Final Report
Scheme for Academic Mobility and Exchange (SAME) Program

The Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector

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Department of Electrical Engineering
Faculty of Engineering
Hasanuddin University
Year 2019

VALIDATION SHEET

Scheme for Academic Mobility and Exchange (SAME) Program 2019

Title of Research	: The Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector
Researcher:	
a. Full Name	: Yusri Syam Akil, S.T., M.T., Ph.D
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Host Professor:	
a. Full Name	: Assoc. Prof. Hajime Miyauchi
b. Institution	: Department of Computer Science and Electrical Engineering, Kumamoto University
c. Address of Institution	: 2-39-1 Kurokami, Chuo-ku, Kumamoto-shi, 860-8555 Japan
Lenght of SAME Program	: 3 Months (27 August – 24 November 2019)

Makassar, 28 November 2019

Acknowledged,
Rector of Hasanuddin University

(Prof. Dr. Dwia Aries Tina Pulubuhu, MA.)
NIP. 19640419 198903 2 002

Researcher

(Yusri Syam Akil, S.T., M.T., Ph.D)
NIP. 19770322 200501 1 001

PREFACE

My gratitude to Allah SWT for His blessings especially during the implementation of my Scheme for Academic Mobility and Exchange (SAME) program in Japan with research topic The Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector.

I would like to express my thanks to Directorate General of Resources for Science, Technology and Higher Education of Indonesia for financial support in this program. My sincere thanks and appreciation go to for my host professor in Kumamoto University, Assoc. Prof. Hajime Miyauchi for his suggestions (supervisions) during research under the SAME program. Thanks to staffs in the International Affairs Section of Kumamoto University, and all members of Power System Laboratory for given support and warm friendship during my stay in Japan. My sincere thanks also go to Rector, Vice Rectors, Dean, and other colleagues in Engineering Faculty, Hasanuddin University for their supports.

It is believed that the implementation of this SAME program will increase research collaboration and continuity of academic cooperation with university in Japan particularly Kumamoto University. Besides that, it is expected findings / research output not only can give scientific contribution to the body of knowledge in the field of energy or power demand analysis, but also can be used as a reference in making energy efficiency policy or educational models for consumers such as energy saving programs for industrial sector. Furthermore, it can be used for updating course unit or to enrich learning material for student which is based on the research or development curriculum in the university.

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1.1 Background to the Research

One of the important issues in many countries including in Indonesia is how to meet energy needs from consumers which tends to increase over the time. The energy demand can come from a number of sectors such as residential, commercial, and industrial sector. In Indonesia, one of main sectors which consumed highly energy is industrial sector. Therefore, increasing efficiency of energy usage in this sector is needed as an effort to reduce total of energy consumption mainly for electricity energy. In general, reduction of energy consumption (energy saving from consumer side) is a possible option to overcome problem in maintaining stability between supply and demand for continuity service to consumers under certain period. Comparing with other efforts such as building of new thermal power plants and transmission line, the increasing efficiency of electricity energy usage give other advantages such as help for environmental mitigation, preventing carbon emission, encouraging equitable electricity, and reducing cost in providing electricity energy at the same time [1-3].

Similar to Makassar - Indonesia, one of the largest energy consumption / consumer groups is industrial sector including micro-small-medium enterprises (MiSMEs). The important role of MiSMEs in Indonesia to support economic growth, job creation, poverty reduction which is in line with government programs causes number of SMEs tends to increase from year to year which is proportional to energy consumption. With regards to this situation, and considering the unique relationship between driver variables makes comprehensive study on energy usage for MiSMEs need to be done for sustainable energy consumption mainly for electricity energy. Therefore, besides adding power capacity in the system, increasing efficiency in the aspect of using electricity or energy saving improvement is important. For energy saving, various factors can influence the successful of its practice in one place and one of them is consumer's behavior. From this perspective, it is meaningful to know user's behavior as a reference to reduce energy consumption and to enhance quality service to existing consumers at the same time. One of the successful methods that can be used for this purpose is regression analysis [4].

In general, more detail information can be obtained by the application of regression method. It includes such as main driver variables can be identified, the importance of the variables can be ranked, and the relationship between variables can be known. Next, knowledge or obtained information can be used as a reference to improve efficiency of energy usage, to design more suitable strategy for energy conservation to prevent energy crisis. However, providing consumers' behaviors models for energy efficiency improvement is not an easy task for modeller. This is caused besides perception and consumer behavior can be different, the availability of data, and kinds of driver variables may not same in the different sectors and places. Previous studies on energy efficiency analysis from various places for different sectors can be seen such as in [3-10].

Currently, a number of issues related energy such as providing electricity energy are found in many places in Indonesia including in Makassar which is connected to Sulselrabar electric power system. Energy usage which is still inefficient, educational programs to consumers that have not been maximized, and the range of network faults and power outages are some causes of the problems and inefficiencies. If this continues, stability of energy supply to consumers can continue to decline which will harm the power utility and consumers in many aspects. As one of efforts to dealing with this condition, it is needed a comprehensive study concerning energy analysis and consumers through developing more specific model.

Considering the complexity of energy consumption [11] and required data for analysis, therefore this proposed research focus on the development of regression model for industry to improve efficiency of energy usage particularly for manufacturing Small-Medium Enterprises (SMEs) in Makassar - Indonesia. To the our knowledge, energy efficiency analysis for Indonesian SMEs is very limited. This research is in line with the leading research topic under "Group of Tekno-Sains" (Rumpun Tekno-Sains) in the Strategic Planning of Hasanuddin University Year 2016-2020 (RENSTRA Penelitian UNHAS 2016-2020) with sub theme is "Energy Management, Natural Resources and Environment" [12]. Therefore, besides this research is relevant to support the achievement of existing university strategic planning (RENSTRA UNHAS), it is also support the development of academics in the Department of Electrical Engineering, UNHAS in many aspects.

1.2 Research Objectives

The objectives of this research are as follows:

1. To measure the perception level of industrial consumers particularly for manufacturing small-medium enterprises (SMEs) in Makassar city - Indonesia towards energy saving as research objects.
2. To identify drivers of consumers' behaviors to improve energy efficiency usage in SMEs by developing model using regression approach.
3. To compose suitable strategy for improving efficiency of energy usage in manufacturing SMEs.

CHAPTER 2
EXPECTED OUTPUT

Expected output of the this research and their indicator are shown in Table 1 and 2 as follows:

Table 1. Primary output

No.	Output Indicator		Achieved Indicator
1.	Article	International journal indexed by Scopus and registered at Scimago	Submitted / under review journal (joint publication)

Table 2. Additional outcome

No.	Output Indicator		Achieved Indicator
1.	Oral Presentation	International Conference / Symposium / Seminar (Scopus Indexed)	Submitted paper at international conference (joint publication)
2.	Model		Model to improve energy consumption in manufacturing SMEs'
3	Giving a lecture as visiting researcher		Document giving a lecture in Kumamoto University, Japan

CHAPTER 3

RESEARCH ACTIVITIES

3.1 Research Time

Time length of the conducted research under SAME Program is three months, from 27 August (Makassar to Japan) to 24 November 2019 (Arrived in Makassar from Japan). Gantt chart of the research activities is completely shown in Table 3.

Table 3. Reesearch activities

No	Conducted Activities	Time in Months		
		1	2	3
1.	Literature review, questionnaire design, data collection			
2.	Develop models to analyze energy efficiency improvement and consumers' behaviors in manufacturing SMEs			
3.	Measure perception level of consumers' SMEs towards energy saving			
4.	Identify driver variables to improve energy efficiency usage which is derived from developed model			
5.	Compose strategy to improve efficiency of energy usage and recommendation			
6.	Full paper and international journal submissions (Scopus indexed), completion of final report and other required documents			

3.2 Research Place

Research activities for three months are conducted at Power System Laboratory, Kumamoto University, Japan (host professor is Assoc. Prof. Hajime Miyauchi).

3.3 Primary Output

Achieved primary output of this research and its description are shown in Table 4 below:

Table 4. Primary output

No	Output	Total	Description
1.	International journal paper (joint publication) Title: Perceptions and Determinants of SMEs Consumers' Behaviors for Electricity Saving: Evidence from Indonesia	1	Submitted / under review in the **International Journal of Energy Economics and Policy (IJEEP)** (Scopus indexed and registered at Scimago, **Q2**)

Note: Submitted journal paper and proof of the submission can be seen in the Appendix 1

3.4 Additional Outcome

Some additional output (outcome) during the implementation of the program and their description are shown in Table 5 as follows:

Table 5. Additional output

No	Output	Total	Description
1.	International conference paper (joint publication) Title: Preliminary Analysis of Electricity Energy Efficiency in SMEs	1	- **Abstract of paper is accepted** in *the 1st International Conference on Research in Industrial and System Engineering (ICRISE 2019)* - **The paper has been presented** on November 14, 2019 (online oral presentation) in ICRISE 2019 - **Full paper has been submitted / under review** (Conference proceeding is Scopus indexed)
2.	Model (Equation models for consumers' behaviors to improve efficiency of energy usage in manufacturing SMEs)	1	- **The proposed models** are used in the submitted journal as in Table 1
3.	Giving a lecture as visiting researcher Title: Consumer's Behavior and Residential Electricity Consumption	1	- **The lecture is done on October 15, 2019** for undergraduate and graduate students belongs to Power System Laboratory, Kumamoto University, Japan

Note: Acceptance of abstract paper, certificate of presentation, proof of full paper submission, certificate as a guest lecturer can be seen in the Appendix 2

3.5 Future Plan

There are several academic activities planned from this SAME program. First, regarding research, I will analyze completely characteristics of energy consumption in industrial sector in Indonesia with relation to enhance efficiency of energy usage including intervention strategy. The other activities will be assisting bachelor students to visit Kumamoto University in 2020 under the Sakura Science Plan as advised from my host professor. Some collaboration in academic paper writing will also continue between my host supervisor and me.

CHAPTER 4

RECOMMENDATION

Considering to the importance of this program, there are some recommendation for the future SAME program as listed below:

1. The length of program can be considered to extend more than 3 months.
2. The number of participants can be increased.

LAPORAN REALISASI KEUANGAN
ATAS KONTRAK KERJA ANTARA

DIREKTORAT JENDERAL SUMBER DAYA IPTEK DAN DIKTI

TAHUN ANGGARAN 2019

SCHEME FOR ACADEMIC MOBILITY AND EXCHANGE (SAME) PROGRAM

Rekapitulasi Realisasi Anggaran:

NO	NOMOR KONTRAK	TANGGAL KONTRAK	NILAI KONTRAK	REALISASI	SISA DANA	BUKTI SETOR
1	110/D2.3/KK.04. 03/2019	17 Juni 2019	Rp. 125.793.750	Rp. 125.793.750	0	
	Jumlah		Rp. 125.793.750	Rp. 125.793.750	0	Nihil

Laporan realisasi anggaran atas pelaksanaan kontrak seperti tersebut di atas dibuat dengan sebenarnya sesuai bukti pengeluaran. Dokumen pendukung tersebut telah kami catat dalam buku kas serta didokumentasikan sesuai ketentuan yang berlaku.

Makassar, 28 November 2019

Pihak Kedua / Penanggungjawab
Program

Yusri Syam Akil, S.T., M.T., Ph.D
Nip. 19770322 200501 1 001

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[11] I. Motawa, and M. G. Oladokun, "Structural Equation Modelling of Energy Consumption in Buildings," *International Journal of Energy Sector Management*, Vol. 9, Issue 4, pp.435-450, 2015.

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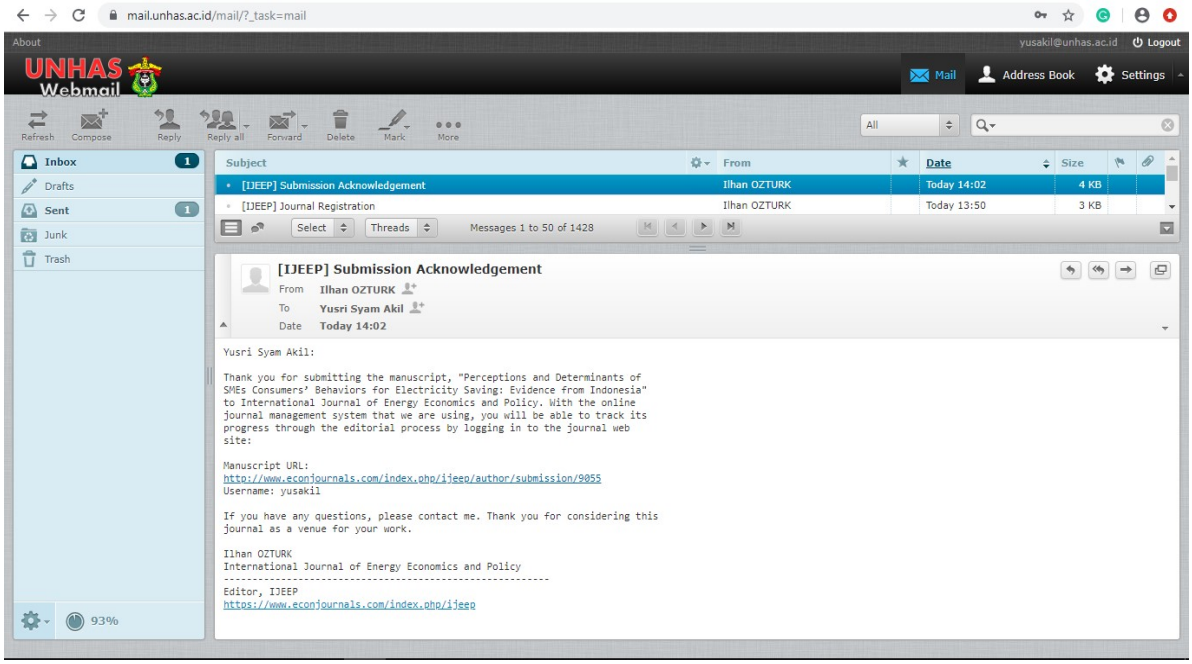
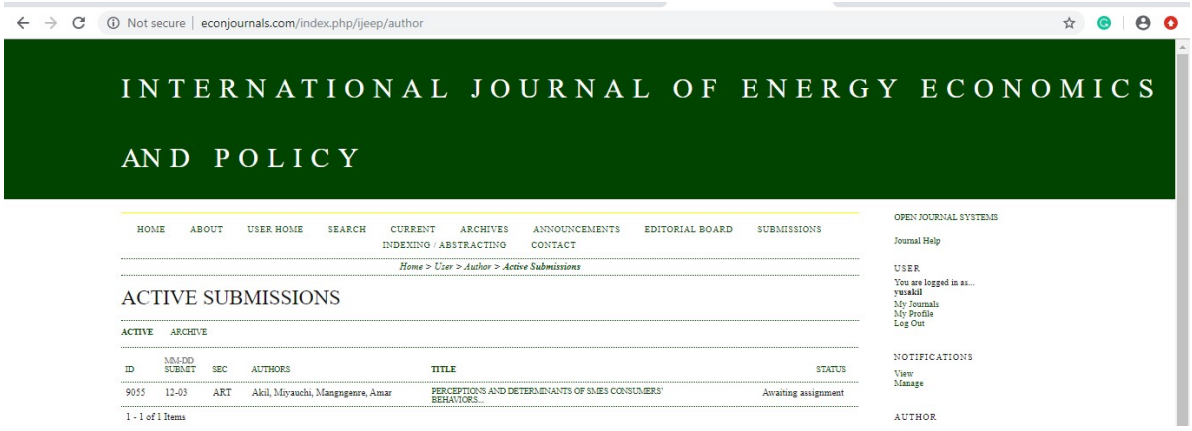
Appendices

Appendix 1

Proof of the journal submission (under review) and Submitted Journal Paper





Perceptions and Determinants of SMEs Consumers' Behaviors for Electricity Saving: Evidence from Indonesia

Yusri Syam Akil[1,*], Hajime Miyauchi[2], Saiful Mangngenre[3], and Kifayah Amar[3]

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[2]Dept. of Computer Science and Electrical Engineering, Kumamoto University, Japan
[3]Dept. of Industrial Engineering, Hasanuddin University, Indonesia

E-mail: yusakil@unhas.ac.id[*], miyauchi@cs.kumamoto-u.ac.jp, saiful.ti@unhas.ac.id, kifayah.amar@unhas.ac.id

Abstract: Consumer's behavior can affect volume and electricity demand profile. Therefore, knowing behavior of users is valuable to manage electricity usage, to design better energy policy and management. This study aims to analyse electricity users for manufacturing small and medium enterprises (SMEs) in Makassar, Indonesia to get information about perceptions and users' behaviors on energy consumption using statistical approach. A questionnaire for survey is firstly designed to obtain required data from respondents. Next, two regression models are proposed to examine determinants of usage behavior and habit of SMEs users towards electricity saving. Explanation variables in the models are user's perception, meteorological, economic, and production technology. Results shown the designed questionnaire is reliable. Perception on energy saving for SMEs' users is generally good enough. The perceptions of consumers are different based on the characteristics of demographic. Other results shown determinants of usage behaviour in SMEs towards electricity saving are user's perception, economic and production technology. Meanwhile determinant for habit of users is perception and production technology. Presented results can give more insight to government or power utility in relation to encourage energy efficiency for industrial sector in Indonesia.

Keywords: Electricity saving, perception, consumers' behaviors, SMEs, Indonesia
JEL Classification: Q40, Q41, Q48, L94

1. Introduction

Electricity is an essential input for households, business places, and industries. It is used such as for lighting at home, to improve service to customers at business place, and to support production process in industries. As its role is vital for many aspects to human life, therefore, the availability of electricity energy at all times with good quality for consumers is an issue in operation of power systems.

At present, electricity demand continues to increase in many countries including in Indonesia. To handle this, efforts to keep balancing between demand and supply are needed such as through the addition of power plants to increase capability of electric systems in meeting load growth. Increasing efficiency of energy usage or energy saving for sectors which consumed highly electricity such as in SMEs is an interesting option as well. It is caused beside to support security of energy supply, efficient of energy use can reduce operational cost, enhance productivity and also competitiveness (Backlund et al., 2012). However, the success of energy saving practice can be affected by a number of variables and one of them is behavior of consumer. Based on this, it is useful to understand users' behaviors as a basis to reduce electricity consumption. Understanding the characteristics of consumers can increase quality service of utility at the same time. In (Poznaka et al., 2015), knowing pattern and habits of energy usage is an important aspect in analysing factors affecting electricity demand. For this task, one of the approaches that can be applied to observe consumer's behavior is regression analysis (Park and Lee, 2013). However, performing a study on this area is not easy as required data

[*]Correspondence author.

Catatan: *Hanya halaman 1 dari international journal paper yang ditampilkan*

Appendix 2

Proof other output (Submission of International conference paper, guest lecture)

International conference paper (Abstract acceptance, certificate presenter (*online presentation*), proof of paper submission, and full paper)

The 1st International Conference on Research in Industrial and Systems Engineering
Building capabilities in a digital world: industrial strategy, innovation and collaborations.
November 14-15, 2019
Bali, Indonesia
http://www.icrise.org

October 17, 2019

To: **Mr. Yusri Syam Akil**
Department of Electrical Engineering, Hasanuddin University, Gowa, Indonesia

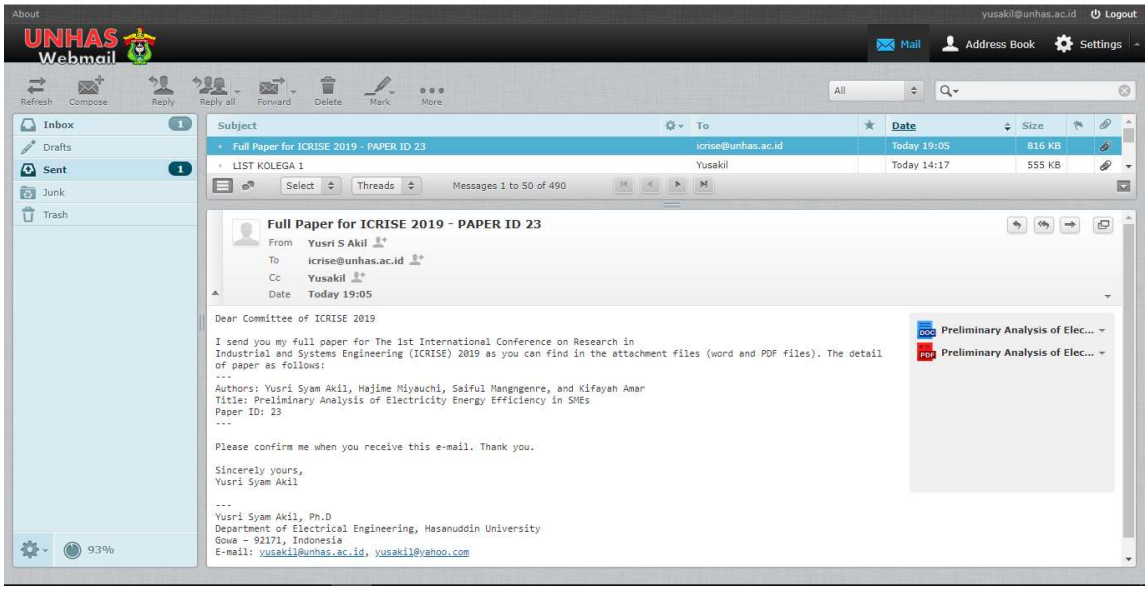
Dear Mr. Akil,

Your abstract entitled **Preliminary Analysis of Electricity Energy Efficiency in SMEs** has been reviewed. The conference committee is pleased to invite you to present your paper in **The 1st International Conference on Research in Industrial and Systems Engineering (ICRISE)** which is to be held in Bali, Indonesia on November 14 - 15, 2019.

Thank you for your interest in participating the ICRISE 2019. Guidelines for preparing the full paper is posted online https://www.icrise.org/submission. The online submission system is opened at EasyChair here. Please do not hesitate to contact us directly at icrise@unhas.ac.id if you have any questions or need any assistance regarding the paper submission. We look forward to receiving your full paper.

Sincerely,

Dr. Ir. Rosmalina Hanafi, M.Eng
Conference Chair



Preliminary Analysis of Electricity Energy Efficiency in SMEs

Yusri Syam Akil[1], **Hajime Miyauchi**[2], **Saiful Mangngenre**[3], **and Kifayah Amar**[3]
[1]Department of Electrical Engineering, Hasanuddin University, Gowa, Indonesia
[2]Department of Computer Science and Electrical Engineering, Kumamoto University, Kumamoto, Japan
[3]Department of Industrial Engineering, Hasanuddin University, Gowa, Indonesia

E-mail: yusakil@unhas.ac.id, miyauchi@cs.kumamoto-u.ac.jp, saiful.ti@unhas.ac.id, kifayah.amar@unhas.ac.id

Abstract. In general, industrial sector consumes high energy. Therefore, efforts to manage the energy usage in this sector are useful as it can reduce significantly total energy consumption mainly for electricity. This research aims to observe consumers' perceptions and success factors to improve efficiency of electricity energy usage for industry particularly for manufacturing small-medium enterprises (SMEs) in Makassar as a representative big city in Indonesia. A questionnaire for survey is designed to get data from 127 respondents and analysed using statistical approach. Observed variables related to energy efficiency in SMEs include human resources, production technology, rainfall, and tax. Results shown the developed questionnaire is reliable (Cronbach's alpha value exceeds 0.6). Perception of consumers about energy saving is quite good. From aspect of demographic characteristic, there is a difference in users' perceptions on energy saving. Other results show the significant relationship between human resources, production technology, and rainfall condition to the energy efficiency level at SMEs. Knowledge or findings of this study provide valuable information in relation to strategy to improve efficiency of electricity usage in industries.

1. Introduction

Electricity load in many countries increase over the time. To assure the balancing between electricity production and load growth, efforts such as building renewable based power plants at certain times and energy saving are needed. The balancing is an important aspect to keep stability electricity service to consumers in power systems.

As in other places, industrial sector in Indonesia consumes high energy. Based on this, energy saving actions or energy efficiency improvement (EEI) in this sector such as for SMEs is meaningful as a strategy to reduce energy consumption mainly electricity. However, its implementation is not an easy task as several factors can influence the success of energy saving actions or EEI in one place. One of barriers for some consumers to practice energy saving optimally is the lack of information [1]. Therefore, determining the best way to promote energy saving practice for enhancing consumers' knowledge and observing main factors affecting EEI are the challenge for researchers. Consumers that have enough information or have positive perceptions are normally easier to practice energy saving. They will utilize energy efficient equipments and use electricity energy wisely in their daily activities as a habit.

[1]Correspondence author.

Catatan: *Hanya halaman 1 dari full paper international conference yang ditampilkan*

Guest lecture (Certificate for giving a lecture)

国立大学法人
熊本大学

November 18, 2019

CERTIFICATE

This is to certify that Dr. Yusri Syam Akil, a lecturer of Electrical Engineering Department Hasanuddin University, has giving a lecture to undergraduate and graduate students belongs to Power System Laboratory, Kumamoto University, Japan on October 15, 2019 entitle Consumer's Behavior and Residential Electricity Consumption.

Sincerely yours,

Hajime MIYAUCHI

Associate Prof. Hajime Miyauchi, Ph.D
Division of Informatics and Energy,
Faculty of Advanced Science and Technology,
Kumamoto University
Kumamoto 860-8555, JAPAN

Appendix 3

Letter of acceptance (LoA) from Host University

国立大学法人
熊本大学

March 8, 2019

LETTER OF ACCEPTANCE

To Whom It May Concern:

I certify that Dr. Yusri Syam Akil (Head of Distributed Generation, Energy and Environment Research Group, Department of Electrical Engineering, Hasanuddin University, Makassar Indonesia) and I collaborate in the research on "The Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector" under "Scheme for Academic Mobility and Exchange (SAME Program 2019)".

Sincerely yours,

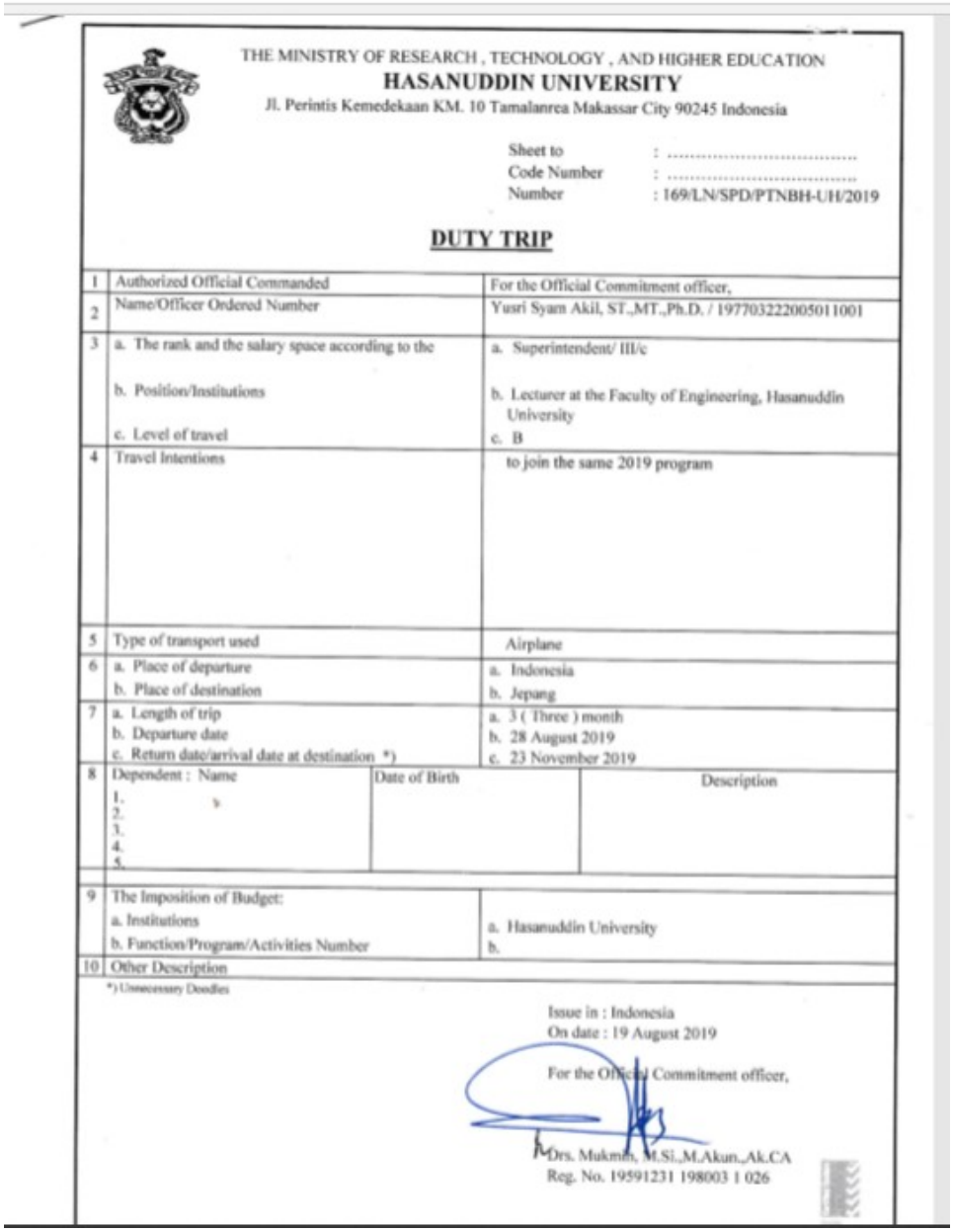
Hajime Miyauchi

Hajime MIYAUCHI

Associate Prof. Hajime Miyauchi, PhD,
Division of Informatics and Energy,
Faculty of Advanced Science and Technology,
Kumamoto University
Kumamoto 860-8555, JAPAN

Appendix 4

Duty trip (*bukti SPPD*)



THE MINISTRY OF RESEARCH , TECHNOLOGY , AND HIGHER EDUCATION
HASANUDDIN UNIVERSITY
Jl. Perintis Kemedekaan KM. 10 Tamalanrea Makassar City 90245 Indonesia

Sheet to : .....
Code Number : .....
Number : 169/LN/SPD/PTNBH-UH/2019

DUTY TRIP

1	Authorized Official Commanded	For the Official Commitment officer,	
2	Name/Officer Ordered Number	Yusri Syam Akil, ST.,MT.,Ph.D. / 197703222005011001	
3	a. The rank and the salary space according to the b. Position/Institutions c. Level of travel	a. Superintendent/ III/c b. Lecturer at the Faculty of Engineering, Hasanuddin University c. B	
4	Travel Intentions	to join the same 2019 program	
5	Type of transport used	Airplane	
6	a. Place of departure b. Place of destination	a. Indonesia b. Jepang	
7	a. Length of trip b. Departure date c. Return date/arrival date at destination *)	a. 3 (Three) month b. 28 August 2019 c. 23 November 2019	
8	Dependent : Name 1. 2. 3. 4. 5.	Date of Birth	Description
9	The Imposition of Budget: a. Institutions b. Function/Program/Activities Number	a. Hasanuddin University b.	
10	Other Description		

*) Unnecessary Doodles

Issue in : Indonesia
On date : 19 August 2019

For the Official Commitment officer,

Drs. Mukmin, M.Si.,M.Akun.,Ak.CA
Reg. No. 19591231 198003 1 026

		Departured From : Indonesia To : Jepang On date : 28 August 2019 For the Official Commitment officer, Drs. Mukmin, M.Si.,M.Akun.,Ak.CA Reg. No. : 19591231 198003 1 026
I.	Arrive at : Jepang On date : 29 August 2019 Head Office of : Atase-Pendidikan KBRI-Tokyo Name : Dr.Alinda F.M.Zain NIP : 19660 126 199103 2 002	Departured From : Jepang To : Indonesia On date : 23 November 2019 Head Office of : Atase-Pendidikan KBRI-Tokyo Name : Dr.Alinda F.M.Zain NIP : 19660 126 199103 2 002
II.	Arrive at : On date : Head Office of : ..... Name : Singnature :	Departured From : To : On date : Head Office of : ..... Name : Singnature :
III.		
IV.	Arrive at : Indonesia On date : 23 November 2019 For the Official Commitment officer, Drs. Mukmin, M.Si.,M.Akun.,Ak.CA Reg. No. : 19591231 198003 1 026	Have been examined, with the caption that the trip actually done on his orders and solely for the benefit of the position in the shortest-in a nutshell time. For the Official Commitment officer, Drs. Mukmin, M.Si.,M.Akun.,Ak.CA Reg. No. : 19591231 198003 1 026
V.	Miscellaneous notes	
VI.	Attention : The competent authority issued the Duty Trip, officials who travel on duty, on which officials confirmed the date of departure/arrival and Treasurer is responsible on the basis of the country's financial regulations in a country suffering a loss as a result of errors, omissions and forgetfulness, (figures 8 attachment Circulars Finance Minister on April 30, 1974 No. B. 296/MK/I/41974).	

Appendix 5

Boarding pas

Makassar – Japan (Rute: Makassar – Surabaya, Surabaya – Singapore, Singapore – Fukuoka)

Japan - Makassar (*Rute*: Fukuoka – Singapore, Singapore – Surabaya, Surabaya – Makassar)

SINGAPORE AIRLINES ECONOMY CLASS

AKIL YUSRISYAM MR

Flight	From	To	Date
SQ 655	FUK	SIN	23NOV19

Terminal	Gate	Boarding time	Seat	Boarding Group
I	58	09:15 AM 23NOV19	61A	5

GATE CLOSES 10 MINS BEFORE DEPARTURE

00199 ETNo 618363043514403

ECONOMY CLASS

AKIL YUSRISYAM MR

From FUKUOKA
To SINGAPORE
Flight SQ 655 Seat 61A
Date 23NOV19

00199 ETNo 618363043514403

A STAR ALLIANCE MEMBER

SINGAPORE AIRLINES ECONOMY CLASS

AKIL YUSRISYAM MR

Flight	From	To	Date
MI 226	SIN	SUB	23NOV19

Terminal	Gate	Boarding time	Seat	Boarding Group
2		03:40 PM 23NOV19	27A	

PLS BOARD EARLY AS GATE CLOSES 10 MINS TO DEP

00093 ETNo 618363043514404

ECONOMY CLASS

AKIL YUSRISYAM MR

From SINGAPORE
To SURABAYA
Flight MI 226 Seat 27A
Date 23NOV19

00093 ETNo 618363043514404

A STAR ALLIANCE MEMBER

LINK
Passenger
24Nov19

AKIL/YUSRISYAM
Garuda Miles Member ID :

Flight No : QG 307
Boarding Time: 13:10
Gate: 9/10 Seat: 10B
Rute : SUB-UPG

DIV9JB seqf164

SSR :

PENERBANGAN BEBAS ROKOK - STOP NARKOBA
NON SMOKING FLIGHT - STOP DRUGS

Dalam rangka kenyamanan penerbangan dan
Keberangkatan tepat waktu, diminta untuk:
1. Memastikan nomor ruang tunggu dan
berada 40 menit sebelum jadwal
keberangkatan.
2. Menunjukkan kartu identitas saat
masuk ke ruang tunggu.
3. Hanya diperbolehkan 1 tas max 7 kg
di dalam kabin.

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Appendix 6

Photocopy of passport (Identity, *Ijin Perjalanan Luar Negeri*, visa, landing permission, tanda bukti lapor diri)

* Identity and *Ijin Perjalanan Luar Negeri*

* Visa and Landing Permission in Japan

* *Tanda Bukti Lapor Diri di* Japan

KEDUTAAN BESAR REPUBLIK INDONESIA
TOKYO

TANDA BUKTI LAPOR DIRI

YUSRI SYAM AKIL
NIT : 7371132203770003

IZIN TINGGAL : 19A04345
LAIN-LAIN /

BERLAKU S.D : 29 AGUSTUS 2020

Gratis

Appendix 7

SP Sekneg

KEMENTERIAN SEKRETARIAT NEGARA
REPUBLIK INDONESIA

Jalan Veteran No. 17-18, Jakarta 10110, Telepon (021) 3845627, 3442327
Faksimile (021) 3813583, Situs : www.setneg.go.id

Nomor : B-00015179/Kemensetneg/Set/KTLN/LN.01.05/07/2019 — 12 Juli 2019
Sifat : Segera
Lampiran : 1 Berkas
Hal : Persetujuan Perjalanan Dinas Luar Negeri

Yth. Sekretaris Direktorat Jenderal Sumber Daya
Iptek Dan Dikti, Kementerian Riset, Teknologi, Dan
Pendidikan Tinggi
di Jakarta

Sehubungan dengan surat Sekretaris Direktorat Jenderal Sumber Daya Iptek dan Dikti, Kementerian Riset, Teknologi, dan Pendidikan Tinggi nomor T/2600/D1.2.D1.2.2/KS.01.00/2019 tanggal 10 Juli 2019 hal tersebut di atas, dengan hormat diberitahukan bahwa Pemerintah menyetujui perjalanan dinas luar negeri bagi pejabat/pegawai sebagaimana tercantum dalam daftar terlampir.

Persetujuan Pemerintah ini diberikan dengan ketentuan sebagai berikut:

1. Perjalanan dinas luar negeri dilakukan untuk kepentingan penyelenggaraan pemerintahan yang sangat tinggi.
2. Yang bersangkutan menghubungi Kedutaan Besar RI/ Perwakilan RI di negara setempat untuk menyampaikan maksud kedatangan.
3. Laporan tertulis hasil perjalanan dinas tersebut agar disampaikan kepada Kementerian Sekretariat Negara.

Atas perhatian dan kerja sama yang baik, kami sampaikan terima kasih.

a.n. Sekretaris Kementerian Sekretariat Negara
Kepala Biro Kerja Sama Teknik Luar Negeri,

Nanik Purwanti

Tembusan:
1. Kepala BPKP
2. Dirjen Anggaran, Kemenkeu
3. Dirjen Perbendaharaan, Kemenkeu
4. Dir. Konsuler, Kemenlu
5. Dubes / Kepala Perwakilan RI Setempat
6. Yang Bersangkutan

Dokumen ini telah ditandatangani secara elektronik.

Lampiran Surat Sekretaris Kementerian Sekretariat Negara
Nomor : B-00015179/Kemensetneg/Set/KTLN/LN.01.05/07/2019
Tanggal : 12 Juli 2019

Daftar Peserta
Program SAME Tahun 2019
di Jepang.

No.	Nama/NIP	Jabatan	Jangka Waktu	Biaya Penugasan
1.	Yusri Syam Akil, S.T., M.T., Ph.D 197703222005011001	Dosen Fakultas Teknik Elektro , Universitas Hasanuddin	28 Agustus 2019 s.d. 28 November 2019	Kementerian Riset, Teknologi dan Pendidikan Tinggi

a.n. Sekretaris Kementerian Sekretariat Negara
Kepala Biro Kerja Sama Teknik Luar Negeri,

Nanik Purwanti

Appendix 8

Logbook (*Catatan Kegiatan Harian*)

Title: The Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector
Host University: Kumamoto University, Japan
Period: 27 August – 24 November 2019 (**90 days**)

No	Date	Activities	Output	Progress (%)	Total Progress (%)
1.	27/08/2019	Travel from Makassar to Surabaya	Arrive in Surabaya	2%	2%
2.	28-29/08/2019	Travel from Surabaya to Japan	Arrive in Kumamoto, Japan (29/08/2019)	3%	5%
3.	29/08/2019	Registration: International House Kumamoto University	Stay at International House Kumamoto University	1%	6%
4.	30/08/2019	Collecting references / literature review, completion of developed questionnaire	References to support conducted research, a questionnaire for survey	3%	9%
5.	31/08/2019	Survey to get data related to energy efficiency / electricity energy usage in industrial sector (manufacturing SMEs), collecting other supporting data (around two months)	Data for analysis	10%	19%
6.	02/09/2019	Attend a research seminar at Lab. Power System (Lab. of host Professor)	Information / research discussion among lab. members	1%	20%
7.	02/09/2019	Literature review (2): Electricity energy consumption, industrial sector, consumer's behavior, electric equipment, energy saving (around 1 month)	Knowledge as a basis to develop energy efficiency analysis for industrial sector (SMEs)	10%	30%

8.	07/09/2019	Submit arrival document in Japan and including SPPD	Acceptance arrival report and SPPD document	2%	32%
9.	11/09/2019	Attend a research seminar at Lab. Power System (2)	Information / research discussion among lab. members	1%	33%
10.	01/10/2019	Attend a special lecture by former President of Singapore	Network and knowledge on Building a Resilient Nation - The Singapore Experience -	1%	34%
11.	7/10/2019	Attend a research seminar at Lab. Power System (3)	Information / research discussion among lab. members	1%	35%
12.	8/10/2019	Develop model for energy efficiency / energy saving analysis in SMEs (around 1 month)	Model for energy efficiency improvement / energy saving behavior analysis in SMEs	14%	49%
13.	8/10/2019	Attend a journal seminar at Lab. Power System (1)	Knowing the latest research (IEEE journal) in the area of power system	1%	50%
14.	11/10/2019	Write paper (abstract) for conference	A draft of paper abstract	1%	51%
15.	15/10/2019	Giving a lecture	Knowledge sharing to student at Power System Laboratory (include undergraduate, master, and doctoral student)	5%	56%
16.	16/10/2019	Attend a journal seminar at Lab. Power System (2)	Knowing the latest research (IEEE journal) in the area of power system	1%	57%
17.	16/10/2019	Submit a paper abstract at international conference (ICRISE 2019)	Paper submission	1%	58%
18.	1/11/2019	Completion of international conference paper (including fine	Final conference paper	6%	64%

		tuning of the paper for joint publication)			
19.	5/11/2019	Write a journal paper (including fine tuning of the paper for joint publication)	A draft of international journal paper	15%	79%
20.	12/11/2019	Practice presentation for international conference and discussion	Readiness for conference	1%	80%
21.	13/11/2019	Attend a journal seminar at Lab. Power System (3)	Information of the latest research (IEEE journal) in the area of power system	1%	81%
22.	14/11/2019	Attend and present a paper at international conference (ICRISE 2019)	Present a paper at international conference (online presentation)	3%	84%
23.	18/11/2019	Attend a research seminar at Lab. Power System (4)	Information / research discussion among lab. members	1%	85%
24.	22/11/2019	Move out from International House of Kumamoto University, and go to Fukuoka	Move out from International House	1%	86%
25.	23-24/11/2019	Travel from Japan to Makassar, Indonesia	Arrive in Makassar	5%	91%
26.	2/12/2019	Submit full paper to international conference ICRISE 2019	Full paper submission (Scopus indexed)	2%	93%
27.	3/12/2019	Submit a paper to international journal (IJEEP, Q2)	Submission of a paper to international journal (Scopus indexed)	2%	95%
28.	3/12/2019	Completion of final report and other required documents	Final report including other documents	5%	100%

Appendix 9

Completion Letter from Host University, and Some Photos during SAME Program

国立大学法人
熊本大学

November 18, 2019

COMPLETION LETTER

To Whom It May Concern:

This is to certify that Dr. Yusri Syam Akil, a lecturer of Electrical Engineering Department Hasanuddin University, has successfully finished his Scheme for Academic Mobility and Exchange (SAME) program 2019 for 3 months (from August to November 2019) at Power System Laboratory, Kumamoto University, Japan with research topic of the Development of a Model for Improvement Efficiency of Electricity Energy Usage in Indonesian Industrial Sector.

Sincerely yours,

Hajime MIYAUCHI

Associate Prof. Hajime Miyauchi, Ph.D
Division of Informatics and Energy,
Faculty of Advanced Science and Technology,
Kumamoto University
Kumamoto 860-8555, JAPAN

Some Photos during SAME Program in Japan: