, MHES

1. INTRODUCTION

PT. Elastis Reka Aktif (ERA PLASTIC) is one of the industry engaged in manufacturing plastics. Established in 1996, the product produced by PT. ERA PLASTIC is a consumer good by using technology extrusion blown film into plastic bags used everyday society.

Plastic bags help people in everyday life, especially for housewives who shop daily whether it is to the traditional markets, supermarkets, stalls, or small kiosks. But the ease of plastic bag making highly dependent housewives throughout its existence because it is very helpful and effective.

In 2014, PT. Plastic ERA wants to expand production to meet the needs of the market by opening a new plant, located on Jl. Raya Gema Lapik, South Cikarang Indonesia under the name Elite Recycling Extension (ERI Extension). The location of

the new plant has a land area of 6000 m² and a building area of ± 2200 m². The problem in this research is PT. Plastic ERA requires the design of plant layout for PT. ERI Extension with the goal of maximizing the capacity of 300 tons / month with the size of the location is available and meets the criteria of a good layout. Limitation of problems used in this study is predetermined capacity and follows the shape of the land owned land.

2. LITERATURE REVIEW

Definition of Plant Layout

According Sritomo (2009, p67), the layout is a major cornerstone in the industrial world. Plant layout can be defined as a procedure for setting the plant facilities to support the smooth production process by utilizing the area for placement of machines or other production support facilities, the smooth

movement of material transfer, storage of materials, personnel work, and so forth.

Layout Type

According Wignjosoebroto (2009, p148) there are 4 (four) different types of layouts that are generally applied in the design layout, namely:

- The layout of the facility is based on the flow of production (Product Layout)
If a factory is specialized in producing a variety of products in the quantities or large volume and long production time.
- Based Facility Layout Function or kinds Process (Process Layout)
Generally used for the manufacturing industry working with relatively small production volumes and especially for the kind of products that are not standard.
- Location Based Facility Layout Materials and Equipment (Fixed Position Layout)
Production facilities such as machines, humans, and other components move towards the main product components that are in a fixed position. Example: aircraft, in sound of the sea, and others.
- Facility Layout Based Products Group (Group Technology Layout)
Grouping by step processes, forms, machines, and equipment used.

The characteristics of a Good Layout

According Hadiguna and Setiawan (2008, p15) in designing the plant layout criteria that there be the size of a good plant layout, among others:

- The planned material flow patterns; This criterion is not intended that the material flow jumps or backward (backtrack)
- The first operation close to the reception; This criterion aims to conserve the use of space and shorten the distance of displacement of material
- The last operation close to delivery; This criterion aims to shorten the distance of displacement of material
- Inventories of semi-finished goods or work in process (WIP) minimum; This criterion aims to achieve a balance trajectories in a way to avoid the buildup of WIP to the next process (bottleneck)
- Control of noise, dirt, dust, smoke, and moisture is adequate; This criterion aims

to maintain the Occupational Health and Safety (K3) for workers

Systematic Layout Planning (SLP)

A systematic and organized approach to planning the layout that was created by Richard Muther (1973) known as the Systematic Layout Planning (SLP). SLP diagram is shown in Figure 1.

Calculation of Number of Machines

According to Apple (1990), sheet production sequencing (routing sheet) is a tabulation of the steps are covered in producing certain components and details for related matters. The purpose of making the routing sheet is to know the number of machines or production equipment necessary to meet the desired production quantities by taking into account the percentage of scrap (waste), the engine capacity, and efficiency of the engine.

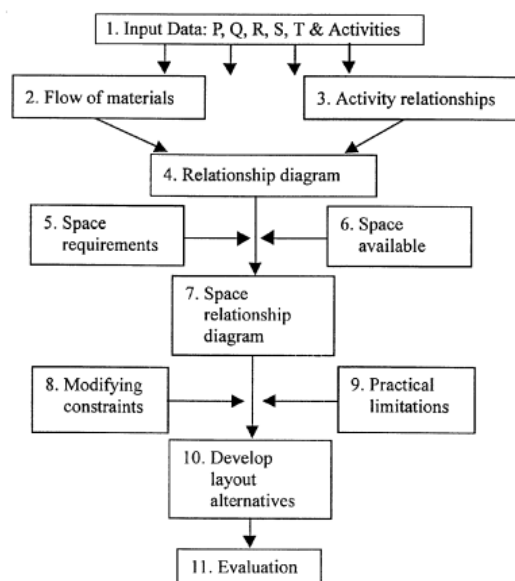


Figure 1. Diagram SLP

Activity Relationship Chart (ARC)

According Wignjosoebroto (2009, p 199-203), map relationships or activities Activity Relationship Chart (ARC) is a method or technique that is simple in the plan layout of the facility or department based on the degree of relationship that is often expressed in aktivitas assessment is subjective.

Algorithmic Approach Relationship diagraming

According to Tompkins (2nd edition, p295), ranked by proximity, placement between departments can use the algorithmic approach in which one example of the algorithmic approach is Relationship diagraming method. This method is the basis for constructing a new layout that prioritizes the department with the highest number of A. The required input is the activity relationship chart (ARC) and create a worksheet from the ARC as a basis for the construction activity relationship diagram (ARD).

Material Handling Checklist

Based on Material Handle Institute (MHI) removal of material covers all the basic

operations include a large movement of goods and packaging in the form of solid area between machines in the workplace as a limit. Material handling checklist uses basic principles of chemical transfer rules, criteria for a good layout, and a checklist as a list of things that should be checked.

3. RESEARCH METHODOLOGY

Methodology is a major stages that must be done before doing research on the subject matter so that research can be carried out more targeted and easier in analyzing problems to fit the expected goals. Flowchart of research methodology can be seen in Figure 2.

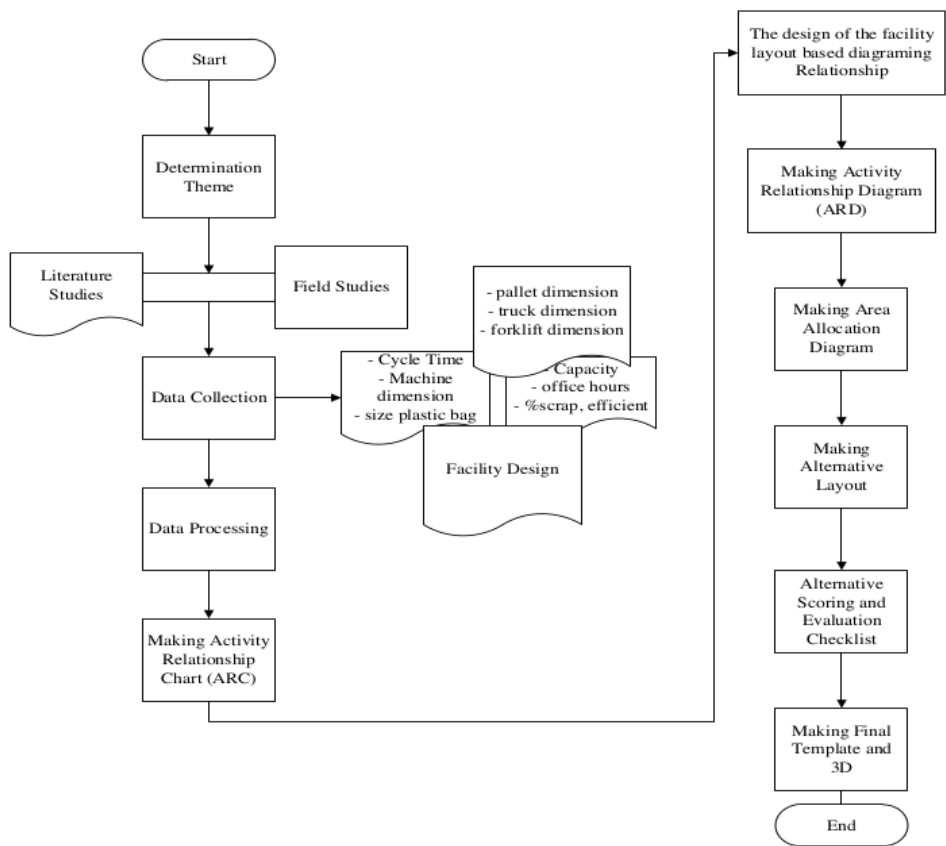


Figure 2. Flowchart of Research Methodology

4. DATA COLLECTION AND PROCESSING

Routing Calculation Sheet conducted to determine the number of machines in the

production process needs the manufacturing of plastic bags. Calculation of the number of machines can be seen in Table 1.

Table 1. Calculation of Number of Machines

NAME OF THE MACHINE	THE NUMBER OF MACHINES NEEDED		
	Size 17 Cm	Size 24 Cm	Size 28 Cm
Mixer	1	1	1
Extrusion Blown Film	22		
Cutting and Sealing with auto puncher	4	3	2
workbench 1	1	0	0
workbench 2	1	1	1
workbench 3	1	1	1
workbench 4	1	1	1
workbench 5	1	1	1

In determining the amount of engine requirements, not all machines are summed and rounded up. At the cutting and sealing machine with auto puncher to a size of 17 cm requires 4 machine, size of 24 cm requires 3 machine, and for the size of 28 cm requires 2 machines. This is due to the machine that is used to a size of 17 cm different from the machine to the size of 24 cm and 28 cm. The difference lies in the puncher is used and waste generated. While the machine needs extrusion blown film can be summed and rounded up because the same machine used and its use can be set according to the type of plastic bags that want to produce.

After calculating the needs of the machine, proceed to the calculation of the floor area of the main floor area that is followed by the calculation of production and production supporting floor area that can be seen in Table 2.

5. FACILITY LAYOUT DESIGN

In planning the layout of the facility or the department tend to be based considerations are subjective of each facility or department. To simplify the design, made two (2) ARC where the division is based on the production room and in the plant area. Code given in the form of the letter A, E, I, O, U, and X are included reasons such as numeric code which is used is subjective reasons. Table descriptions reasons used are listed in Table 3. While examples Figure ARC and ARD plant service in the production of space can be seen in Figure 3.

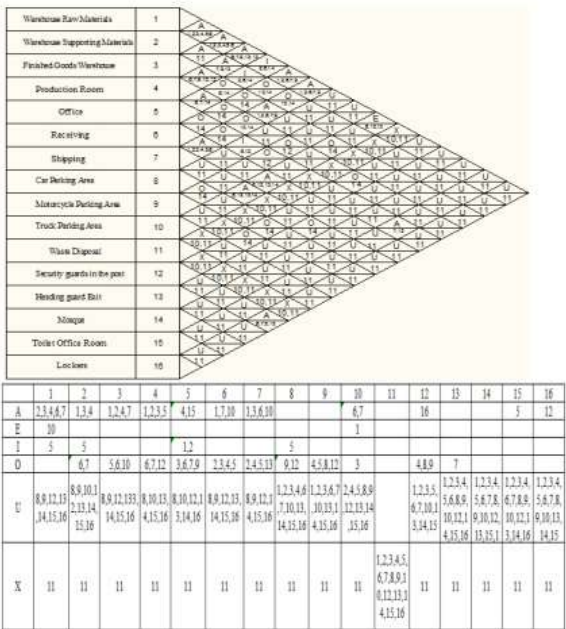
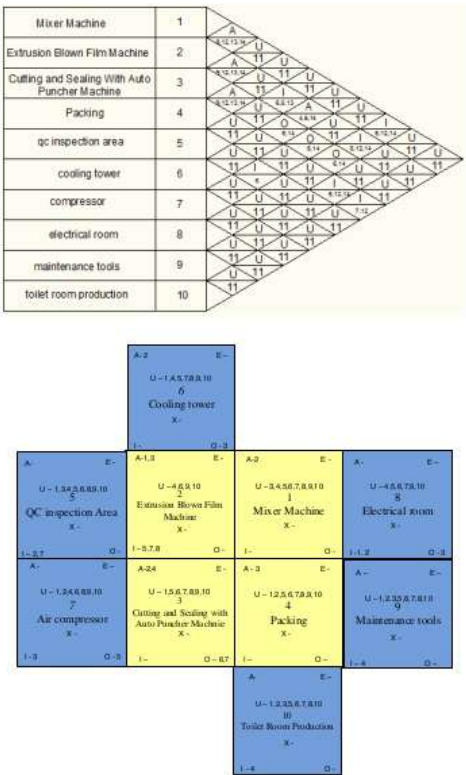
Table 2. Areas required for each facility

No	Floor Department	Area (m ²)
1	Mixer	54,9
2	Extrusion Blown Film	361,20
3	Cutting and sealing with auto puncher size 17 cm	127,76
	Cutting and sealing with auto puncher size 24 dan 28 cm	213,18
4	Packing Size 17 cm	77,19
	Packing Size 24 cm	59,44
	Packing Size 28 cm	37,35
5	Warehouse Raw Materials	40,04
6	Warehouse Supporting Materials	24,31
7	Finished Goods Warehouse	22,88
8	Receiving and Shipping	140
9	Office	70
10	Mosque	107,8
11	Waste Disposal	18
12	lockers	10,35
13	Security guards in the post	4,59
14	Heading guard Exit	3,49
15	Car Parking Area	116,89
16	Truck Parking Area	168
17	Motorcycle Parking Area	115,5
18	Electrical Room	112,01
19	Maintenance Tools	20,33
20	Toilet Room Production	16,88
21	Cooling Tower	9
22	QC Inspection area	9
23	Compressor	14,89
TOTAL		1959,94

Table 3. Description Reason for use

Reason Code	Description Reasons
1	use of notes together
2	using the same labor
3	using the same space area
4	work using the same equipment
5	carry out the same work activities
6	facilitate supervision
7	degree of contact personnel who often do
8	the degree of contact paper work that is often done
9	workflow sequence
10	the scent is disturbing
11	disturbing other activities
12	reduce the time delay
13	facilitate removal
14	facilitate coordination

From Figure 3, the ARC is based on subjective assessments to determine the closeness of the relationship between machines. As an example for the mixer machine and blow machine given the code letters A reason for having the sequence of work flow, reducing the time delay, easy removal, and facilitate coordination so that the mixer machine and blow machine should really take precedence. Unlike the mixer engine and cutting machines. Mixer machines and cutting machines are given a code letter U because it has reason to interfere with other activities and cut mixer machine is not important for approximated. Furthermore displayed ARC, worksheets, and ARD Plant Service Outside the factory can be seen in Figure 4.



The design of the plant outside the factory service using an algorithmic

approach relationship diagramming where input needed is ARC then created a worksheet to facilitate the selection of the department to be put in blockplant. From Figure 5 known relationships between departments is a most departments namely Warehouse Raw Materials 1 (GBB) so that 1 is the first department in blockplant can be seen in Figure 5 (a). Furthermore, the election department for the second, third, and so on are made to the chart from the table that contains the combination of the degree of interest. Examples from to chart can be seen in Table 4.

Table 4. From to Chart Plant Service Outside with Factory

From to	1	TCR	From to	1	2	kombinasi	TCR
1	0	0	1	0	A	-	32
2	A	32	2	I	0	-	8
3	A	32	3	A	A	AA	64
4	A	32	4	A	A	AA	64
5	I	8	5	I	I	II	16
6	A	32	6	A	O	AO	36
7	A	32	7	A	O	AO	36
8	U	2	8	U	U	UU	4
9	U	2	9	U	U	UU	4
10	E	16	10	E	U	EU	18
11	X	1	11	X	X	XX	2
12	U	2	12	U	U	UU	4
13	U	2	13	U	U	UU	4
14	U	2	14	U	U	UU	4
15	U	2	15	U	U	UU	4
16	U	2	16	U	U	UU	4

From to	1	2	3	kombinasi	TCR
1	0	A	A	-	64
2	I	0	A	-	40
3	A	A	0	-	64
4	A	A	A	AAA	96
5	I	I	O	IIO	20
6	A	O	O	AOO	40
7	A	O	A	AAO	68
8	U	U	U	UUU	6
9	U	U	U	UUU	6
10	E	U	O	EOU	22
11	X	X	X	XXX	3
12	U	U	U	UUU	6
13	U	U	U	UUU	6
14	U	U	U	UUU	6
15	U	U	U	UUU	6
16	U	U	U	UUU	6

From to	1	2	3	4	kombinasi	TCR
1	0	A	A	A	-	64
2	I	0	A	A	-	40
3	A	A	0	A	-	64
4	A	A	A	0	-	64
5	I	I	O	A	AIO	52
6	A	O	O	O	AOOO	44
7	A	O	A	O	AAOO	72
8	U	U	U	U	UUUU	8
9	U	U	U	U	UUUU	10
10	E	U	O	U	EOUU	24
11	X	X	X	X	XXXX	4
12	U	U	U	O	OUUU	10
13	U	U	U	U	UUUU	8
14	U	U	U	U	UUUU	8
15	U	U	U	U	UUUU	8
16	U	U	U	U	UUUU	8

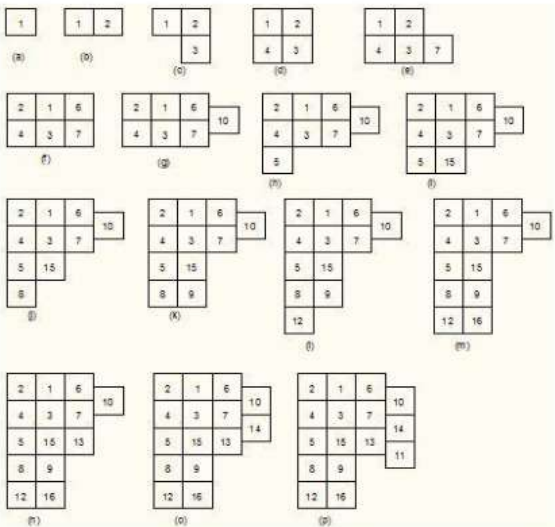


Figure 5. Blockplant Plant Service Outside with Factory

As an example from Table 4, it is found that the department was selected to blockplant 2 department because the department 2 has a relationship with department 1 and has the highest TCR of 32. Department subsequently selected to blockplant is 3 department because the department has a relationship 3 AA combination and have TCR the highest was 64. steps the same done to all the departments are elected to the blockplant which can be seen in Figure 4. at the time of entering into blockplant department, laying blockplant is clockwise (clockwise). The results of relationship diagramming method is Activity Relationship Diagram (ARD) which can be seen in Figure 6.

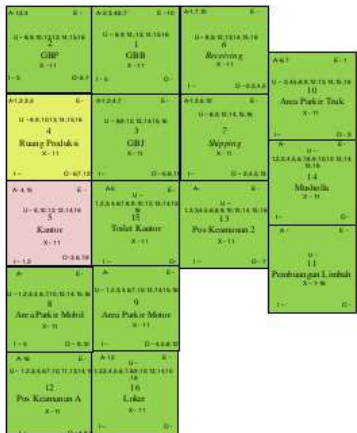


Figure 6. ARD Plant Service Outside with Plant

Results of selected ARD followed by making Area Allocation Diagram (AAD) blockplant where this blockplant AAD use in the conversion of the area into the templates area. Figure AAD blockplant can be seen in Figure 7.

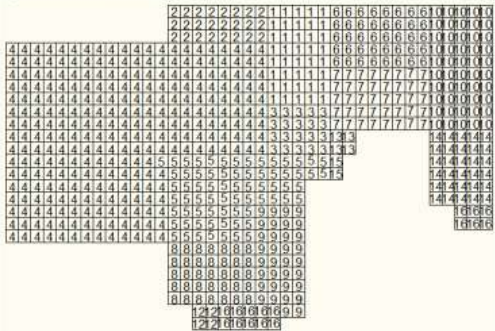


Figure 7. AAD Blockplant Plant Service Outside with Factory

Because of the available land has limited the development of alternative layouts created an alternative that can be seen in Figure 8.

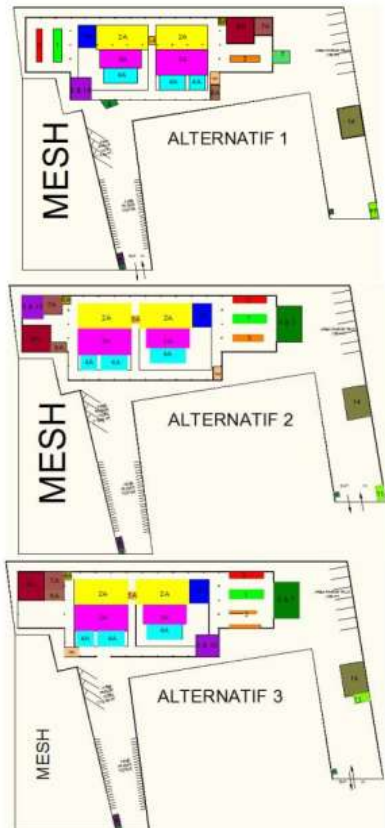


Figure 8. Development Alternative Layout

6. EVALUATION OF LAYOUT

Evaluations were conducted to evaluate the layout design of the layout of the plant facility by adjusting the available land. How to evaluate the layout is done with two (2) ways, namely by using a scoring quantitatively and qualitatively using the Material Handling Checklist. The first method uses a scoring method which used the code letters have numeric values, namely:

A has value 2⁵

E has value 2⁴

I has value 2³

O has value 2²

U has value 2¹

X has value 2⁻¹

If the borders between departments directly, then multiplied by 1. Conversely, if the borders between departments not directly, then multiplied by 0. Results of calculation of scoring alternative development layout can be seen in Table 5.

Based on Table 5 the results obtained from the calculation of an alternative scoring for 1, 276, Alternative 2 is 270, and the alternative 3 is 506.

Table 5. Results Scoring Alternative Development Layout.

Department	Alternative 1	Alternative 2	Alternative 3
1	32	80	80
2	16	52	52
3	33	68	68
4	52	49	66
5	34	16	32
6	4	52	52
7	32	66	66
8	1	3	3
9	5	3	3
10	17	33	33
11	0	0	1
12	16	16	16
13	0	0	0
14	0	0	1
15	17	16	17
16	17	16	16
Grand total	276	470	506

While the second method, an alternative layout is qualitatively evaluated by using a checklist of material handling. The results of the evaluation using a checklist of material handling can be seen in Table 6.

Table 6. Material Handling Checklist

Material Handling Checklist							
Number	Criteria of Good Facility Layout	Alternative 1		Alternative 2		Alternative 3	
		Yes	No	Yes	No	Yes	No
1	linkage activities planned	✓		✓		✓	
2	planned material flow patterns	✓		✓		✓	
3	Flow straight		✓	✓		✓	
4	step back (backtrack) minimum	✓		✓		✓	
5	additional flow paths		✓		✓	□	
6	straight alley	✓		✓		✓	
7	displacement between the minimum operating		✓		✓	□	
8	planned removal method	✓		✓		✓	
9	minimum displacement distance		□		□		✓
10	processing combined with the removal of material		✓		✓		✓
11	removal of moving toward acceptance of delivery	✓		✓		✓	
12	The first operation near the reception circuitry		✓	✓		✓	
13	last operation close to delivery	✓		✓		✓	

Table 6. Material Handling Checklist

Material Handling Checklist							
Number	Criteria of Good Facility Layout	Alternative 1		Alternative 2		Alternative 3	
		Yes	No	Yes	No	Yes	No
14	storage usage on the spot if possible	✓		✓		✓	
15	Flexible layout	✓		✓		✓	
16	able to accommodate future expansion plans	✓		✓		✓	
17	semi-finished goods inventory or minimum WIP	✓		✓		✓	
18	minimum of material being processed	✓		✓		✓	
19	maximum use of the entire production floor		✓		✓		✓
20	sufficient storage space	✓		✓		✓	
21	provision of sufficient space between equipment	✓		✓		✓	
22	buildings erected around the layout	✓		✓		✓	
23	materials delivered to the workers and taken from work		✓		✓		✓
24	as little as possible on foot between production operations		✓		✓		✓
25	proper placement services for production facilities and workers	✓			✓	✓	
26	mechanical switching apparatus installed in the appropriate place	✓		✓		✓	
27	service function enough workers	✓		✓		✓	
28	noise control dirt, dust, smoke, and moisture is adequate	✓		✓		✓	
29	processing time for a maximum total production time	✓		✓		✓	
30	minimize the transfer of materials	✓		✓		✓	
31	Minimum redeployment	✓		✓		✓	
32	separator does not interrupt the flow of materials and goods	✓		✓		✓	
33	material removal by a machine operator directly as possible	✓		✓		✓	
34	reduce the disposal of waste materials		✓		✓		✓
35	appropriate placement for the receipt and delivery		✓	✓		✓	
Total Yes		24		26		29	
Total No		11		9		6	

Material Handling Checklist of evaluation using 35 criteria nice layout obtained results for each alternative. The first alternative with a total of 23 yes votes and a total of not as much as 12. Alternative second with a total of 25 yes votes and a total of not as much as 10. Third alternative with a total of 28 yes

votes and a total of not as much as 7. Therefore, a third alternative was selected and showed that alternative the third most applicable.

In the third alternative is not as much as there are a total of 6. These results prove

the three alternative designs have limitations as 6 criteria, namely:

- 1) The minimum displacement distance
- 2) processing combined with the removal of material
- 3) the use of the entire production floor maximum
- 4) materials delivered to the workers and taken from work
- 5) as little as possible on foot between production operations
- 6) reduce the disposal of waste materials

Minimum displacement distance criteria, combined with the removal of material processing, material transfer criteria to be taken from the workers and the workplace, and as little as possible on foot between production operations are given a checklist is not due to the condition of the material using the displacement and the displacement of tools and materials such as trolley dolly. This condition can be treated by using a conveyor or conveyor belt so that the operator does not have to waste time to move the processed materials. But the other one hand, companies should consider in terms of finance to use conveyor.

Criteria for the maximum use of the entire production floor is given a checklist is not due to the condition of the production floor is not made of two levels. These criteria can be addressed by increasing the production capacity so that the need for the engine to produce more.

Criteria reduce the disposal of waste materials checklist is not given because of the condition of the factory plastic bag certainly result in residual form of scrap and waste, but this plant already has a solution to cope with scrap and waste. Scrap and waste plastic bags collected and then transferred to ore recycled into plastic recycle plastic bags so it can be used again.

7. CONCLUSION

Based on the stage of the plant layout design using SLP approach, to design the factory plastic bag with a capacity of 300 tons / month obtained the layout type of product layouts include:

- 1) Facilities production floor, with a floor area of 931.02 m² production consists of three (3) main engine which includes:

area of mixer machine, extrusion machine area blown film cutting and sealing machine area with auto puncher, and packing area

- 2) Facilities supporting the production floor, with a total area of 1028.92 m² which includes: Raw Material Warehouse, Warehouse Supporting Materials, Finished Goods Warehouse, Shipping and Receiving, Office, office toilets, mosque, waste disposal, security entry Pos, Pos guard out, Lockers, car parking, motorcycle parking, truck parking, maintenance tools, Cooling towers, Qc inspection area, Compressor, and Toilet production space

After the calculation of floor area for the production floor facilities and supporting the production floor, the layout design was developed into three alternative design layout. Alternative layout then quantitatively evaluated by scoring method and evaluated qualitatively with material handling checklist sheet. From the evaluation performed quantitatively and qualitatively, the third alternative is the alternative layout was selected to proceed to the creation of templates and 3D. Although no third alternative has a total of as much as 6, a third alternative is best layout to be applied because it meets kriteria good layout.

8. REFERENCES

- (a) Apple, James M. 1962. *Plant Layout and Material Handling*. New York: The Macmillan Company.
- (b) Hadiguna, RA, and Setiawan, H. 2008. *Layout Factory*. London: ANDI.
- (c) Sitalaksana, Iftikar Z, Ruhana Anggawisastra, and John H. Tjakraatmadja. 1979. *Mechanical System Design Work*. London: Department of Industrial Engineering, Bandung Institute of Technology.
- (d) Tompkins, James A, John A. White, et al., 2010. *Facilities Planning*. Wiley: United States of America.
- (e) Wignjosoebroto, Sritomo. 2009. *Factory Layout and Material Moving* the third edition. Jakarta: Widya Guna.

FACTORY PLASTIC BAG LAYOUT DESIGN IN ELITE RECYCLING INDONESIA EXTENSION

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