PROCEEDING 9TH ISIEM

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9th INTERNATIONAL SEMINAR ON INDUSTRIAL ENGINEERING & MANAGEMENT

ISIEM

"COLLABORATIVE INNOVATION TOWARDS BORDERLESS INDUSTRIAL AND ECONOMIC SYSTEM"

GRAND INNA MUARA
HOTEL CONVENTION & EXHIBITION
PADANG, WEST SUMATERA, INDONESIA
TUESDAY-THURSDAY, SEPTEMBER 20-22, 2016

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ISSN : 1978-774X

PROCEEDING

9th ISIEM

The 9th International Seminar on Industrial Engineering and Management

Grand Inna Muara Hotel Convention & Exhibition Padang,
West Sumatera, Indonesia, September 20 – 22, 2016

Organized by :

Industrial Engineering Department of

•Trisakti University• Al Azhar Indonesia University•
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PREFACE

Dear Presenters and Delegates,

On behalf of the Organizing Committee, I am honored to welcome you to the 9th International Seminar on Industrial Engineering and Management (ISIEM). This seminar is organized by the Industrial Engineering Department from eight Universities, namely Trisakti University, Telkom University, Tarumanagara University, Atma Jaya Catholic University of Indonesia, Al Azhar Indonesia University, Esa Unggul University, Pasundan University, and Bung Hatta University.

The theme **"Collaborative Innovation Towards Borderless Industrial and Economic System"** which in accordance with the current economic era, we hope that through the exchange of ideas, experiences and recent progress in Industrial Engineering and Management from academicians, engineers, professionals and practitioners from Universities, research institutions, government agencies and industries be able to help us to deal with future challenges.

We hope that our presenter and delegates will gain many shared ideas and great experiences from this conference and also acquire additional insights from our honorable speakers, **Gursel Ilipinar, PhD** from ESADE Business School – Barcelona, **Profesor Emeritus Dato' Ir. Dr. Zainai Bin Mohamed** from UTM Razak School of Engineering and Advance Technology – Malaysia, **Milko-Pierre Papazoff** from Vice President of French External Trade Counsellor (Malaysian Chapter).

The success of this seminar is due to the hard efforts of many people who we gratefully acknowledge. Special thank to all reviewers, speakers, and presenters, also highly appreciate to the committee for mutual effort and invaluable contribution.

Finally, we hope you will enjoy this conference and the natural beauty of Padang city – Indonesia and see you in the next ISIEM.

Best wishes,

Chair of the 9th ISIEM 2016

Dr. Wisnu Sakti Dewobroto, M.Sc

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18. Ayu Bidiawati J.R, S.T.,M.T. (Bung Hatta University)

KEYNOTE SPEECH

#1
Prof. Emeritus Dato' Ir. Dr. Zainai Bin Mohamed
UTM Razak School of Engineering and Advanced Technology
UTM International Campus

#2
Gursel Ilipinar, PhD
Innovation Management Expert
ESADE Business School - Barcelona

#3
Milko-Pierre Papazoff
VP of French External Trade Counsellor (Malaysian Chapter)

A G E N D A

September 20, 2016

18:00 - 18:30	Registration
18:30 - 19:30	Dinner
19:30 - 19:40	Padang Dance by Bung Hatta University
19:40 - 19:45	Welcoming Speech from Head of Committee ISIEM 9th
19:45 - 20:00	Opening Ceremony by Bung Hatta University Rector
20:00 - 21:00	Keynote Speech # 1 **Prof. Emeritus Dato' Ir. Dr. Zainai Bin Mohamed** **(UTM Razak School of Engineering and Advanced Technology,** **UTM International Campus – Malaysia)** **Moderator:** Dr. Adianto, M.Sc.
21:00 - 21:15	Photo Session with all participants

September 21, 2016

6:30 - 8:00	Breakfast and Registration
8:00 - 9:00	Keynote Speech # 2 **Gursel Ilipinar, PhD** **(Innovation Management Expert** **ESADE Business School – Barcelona)** **Moderator:** Ir. Wahyukaton, M.T.
9:00 - 10:00	Keynote Speech # 3 **Milko-Pierre Papazoff** **VP of French External Trade Counsellor (Malaysian Chapter)** **Moderator:** Dr. Ir. Syarif Hidayat, M.Eng.Sc, M.M.
10:00 - 10:30	Question and Answer
10:30 - 11:15	Coffee and Tea Break
11:15 - 12:35	Parallel session #1
12:35 - 13:30	Lunch break
13:30 - 16:30	Parallel session #2
15:00 - 15:15	Coffee and Tea Break
18:30 - 20:00	Dinner

September 22, 2016

08:00	- 09:30	Parallel session #3
09:30	- 17:00	City Tour

PARALLEL SESSION

SEPTEMBER 21, 2016 SESSION 1 ROOM 1
Moderator : Dr. Lamto Widodo, S.T., M.T.

Time	Paper	Code	Paper Code
11.15-11.25	**MAINTENANCE PERFORMANCE MEASUREMENT TRANSJAKARTA BUS AT PERUM DAMRI SBU BUSWAY CORRIDOR I & VIII USING MAINTENANCE SCORECARD** Didien Suhardini, Iveline Anne Marie, Amal Witonohadi, Auliandi Fahriditya Putra Jurusan Teknik Industri, Fakultas Teknologi Industri, Universitas Trisakti, Jakarta, Indonesia	IM	110
11.25-11.35	**IDENTIFICATION OF SUPPLY CHAIN PERFORMANCE INDICATORS AND STRATEGIC OBJECTIVES USING THE BALANCED SCORECARD** Dwi Kurniawan, Adela Anggun Pertiwi, Lisye Fitria Industrial Engineering Department, Institut Teknologi Nasional, Bandung, Indonesia	SCM	26
11.35-11.45	**IMPROVEMENT TO QUALITY OF TELECOMMUNICATION SERVICE BY MINIMIZE FAILURE OF SIMKARI APPLICATION DEVICE (A CASE STUDY IN PT DATALINK SOLUTION)** M. Hudori Department of Logistic Management, Citra Widya Edukasi Polytechnic of Palm Oil, Bekasi, Indonesia	QM	79
11.45-11.55	**POSITIONING ANALYSIS FOR HIGHER EDUCATION BASED ON PERCEPTUAL MAPPING USING MULTIDIMENSIONAL SCALING** Hafizh Suharja, Yati Rohayati, Rio Aurachman School of Industrial and System Engineering, Telkom University, Bandung, Indonesia	IM	16
11.55-12.05	**IMPROVING THE SERVICE QUALITY OF DISTANCE EDUCATION USING INTEGRATION SERVICE QUALITY FOR HIGHER EDUCATION AND KANO** Istianah Nedia, Yati Rohayati, Maria Dellarosawati Idawicasakti School of Industrial and System Engineering, Telkom University, Bandung, Indonesia	QM	40
12.05-12.15	**DESIGN OF STANDARD OPERATING PROCEDURE (SOP) OF DESIGN AND DEVELOPMENT OF PRODUCT ACCORDING TO ISO 9001:2015 CLAUSE 8.3 BASED ON RISK BASED THINKING BY BUSINESS PROCESS IMPROVEMENT METHOD AT CV. XYZ** Rindy Aprilina Gita Prastyanti[1], Sri Widaningrum, Heriyono Lalu Faculty of Industrial Engineering, Telkom University, Bandung, Indonesia	QM	52
12.15-12.25	**DESIGN OF NONCONFORMITY AND CORRECTIVE ACTION STANDARD OPERATING PROCEDURE BASED ON INTEGRATED REQUIREMENTS FROM ISO 9001 AND ISO 14001** Rahmah Fadhilah, Sri Widaningrum, Heriyono Lalu Industrial Engineering Department, Telkom University of Engineering, Bandung Indonesia	QM	53

SEPTEMBER 21, 2016 SESSION 1 ROOM 1
Moderator : Dr. Lamto Widodo, S.T., M.T.

Time	Paper	Code	Paper Code
12.25-12.35	**DESIGN AND ANALYSIS PHYSICAL AND LOGICAL SECURITY USING TIA-942 AND ISO/IEC 27000 SERIES IN DATA CENTER OF PDII-LIPI** Mukhlis Anugrah Pratama, Mochammad Teguh Kurniawan, Information System Major, Industrial Engineering Faculty, Telkom University, Bandung, Indonesia	DSS	68

SEPTEMBER 21, 2016 SESSION 1 ROOM 2
Moderator : Dr. Ir. Syarif Hidayat, M.Eng.Sc, M.M.

Time	Paper	Code	Paper Code
11.15-11.25	**INCREASING PRODUCTIVITY WITH OBJECTIVE MATRIX METHOD CASE STUDY ON BUILDING MAINTENANCE MANAGEMENT PIO PT. XXX** R Bagus Yosan, Muhammad Kholil, Winny Soraya Industrial Engineering, Mercubuana University, Jakarta, Indonesia	IM	42
11.25-11.35	**LEAN PROJECT MANAGEMENT TO MINIMIZE WASTE, CASE STUDY : INDARUNGVI PROJECT, PT SEMEN PADANG** Nilda Tri Putri, Sarvina Department of Industrial Engineering, Faculty of Engineering, Andalas University, Padang, Indonesia	QM	38
11.35-11.45	**APPLICATION OF LEAN MANUFACTURING IN THE PRODUCTION OF SPUN PILE USING WASTE ASSESMENT MODEL AND VALUE STREAM ANALYSIS** Syarif Hidayat, Siti Nurlina Industrial Engineering Department, Faculty of Science and Technology, University Al Azhar Indonesia, Jakarta, Indonesia	PS	11
11.45-11.55	**THE IMPLEMENTATION OF CORPORATE SOCIAL RESPONSIBILITY OF STARBUCKS COMPANY** Charly Hongdiyanto Ciputra University, Indonesia	IM	72
11.55-12.05	**A MODIFIED ECONOMIC PRODUCTION QUANTITY (EPQ) WITH SYNCHRONIZING DISCRETE AND CONTINUOUS DEMAND UNDER FINITE HORIZON PERIOD AND LIMITED CAPACITY OF STORAGE** Jonrinaldi, Henmaidi, Nurike Oktavia Department of Industrial Engineering, Andalas University, Padang, Indonesia Master Program of Industrial Engineering, Andalas University, Padang, Indonesia	PS	44
12.05-12.15	**APPLICATION OF VALUE STREAM MAPPING IN THE NVOCC FCL SERVICE PROCESS TO MINIMIZE DELAY IN SUBMISSION OF THE DOCUMENT (A CASE STUDY IN PT YUSEN LOGISTICS INDONESIA)** M. Hudori, Nismah Panjaitan Department of Logistic Management, Citra Widya Edukasi Polytechnic of Palm Oil, Bekasi, Indonesia Department of Industrial Engineering, Sumatera Utara University, Medan, Indonesia	QM	76
12.15-12.25	**WAREHOUSE LAYOUT DESIGN USING SHARED STORAGE METHOD** Alan Dwi Wibowo, Rahmat Nurcahyo, Cut Khairunnisa Department of Agro-Industrial Technology,Universitas Lambung Mangkurat, Indonesia Departemen of Industrial Engineering, Universitas Indonesia,	PS	22

SEPTEMBER 21, 2016 SESSION 1 ROOM 2
Moderator : Dr. Ir. Syarif Hidayat, M.Eng.Sc, M.M.

Time	Paper	Code	Paper Code
	Indonesia		
12.25-12.35	**CABLE CLAMP PRODUCTION CAPACITY PLANNING USING ROUGH CUT CAPACITY PLANNING (RCCP) METHOD (A CASE STUDY IN PT FAJAR CAHAYA CEMERLANG)** M. Hudori Department of Logistic Management, Citra Widya Edukasi Polytechnic of Palm Oil, Bekasi, Indonesia	PS	80

SEPTEMBER 21, 2016 SESSION 1 ROOM 3
Moderator : Dr. Ir. Yogi Yogaswara, M.T.

Time	Paper	Code	Paper Code
11.15-11.25	**DEVELOPMENT OF ONLINE KNOWLEDGE MANAGEMENT CYCLE INDICATORS USING SECI APPROACH: CASE STUDY IN AN ENERGY COMPANY** Aldio Fikri Siddik, Amelia Kurniawati, Umar Yunan Kurnia Septo Hediyanto Industrial Engineering Department, Telkom University, Bandung, Indonesia Information System Department, Telkom University, Bandung, Indonesia	DSS	51
11.25-11.35	**MANAGEMENT INFORMATION SYSTEM FOR ORDER FULFILLMENT: A CASE STUDY** Johanes Fernandes Andry, Halim Agung, Yana Erlyana Faculty Technology and Design, Bunda Mulia University, Jakarta, Indonesia	DSS	3
11.35-11.45	**Risk Factor Analysis of Liquified Natural Gas (LNG) Supply Process Chain in Indonesia** Rahmat Nurcahyo, Farid Akbar, Yadrifil Kampus UI Depok Indonesia	SCM	14
11.45-11.55	**ENHANCING PENDULUM NUSANTARA MODEL IN INDONESIAN MARITIME LOGISTICS NETWORK** Komarudin, Muhammad Reza, Armand Omar Moeis System Engineering, Modeling and Simulation (SEMS) Laboratory, Department of Industrial Engineering, Universitas Indonesia	OR	49
11.55-12.05	**PURCHASING CONSORTIUM SYSTEM USING COMMON REPLENISHMENT EPOCH (CRE) MODEL BY DESIGNING MOBILE INFORMATION SYSTEM FOR SMALL and MEDIUM ENTERPRISES (SMEs)** Yudha Prasetyawan, Imam Baihaqi, Shinta Dewi Industrial Engineering Department, Sepuluh Nopember Institut of Technology, Surabaya, Indonesia Business and Management Department, Sepuluh Nopember Institut of Technology, Surabaya, Indonesia Agroindustrial Technology Department, Universitas Internasional Semen Indonesia, Indonesia	DSS	10
12.05-12.15	**DESIGN E-COMMERCE ANGON BASED ON MARKETPLACE TO INCREASE REVENUE FOR LIVESTOCK'S ACTORS (SELLING MODULE)** Atika Elysia, Irfan Darmawan, Muhammad Azani Hasibuan Department of Industrial Engineering, Telkom University, Bandung, Indonesia	IM	65

SEPTEMBER 21, 2016 SESSION 1 ROOM 3
Moderator : Dr. Ir. Yogi Yogaswara, M.T.

Time	Paper	Code	Paper Code
12.15-12.25	**CONTROL SYSTEMS DESIGN FOR AUTO JUDGEMENT CHECK MACHINE IN ROTOR ASSEMBLY LINE USING PROGRAMMABLE LOGIC CONTROLLER** Syahril Ardi, Moh Faiza Abu Rizal Production and Process Manufacture, Polytechnic Manufacture Astra, Jakarta, Indonesia	PS	31
12.25-12.35	**OPERATIONAL RISK IDENTIFICATION IN ADMINISTRATION SERVICES OF HIGHER EDUCATION** Robby Anzil Firdaus, Rahmat Nurcahyo, Anafi Yuan Septiari, Supriadi Industrial Engineering Departement, Universitas Indonesia, Indonesia	IM	17

SEPTEMBER 21, 2016 SESSION 2 ROOM 1
Moderator : Niken Parwati, S.T., M.M.

Time	Paper	Code	Paper Code
13.30-13.40	**SHELVES RE-DESIGN TO CONSIDER ASPECTS OF ERGONOMICS IN KOPETRI MINI MARKET, KARAWANG** Dene Herwanto, Sukanta University of Singaperbangsa Karawang, Karawang, Indonesia	6	ER
13.40-13.50	**COGNITIVE ERGONOMIC ANALYSIS OF PROFESSIONALS IN INDUSTRIAL DESIGNER APPAREL (Case Study: Designer at PT. Kurnia ASTASURYA)** Erwin M Pribadi, Ari Robiana Rijalah Industrial Engineering Department, Universitas Pasundan, Bandung, Indonesia	13	ER
13.50-14.00	**DESIGN CONCEPT OF WASHING GALLON USING DESIGN METHOD RATIONAL** Antonio Bennarivo Nainggolan, Mira Rahayu, Teddy Syafrizal Industrial Engineering Department, Telkom University, Bandung, Indonesia	56	ER
14.00-14.10	**DESIGNING ERGONOMIC CONVEYANCE TOOLS FOR SULFUR MINERS IN THE IJEN CRATER** Anny Maryani, Dyah Santhi Dewi, Elsa Camelia Harmadi, Pamungkas Dwi Admaja Industrial Engineering Department, ITS Surabaya, Indonesia	61	ER
14.10-14.20	**AUTOMATIC POLARIZING FILTER SYSTEM FOR WELDING MASK** Muhammad Ridwan Andi Purnomo, Riadho Clara Shinta, Rizqi Ramadhani, Ahmad Rizal Yassaruddin, Muhammad Iqbal Sabit Department of Industrial Engineering Universitas Islam Indonesia	47	ER
14.20-14.30	**DESIGN GALLON WASHING TOOLS USING ERGONOMIC FUNCTION DEPLOYMENT METHOD** Bintang Sri Perdana, Mira Rahayu, Teddy Syafrizal Industrial Engineering Department, Telkom University, Bandung, Indonesia	57	ER
14.30-14.40	**ERGONOMIC ANALYSIS FOR THE ARMOURED PERSONNEL CARRIER DRIVER** Halim Mahfudh, Lilik Zulaihah, Reda Rizal Department of Industrial Engineering, Universitas Pembangunan Nasional Veteran Jakarta	91	ER

SEPTEMBER 21, 2016 SESSION 2 ROOM 1
Moderator : Niken Parwati, S.T., M.M.

Time	Paper	Code	Paper Code
14.40-14.50	**APPLICATION OF ANALYTICAL HIERARCHY PROCESS TO CHOOSE CRITERIA FOR MOBILE PHONES** Dessi Mufti, Yesmizarti Muchtiar, Iswanto Industrial Engineering Department, Universitas Bung Hatta, Padang, West Sumatera, Indonesia	83	IM
14.50-15.00	**DESIGNING A PERSONAL SURVIVAL KIT IN FLOOD DISASTERS THROUGH PARTICIPATORY DESIGN APPROACH** Grace Novelia, Johanna Renny Octavia Industrial Engineering Department, Parahyangan Catholic University, Bandung, Indonesia	89	ER
15.00-15.10	**DESIGN IMPROVEMENT FOR POTATOES CULTERY TOOLS "POTTY" USING PRODUCT ARCHITECTURE ANALYSIS** Rahmat Ramadhani Bayu, Dicha Keci Barakin, Rendra Gilang Yuniarto, Muhammad Iqbal Industrial Engineering, Telkom University, Bandung, Indonesia	30	ER
15.10-15.20	**STUDY OF SHAFT POSITION IN GAS TURBINE JOURNAL BEARING** Rizky Arman, Iman Satria Mechanical engineering Dept, Faculty of Industrial Technolgy, Bung Hatta University, Padang, Indonesia	105	PS
15.20-15.30	**APPLICATION METHODS P-C-P TO IMPROVE QUEUE SERVICE QUALITY IN SUPERMARKET CASHIER AT THE PEAK DEMAND CONDITION** Yesmizarti Muchtiar, Muhibbullah Azfa Manik, Emil Endrivon Department of Industrial Engineering, Bung Hatta University, Padang, Indonesia	78	QM
15.30-15.40	**DESIGN E-COMMERCE ANGON BASED ON MARKETPLACE TO INCREASE PURCHASING EFFICIENCY FOR LIVESTOCK'S ACTOR (PURCHASE MODULE)** Pratiwi Galuh Putri, Irfan Darmawan, Muhammad Azani Departemen of Industrial Engineering Telkom University, Bandung, Indonesia	67	IM
15.40-15.50	**DEVELOPING INFORMATION SYSTEM OF LIBRARY ON E-SCHOOL QR-CODE BASED IN 13 NATIONAL HIGH SCHOOL USING EXTREME PROGRAMMING METHODOLOGY** Timbul Prawira Gultom, Nia Ambarsari, Muhammad Azani H. Department of Industrial Engineering, Telkom University, Bandung, Indonesia	71	DSS
15.50-16.00	**USING EDUQUAL AND KANO'S MODEL TO IMPROVE THE SERVICE QUALITY OF TRAINING AND CERTIFICATION PROGRAM** Iftitah Pratomo, Yati Rohayati, Sari Wulandari School of Industrial and System Engineering, Telkom University, Bandung Indonesia	23	IM
16.00-16.10	**DEVELOPMENT DETAIL DESIGN GALLON WASHER USING DESIGN FOR ASSEMBLY (DFA)** Mohamad Walid Anshar Ichsan Shahib, Mira Rahayu, Teddy Sjafrizal Industrial Engineering Department, Telkom University, Bandung, Indonesia	55	ER

SEPTEMBER 21, 2016 SESSION 2 ROOM 1
Moderator : Niken Parwati, S.T., M.M.

Time	Paper	Code	Paper Code
16.10-16.20	**MAKING A PLYWOOD BOAT CATAMARANS MODEL FOR HANDLING OF FLOOD EMERGENCY IN AREAS OF DURI KEPA** Indra Gunara Rochyat, Asnawati, Wahyu Albin Tabrani Product Design Department – Design & Creative Industry Faculty, Esa Unggul University, Jakarta, Indonesia	102	ER
16.20-16.30	**STUDY OF LIFT MARKET THROUGH GAP ANALYSIS** Niken Parwati, Nurhanisa Maysa, Aprilia Tri Purwandari Department of Industrial Engineering, Faculty of Science and Technology, Universitas Al Azhar Indonesia	93	IM

SEPTEMBER 21, 2016 SESSION 2 ROOM 2
Moderator : Inna Kholidasari, S.T., M.T., Ph.D.

Time	Paper	Code	Paper Code
13.30-13.40	**MAXIMUM PROFIT CALCULATION BASED ON THE QUANTITY OF DEMAND VEGATABLES WITH THE SINGLE ORDER QUANTITY METHOD** Annura Minar Gayatri, Nunung Nurhasanah, Ahmad Juang Pratama Industrial Engineering, Faculty of Science and Technology, Univerisity of Al Azhar Indonesia, Jakarta, Indonesia	84	PS
13.40-13.50	**DETERMINING THE INVENTORY POLICY FOR V-BELT USING PROBABILISTIC METHOD** Sukanta, Dene Herwanto University Singaperbangsa of Karawang, Indonesia	7	PS
13.50-14.00	**SYSTEM DYNAMICS BASED BALANCED SCORECARD TO SUPPORT DECISION MAKING IN STRATEGY OF PERFORMANCE IMPROVEMENT (A CASE STUDY IN THE UNIVERSITY)** Linda Theresia, Yenny Widianty, Dawi Karomati Baroroh Department of Industrial Engineering, Institut Teknologi Indonesia, Serpong, Indonesia Industrial Engineering, Universitas Gadjah Mada, Yogyakarta, Indonesia	8	DSS
14.00-14.10	**DRUG INVENTORY POLICY PROPOSAL USING PROBABILISTIC METHODS TO INCREASE THE SERVICE LEVEL** Sabila Syafitri Pambudi, Dida Diah Damayanti, Budi Santosa Chulasoh Departemen of Industrial Engineering, Telkom University, Bandung, Indonesia	74	PS
14.10-14.20	**AN AUTOMATED GUIDED VEHICLE SIMULATION THROUGH ROBOTINO TO HELP LEARNING COURSE INDUSTRIAL AUTOMATION** Tatang Mulyana, Haris Rachmat, Prasetia Pramudita Yuliarso Laboratory of Production Manufacturing and Automation, Faculty of Industrial Engineering, Telkom University, Bandung, Indonesia	33	PS
14.20-14.30	**THE IMPLEMENTATION OF ANALYTIC HIERARCHY PROCESS ON THE SELECTION OF SUPPLIER IN START-UP BUSINESS: A CASE STUDY** Ahmad Setyo Irawan, Liliani International Business Management, Universitas Ciputra, Surabaya, Indonesia	27	SCM

SEPTEMBER 21, 2016 SESSION 2 ROOM 2
Moderator : Inna Kholidasari, S.T., M.T., Ph.D.

Time	Paper	Code	Paper Code
14.30-14.40	**OPTIMAL PREVENTIVE MAINTENANCE OF TWO-PHASE MAINTENANCE POLICY FOR LEASED PRODUCT** Hennie Husniah, Andi Cakravastia, Bermawi P. Iskandar Department of Industrial Engineering, Langlangbuana University, Bandung, Indonesia Department of Industrial Engineering, Bandung Institute of Technology, Bandung, Indonesia	28	PS
14.40-14.50	**A SIMPLE MATHEMATICAL MODEL OF TECHNOLOGICAL TRANSFER WITH TWO COMPETING FOLLOWERS (A PRELIMINARY RESULT)** Hennie Husniah, Asep K. Supriatna Department of Industrial Engineering, Langlangbuana University, Bandung, Indonesia Department of Mathematics, Padjadjaran University, Bandung, Indonesia	29	OR
14.50-15.00	**INCREASING PRODUCTIVITY OF PT. XYZ THROUGH THE UTILIZATION OF STANDARD TIME AND THE TWO HANDED PROCESS FOR PANEL BOX PRODUCTION** Arnolt Kristian Pakpahan; Didien Suhardini; Arum Tri Astuti Organizational and Business Development Laboratorium, Industrial Engineering, Faculty of Industrial Engineering, Trisakti University	100	IM
15.00-15.10	**JOB SHOP SCHEDULING AT IN-HOUSE REPAIR DEPARTMENT IN COLD SECTION MODULE CT7 ENGINE TO MINIMIZE MAKESPAN USING GENETIC ALGORITHM AT PT XYZ** Michael Whizo Mayto, Pratya Poeri Suryadhini, Murni Dwi Astuti Industrial Engineering Study Program, Industrial Engineering Faculty, Telkom University, Bandung, Indonesia	99	PS
15.10-15.20	**CAPACITATED VEHICLE ROUTING PROBLEM WITH TIME WINDOWS FOR MILK COLLECTION AT KPBS PANGALENGAN** Tjutju Tarliah Dimyati Industrial Engineering Department, Pasundan University, Bandung, Indonesia	34	OR
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LEAN PROJECT MANAGEMENT TO MINIMIZE WASTE, CASE STUDY : INDARUNG VI PROJECT, PT SEMEN PADANG

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ABSTRACT

Nowadays, the infrastructure development is one of the important things in developing country strategy. Country development could be increased as long as the industry growth in each area in Indonesia; including province and city. The status of West Sumatera is still as the development province in industrial sector. Although the majority income in this area is mostly from agricultural sector, but it has an industry that has a good economic growth, named PT Semen Padang. PT Semen Padang wants to increase their capacity and income by develop Indarung VI. But the project activity performance of Indarung VI project was bad in July 2015, the variance of performance raise 20,94%. Project was needed to be evaluated, to minimize waste on the project activity. Project activity needs the concept of lean, named Lean Project Management (LPM). Two principles of LPM are project system and risk project management. The appliance of these concepts will minimize waste in the next project activity.

Keywords: lean, lean project management, project system, project performance, risk project management

1. INTRODUCTION

1.1. Sub Title for Introduction

Development is an important thing to make sure country is able to compete with the others countries. Infrastructure developing is a good choice based on government to develop their country. An economic capital income will be increased by country development, which means country development makes a better living for Indonesian. In the other side, industry facility in Indonesia is limited and not enough to compete with the competitor industry (from other country). It becomes the main issue and problem of Indonesia's industry. To respond those problems, some industries want to expand their business to get the higher profit per month. New construction development in industry is the one of the alternatives to expand their production capacity and expand their market.

PT Semen Padang is the one of cement industry in Padang, West Sumatera. PT Semen Padang has five current plants area named Indarung I, II, III, IV, and V and they want increase their capacity and income by develop Indarung VI, which has higher capacity of clinker and cement. The purposes of Indarung VI development are to distribute cement for Semen Indonesia Group for 2016 on right time, cost, quality, and work scope to increase the company performance (Technical Report of PT Semen Padang).

In general, Indarung VI construction activity is divided into three sub activities; mechanical construction, electrical and instrumental construction, and civil construction. Civil Construction 1 (CC-1) was the first construction project that will be held by PT Semen Padang in Project Indarung VI.

According to project activity performance in July 2015, the progress reached only 65.64%, but estimated plan was 86.58%. Means, the project progress was worse than the target in 20.94%. The 20,94% as the variance means the number of bad performance for non-value added activity (waste) in project activity.

Lean Project Management (LPM) is the method which identifies waste and risk to

find the solution in each problem before it happened. LPM has some principles, named project system, leading people, chartering, right solution, managing variation, managing risk, project plan, and execution. LPM will give continuous improvement in the project and next project that will be held by stakeholder.

2. THEORETICAL BACKGROUND

2.1 Construction

According to Trianto 2011 (in Sarah, 2012) construction is a set of project activity, included civil construction, mechanical construction, and electrical construction. Construction project is a set of activity that is started from planning, implementing, and controlling the activities of architect, civil, mechanical, electrical, and environment layout to build a building.

Construction project has three parties who have responsibility in project directly and indirectly; owner / user, designer and supervision, and contractor. The party who plans the project activity is owner. Each party has task, responsibility, and obligation. The good coordination between each party is the success key of project. (Wahyono, 2011).

2.2 Lean Project Management Principles

2.2.1 Percent Plan Complete

Percent Plan Complete (PPC) is the number of planned activities completed divided by the total number of planned activities, expressed as a percentage. PPC becomes the standard against which control is exercised at the crew level, being derivative from an extremely complex set of directives: project schedules, execution strategies, budget unit rates, etc. Assuming quality plans, higher PPC corresponds to doing more of the right work with given resources, i.e., to higher productivity and progress. (Ballard, 1994)

2.2.2 Lean Project Management Principles

Lean project management is the method to identify the waste (non-value-adding activity) and potensial risk in the process then it will help to estimate time, cost and sources along the project. LPM has seven principles, are (Mandagi and Dundu, 2014) :

1. Project system
   Project system is the method which concerns on identify the waste and find the right solution.
2. Leading people
   Leading people is the method which concerns on identify the stakeholder and control the roles, this method is suitable with project that has many stakeholders.
3. Chartering
   Chartering is the method to define vision and objective of project and give otority to the project leader.
4. Right solution
   Right solution is used to superintend the potential waste in the project process
5. Managing variation
   Managing variation is used to estimate the cost, schedule, and sources before the project processed.
6. Project risk management
   Risk management is used to identify risk events that will be happened which is caused by waste happened.
7. Project plan
   Project plan is the integration of lean project management principles
8. Execution
   This step is including project control, integrate cost and schedulle, and monitoring the time.

3. RESEARCH METHOD

Research methodology is a set of writing report steps, started from survey, literature study, problem identification, problem formulation, data collecting, data processing, result, analysis, mitigation, and conclusion.

Survey has been conducted in Project Indarung VI, PT Semen Padang. The problem formulation in research is how to apply earned value analysis to evaluate the

project activity progress and lean project management concept in order to minimize the waste in Indarung VI Project, PT Semen Padang.

Result and discussion includes the data processing and analysis. Data processing is a set of step which is necessary to be followed in the final project. The data processing and analysis is divided into three parts; percent plan complete, project system and risk project management.

The research methodology is figured in Figure 1.

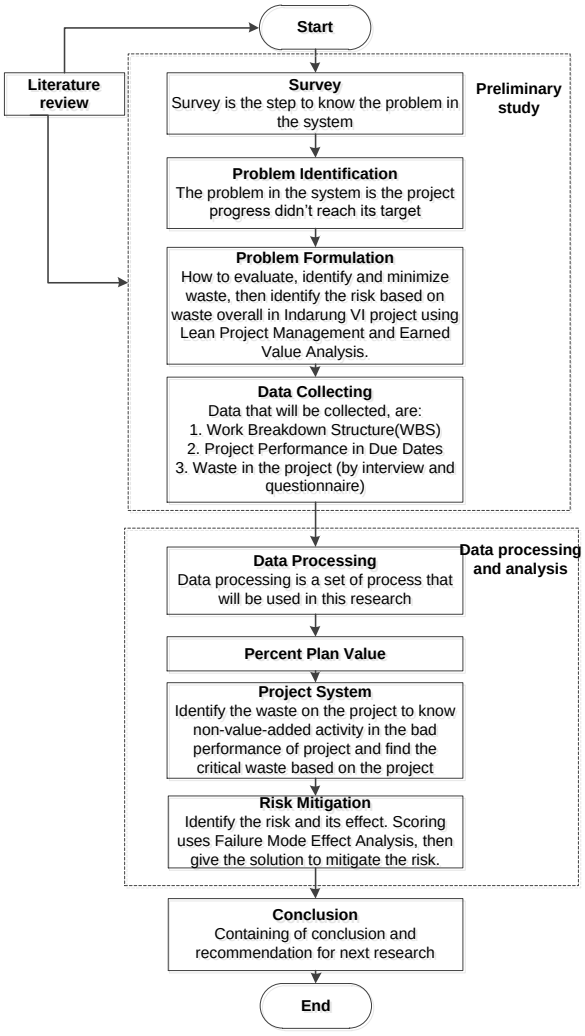

Figure 1. Research Methodology

4. RESULT AND DISCUSSION

4.1 Percent Plan Complete

Percent plan complete is the first waste identification has been conducted in project activity progress. The progress of project activity is shown in Table 1.

Table 1. Project Progress

Line	Work Break Down	Weight	Schedule		ACTUAL	
			Current Month	Cum. Month	Current Month	Cum. Month
		(%)	(%)	(%)	(%)	(%)
1	Mobilization and Preparation	0,95%	0,061%	0,950%	0,000%	0,950%
2	STRUCTURING CYCLONE	28,46%	0,000%	28,460%	-0,132%	30,230%
3	KILN FEED	12,37%	0,000%	12,370%	0,290%	5,500%
4	Raw mill base	2,88%	0,000%	2,880%	0,000%	2,880%
5	CF SILO	36,90%	0,000%	36,902%	0,000%	32,821%
6	Kiln Base	4,65%	0,000%	4,647%	0,000%	4,377%
7	Drill Pole	13,77%	0,000%	13,772%	0,000%	13,565%
	TOTAL	100,00%	0,1%	100,00%	0,16%	90,32%

In 24th December 2015 was the deadline of project activity but it just reached the progress for 90,320%. Means the target was not reached by contractor. The PPC (percent plan complete) for this project:

$$PPC = \frac{\text{Project Progress}}{\text{Project Schedule}} = \frac{90{,}320\%}{100\%} = 0{,}903$$

The number of PPC is less than 1, it means the project activity progress had bad performance.

Based on the problem, it needs the implementation of project system and risk project management to minimize risk and waste in the next project activity.

4.2 Project System

Project system is the method which concerns on identify the waste and find the right solution. It means that project system focused on waste identification on Civil Construction-1 Project. Waste ranking was used to get the highest three rank, then identified the waste based on the rank. There were three respondents who responsible to rank the waste. They are Head Project Area of PT Waskita Karya and two civil engineers of PT Waskita Karya.

According to the interview, it was found that the top three wastes on Civil Construction-1 Project. The wastes were waiting, rework,

and movement. Then the waste had been identified according to the references, interview with head project area of Civil Construction 1 project, and expert opinion.
Waiting has 21 failure modes, rework has 6 failure modes, and movement has 14 failure modes. In order to check the relevant failure modes with the project activity, it needs the expert justification to determine the relevant or un-relevant failure modes. The selected experts are; owner (PT Semen Padang), supervision and consultant (PT Partono Pondas), and contractor (PT Waskita Karya).

The fishbone diagram of each waste is figured in Figure 2, 3 and 4.

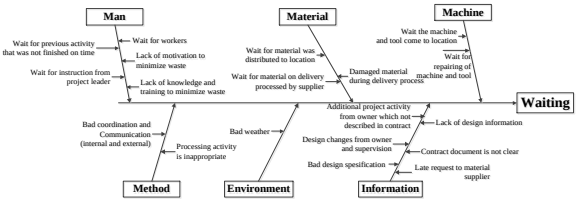

Figure 2. Fishbone Diagram of Waiting

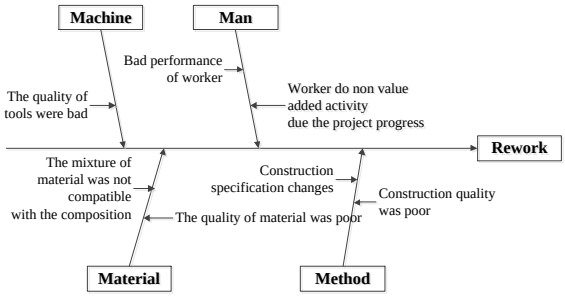

Figure 3. Fishbone Diagram of Rework

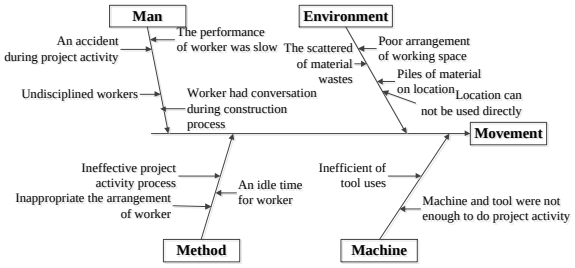

Figure 4. Fishbone Diagram of Movement

4.3 Risk Project Management

Risk project management is risk identification method of current wastes and potential wastes. Risk project management on this case use FMEA as the method to identify risk events and give the recommendation to each failure. According to Beauregard et al. (2009), the 10 steps of FMEA are:

1. Step 1: Review the process or product
2. Step 2: Brainstorm potential failure modes
3. Step 3: List potential effects of each failure mode
4. Step 4: Assign a severity ranking for each effect
5. Step 5: Assign an occurrence ranking for each failure mode or effect
6. Step 6: Assign a detection ranking for each failure mode or effect
7. Step 7: Calculate the risk priority number for each effect
8. Step 8: Prioritize the failure modes for action
9. Step 9: Take action to eliminate or reduce the high-risk failure modes
10. Step 10: Calculate the resulting RPN as the failure modes are reduced or eliminated.

The first and second processed has been done in project system. The third step finds the effect of the failure towards the failure mode. According to the interview with the experts in CC-1 project, there are three most effect of the failure towards the failure mode. It can cause the effect for project duration, project cost, and effect for worker (man power)/hazard effect.

Table 2. Severity Scale

Scale	Explanation	Financial Effect	Time/lateness on project activity	Man power effect
5	Extreme	Increase more than 5% of budget	More than 5% of schedule	May endanger machine or operator, cause the death or serious physical or psychological
4	High	Increase more than 2,5% and less than 5% of budget	More than 2,5% and less than 5% of schedule	Injuri or permanent loss of bodily function
3	Moderate	Increase more than 1% and less than 2,5% of budget	More than 1% and less than 2,5% of schedule	An event, occurance, or situation involving the clinical care of a patient in medical facility
2	Low	Increase more than 0,5% and less than 1 % of budget	More than 0,5% and less than 1% of schedule	Failure can be overcome may cause minor injurity
1	None	Increase less than 0,5% of budget	Less than 0,5% of schedule	No injurity

Severity, occurrence, and detection scale is the representative of the previous research and the expert opinion. The expert opinion has been identified from the Production

Control and Risk Management staff from PT Semen Padang.

Table 3. Occurrence Scale

Scale	Explanation	Probability of Failure
5	Very High	Failure is almost inevitable
4	High	Repeated failures
3	Moderate	Occasional failures
2	Low	Relatively few failures
1	Remote	Failure is unlikely

Table 4. Detection Scale

Scale	Explanation	Likelihood of detection
5	Almost imposible	The probability of detect the risk is very low (based on controlling)
4	Remote	The probability of detect the risk is low (based on controlling)
3	Moderate	The probability of detect the risk is enough yet (based on controlling)
2	Very high	The probability of detect the risk is high (based on controlling)
1	Almost certain	The controlling can detect or prevent the risk

Risk priority number is calculated from the number of occurrence, severity, and detection. The calculation of RPN is done for three experts with different perspective. The outcome of RPN is used to find the highest risk priority and find their respond.

According to FMEA step is to prioritize the highest score of RPN calculation in failure mode. According to interview with PCRM (Planning Control and Risk Management) Staff at PT Semen Padang, the highest RPN; it is when the score is greater than equal to 27. It is caused by the mid score for RPN is 27, when the severity, occurrence, and detection are equal to 3. If the RPN is greater than 27 but its occurrence or severity or detection less than 3, it is still counted to high RPN, it means it has another potential risk in one or two indicators of RPN calculation.

The priority failure mode according to RPN score is shown in Table below:

Table 5. The Priority Failure Mode According to RPN's score

Risk Code	Indicators	Failure Mode	Expert		
			1	2	3
R02	Material	Wait for material on delivery processed by supplier			√
R03		Damaged material during delivery process			√
R04	Man	Wait for the workers		√	√
R30		The performance of worker is slow			√
R10	Machine	Wait for the repairing of machine and tool		√	
R27		The quality of tools were poor	√	√	
R12	Information	Additional project activity from owner which is not described in contract agreement		√	√
R13		Design changes from owner and supervision	√	√	√
R20	Environment	Bad weather	√	√	√
R37		Poor arrangement of working space		√	√
R40		Location can not be used directly		√	

Then the risk responds is depended on the interview with PCRM Staff, Indarung VI Project, PT Semen Padang. PCRM focus on risk management and planning control at this project. Risk respond is used to respond the risk when it happened. The risk respond for failure mode will be shown on table below.

Table 6. Risk Respond

Risk code	Indicator	Failure Mode	Failure Effect	Risk Respond
R02	Material	Wait for material on delivery processed by supplier	1. Break the sequence each activity project 2. Add operational processing time 3. Too much wasting material	1. Push the supplier to fast track the material delivery process 2. Make a group of material base on type and weight on delivery process
R03		Damaged material during delivery process	4. Delayed to start project activity	
R04	Man	Wait for the workers	1. Add operational processing time 2. Break the sequence each activity project 3. Accumulation of activity on the same time 4. Delayed to start project activity 5. Too much wasting time	1. Give the warning letter to sub-contractor 2. Give the take out threat to the correlate activity 3. Command the contractor to add some workers
R10	Machine	Wait for the repairing of machine and tool	1. Add operational processing 2. Break the sequence each activity project 3. Delayed to start project activity 4. Too much wasting time	1. Push the supplier to fast track the material and tool repairing 2. Help the contractor to supply un enough tool and machine (in the tolerance
R12	Informati-on	Additional project activity from owner which is not described in contract agreement	1. Break the sequence each activity project 2. Add operational processing time 3. Add project operational cost 4. Accumulation of activity on the same time	1. Command the contractor to add some workers 2. Make the clear sequence project activity 3. Inspection to location 4. Make the clear design spesification

Table 6. Risk Respond (Con' t)

Risk code	Indicator	Failure Mode	Failure Effect	Risk Respond
R13	Informati-on	Design changes from owner and supervision	1. Break the sequence each activity project 2. Too much wasting materia 3. Add operational processing 4. Add project operational cost 5. Delayed to start project activity	5. Renew the contract agreement (redendum) 6. Inspection to location 7. Give the fund faster
R20	Environ-ment	Bad weather	1. Break the sequence each activity project 2. Add operational processing time 3. Delayed to start project activity 4. Too much wasting time	1. Command the contractor to add some workers
R27	Machine	The quality of tools were poor	1. Break the sequence each activity project 2. Too much wasting material 3. Add operational processing time 4. Delayed to start project activity 5. Too much wasting time	1. Push the supplier to fast track the material and tool repairing 2. Help the contractor to supply un enough tool and machine
R37	Environ-ment	Poor arrangement of working space	1. Add operational processing time 2. Break the sequence each activity project	1. Command an inspector to control each construction location 2. Command the contractor to add some workers
R40		Location can not be used directly	3. Accumulation of material which gives bad effect for other project activity 4. Delayed to start project activity	3. Make a group of material based on the type 4. Place the material near to the location

5. CONCLUSION

The waste that has been identified is 40 wastes which based on waiting, rework, and movement. Risk respond is used to minimize risk that will be happened on project.

The suggestion is the recommendation of FMEA can be implemented on the Civil Construction 1 Project to minimize the risk priority number on the next project activity in civil construction project.

6. REFERENCES

(a) Ballard, Glenn. (1994). *The Last Planner.* Lean Construction Institute, Northern California Construction Institute Monterey, Ca April 22-24, 1994

(b) Beauregard, et al.(2009). *The Basic of FMEA*. Tailor and Francis Group : United States of America.

(c) Mandagi, Robert J.M. and Ariestides K.T. Dundu (2014). Civil Statistic Journal. *An Implementation of Lean Project Management Method for Project Construction Planning (Case study: Mantos Construction Project, Step III) (*in Indonesia*).* Volume 2(2337-6732). 320-329

(d)Sarah. (2012). *Recommendation of System Repairs for Construction Project using Lean Construction Concept* (in Indonesia). Final Project. Andalas University

(d)Wahyono, Herry Ludiro (2011). *Analysis of Un-corresponding in Contract Agreement in term of Construction Fails* (in Indonesia*).* Thesis. Diponegoro University

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