



# ACISE 2020

oleh admin web | Agu 5, 2020 | Departemen, Informasi

Joint Conference of The



2<sup>nd</sup> International Conference on Industrial and System Engineering (IConISE)  
and 7<sup>th</sup> Annual Conference on Industrial and System Engineering (ACISE)

Organized by  
Industrial Engineering Department of Diponegoro University (UNDIP)  
and Industrial and Systems Engineering Department of Institut Teknologi  
Sepuluh Nopember (ITS)

### Keynote Speakers

				
Shanghai Jiaotong University - China	Jacobs University - Germany	Edith Cowan University - Australia	Vice President of Data TRAVELDKA	Scientist (Dr. Scis) Philips Eindhoven Netherlands
"SOME THINGS OF AI FOR SMART CITY"	"THE ROLE OF DATA MANAGEMENT AND ANALYTICS IN INDUSTRY 4.0 ECOSYSTEMS"	"SUPPLY CHAIN BIG DATA - AN OPPORTUNITY FOR FUTURE RESEARCH"	"BIG DATA ANALYTICS - A COMPETITIVE TOOL - TOWARDS SMART INDUSTRIAL SYSTEM"	"PROTECTING 5G MANUFACTURING USING ARTIFICIAL INTELLIGENCE"

Publication :  

**July 22-23, 2020**  
Live streaming on Undip TV  
<https://www.youtube.com/c/UndipTV>

Contact Person  
+62811-2662-01  
(Dr. Ing Novie Susanto, S.T., M.Eng - Diponegoro University)

Joint Conference of The



2<sup>nd</sup> International Conference on Industrial and System Engineering (IConISE)  
and 7<sup>th</sup> Annual Conference on Industrial and System Engineering (ACISE)

Organized by  
Industrial Engineering Department of Diponegoro University (UNDIP)  
and Industrial and Systems Engineering Department of Institut Teknologi  
Sepuluh Nopember (ITS)

### Keynote Speakers

				
Shanghai Jiaotong University - China	Jacobs University - Germany	Edith Cowan University - Australia	Vice President of Data TRAVELDKA	Scientist (Dr. Scis) Philips Eindhoven Netherlands
"SOME THINGS OF AI FOR SMART CITY"	"THE ROLE OF DATA MANAGEMENT AND ANALYTICS IN INDUSTRY 4.0 ECOSYSTEMS"	"SUPPLY CHAIN BIG DATA - AN OPPORTUNITY FOR FUTURE RESEARCH"	"BIG DATA ANALYTICS - A COMPETITIVE TOOL - TOWARDS SMART INDUSTRIAL SYSTEM"	"PROTECTING 5G MANUFACTURING USING ARTIFICIAL INTELLIGENCE"

Publication :  

**July 22-23, 2020**  
Live streaming on Undip TV  
<https://www.youtube.com/c/UndipTV>

Contact Person  
+62811-2662-01  
(Dr. Ing Novie Susanto, S.T., M.Eng - Diponegoro University)

untuk mendapatkan hasil-hasil riset yang dapat dimanfaatkan untuk pengembangan R&D perusahaan mereka secara cepat dan mudah

4. Menyediakan tempat bagi akademisi untuk menguji paper sebelum masuk publikasi jurnal karena pada *joint conference of the 2<sup>nd</sup> IConISE 2020* dan *7<sup>th</sup> ACISE 2020* dihadiri oleh sejumlah profesor dan doktor dari universitas-universitas ternama diluar negeri dan mereka akan berpartisipasi sebagai pendengar pada saat suatu paper dipresentasikan
5. Menyediakan tempat bagi para akademisi untuk bertemu langsung dengan tokoh-tokoh penting dalam bidang penelitian yang dilakukannya
6. Membuka kesempatan kepada dunia akademisi dan juga praktisi untuk mengenal lebih jauh analitik data besar dan kaitannya dengan industri.

Manfaat dari diadakannya *joint conference of the 2<sup>nd</sup> IConISE 2020* dan *7<sup>th</sup> ACISE 2020* adalah:

1. Akademisi dan praktisi dapat memperluas wawasan mereka tentang *tren* terbaru dari penelitian-penelitian di bidang ke-teknik industri-an, industri 4.0, dan rekayasa risiko
2. Akademisi dapat memperluas *networking*, baik dengan sesama akademisi maupun dengan praktisi
3. Akademisi dan praktisi dapat memperoleh ilmu baru dari para profesor, pembicara, praktisi, dan juga akademisi lainnya yang mengikuti dan mempresentasikan papernya dalam *joint conference of the 2<sup>nd</sup> IConISE 2020* dan *7<sup>th</sup> ACISE 2020*
4. Akademisi dapat meningkatkan kualitas penelitian yang dilakukannya karena adanya memperoleh masukan langsung dari para profesor, pembicara, praktisi, dan juga akademisi lainnya yang mengikuti *joint conference of the 2<sup>nd</sup> IConISE 2020* dan *7<sup>th</sup> ACISE 2020*
5. Praktisi dapat memperoleh hasil-hasil riset terbaru dengan mudah dan biaya yang lebih murah
6. Akademisi dan praktisi mendapatkan kesempatan untuk meningkatkan pengetahuan dan ketrampilannya dalam menganalisis data besar.

Terdapat beberapa **Keynote Speaker** dalam konferensi internasional *joint conference of the 2<sup>nd</sup> IConISE 2020 and 7<sup>th</sup> ACISE 2020*. **Keynote Speaker** pertama adalah Chair Professor (Lektor Kepala) dari Universitas Shanghai Jia Tong, China, Prof. Weijia Jia. Beliau juga

merupakan Wakil Direktur Utama dari Laboratorium *Internet Things for Smart City* di Universitas Macau, China.



*"SOME THINKS OF AI FOR SMART CITY"*

Keynote speaker kedua adalah Prof. Dr. Ing. Hendro Wicaksono dari University Jacobs, Jerman.



*"THE ROLE OF DATA MANAGEMENT AND ANALYTICS IN INDUSTRY 4.0 ECOSYSTEMS"*

Keynote speaker ketiga adalah Assoc. Prof. Ferry Jie merupakan Associate Professor pada bidang studi *Supply Chain* dan *Logistics Management* di *School of Business and Law*, Universitas Edith Cowan, Australia.



*"SUPPLY CHAIN BIG DATA – AN OPPORTUNITY FOR FUTURE RESEARCH"*

Keynote speaker keempat adalah Doan Lingga, merupakan Kepala dari *Data Analytics Group* dari perusahaan travel terkemuka di Asia Tenggara, Traveloka.



*"BIG DATA ANALYTICS – A COMPETITIVE TOOLS TOWARD SMART INDUSTRIAL SYSTEM"*

Keynote speaker kelima adalah Dr. Rer. Nat. Fal Sadikin, seorang *scientist (IoT Security)* dari Phillips Eindhoven, Belanda.

## Committee Information

### Advisory Committee:

- Nurhadi Siswanto, S.T., MSIE, Ph.D, Head of Industrial and System Engineering Dept. ITS
- Dr. Ratna Purwaningsih, S.T., M.T., Head of Industrial Engineering Dept. Diponegoro University

**IConISE 2020 Chair:** Ratna Sari Dewi, S.T., M.T., Ph.D

**ACISE 2020 Chair:** Dr. Manik Mahachandra, S.T., M.Sc

### Secretary:

- Dr.-Ing Novie Susanto, S.T., M.Eng
- Retno Widyaningrum, S.T., MBA., Ph.D

### Finance & Registration Team:

- Anny Maryani, S.T., M.T.
- Diesta Iva Maftuhah, S.T., M.T
- Suko Endri Royaningtyas, S.E.

### Program Team:

- Dr. Sri Hartini, S.T., M.T.
- Dewanti Anggrahini, S.T., M.T.
- Yudha Prasetyawan, S.T., M.Eng.

### Paper Team:

- Prof. Dr. Aries Susanty, S.T., M.T.
- Dr. Ir. Heru Prastawa, DEA
- Dr. Naniek Utami Handayani, S.Si
- Dr.Eng. Erwin Widodo
- Dyah Santhi Dewi, S.T., M.Eng.Sc, Ph.D
- Nani Kurniati, Ph.D
- Niniet Indah Arvitrida, S.T., M.T., Ph.D
- Putu Dana Karningsih S.T., M.Eng.Sc, Ph.D

### Publication Team:

- Dr. Denny Nurkertamanda, S.T., M.T.
- Arief Rahman, S.T., M.Sc
- Atikah Aghdhi Pratiwi, S.T., M.T.

### Sponsorship Team:

- Dr. Adithya Sudiarno, S.T., M.T.
- Dr. Purnawan Adi Wicaksono, S.T., M.T.
- Dody Hartanto, S.T., M.T.
- Niken Anggraini Savitri, S.T., M.T.
- Rindi Kusumawardani, S.Si., M.Sc.

**Scientific Board:**

- Prof. Benny Tjahjono, M.Sc., Ph.D, Coventry University, United Kingdom.
- Prof. Chuang-Chun Chiou, PhD., Tunghai University, Taiwan.
- Prof. Dr. Cucuk Nur Rosyidi, S.T., M.T., Sebelas Maret University, Indonesia.
- Prof. Dr. Ir. Dradjad Irianto, M.Eng, ITB, Indonesia
- Prof. Ir. Moses L. Singgih, M.Eng.Sc., ITS, Indonesia.
- Prof. Iwan Vanany, S.T., M.T., Ph.D., ITS, Indonesia.
- Prof. Yassierli, S.T., M.T., PhD., ITB, Indonesia.
- Dr. Adithya Sudiarno, S.T., M.T., ITS, Indonesia.
- Dr. Arfan Bakhtiar, Diponegoro University, Indonesia
- Dr. Denny Nurkertamanda, S.T., M.T, Diponegoro University, Indonesia.
- Dr. Dra. Amelia Santoso, Ubaya, Indonesia.
- Dr. Hasrini Sari, S.T., M.T., ITB, Indonesia.
- Dr. Hery Suliantoro, S.T., M.T., Diponegoro University, Indonesia.
- Dr. Ir. Bambang Purwanggono, M.Eng, Diponegoro University, Indonesia
- Dr. Ir. Eko Pujiyanto, S.Si., M.T., UNS, Indonesia
- Dr. Ir. Heru Prastawa, DEA, Diponegoro University, Indonesia.
- Dr. Ir. Mokh Suef, M.Sc. (Eng), ITS. Indonesia.
- Dr. Ir. Sri Gunani Partiw, M.T., ITS, Indonesia.
- Dr. Made Andriani, S.T., M.T., ITB, Indonesia.
- Dr. Manik Mahachandra, S.T., M.Sc, Diponegoro University, Indonesia.
- Dr. Naniek Utami Handayani, S.Si, Diponegoro University, Indonesia.
- Dr. Purnawan Adi Wicaksono, S.T., M.T., Diponegoro University, Indonesia.
- Dr. Ratna Purwaningsih, S.T., M.T., Diponegoro University, Indonesia.
- Dr. Singgih Saptadi, M.T., Diponegoro University, Indonesia.
- Dr. Sri Hartini, S.T., M.T., Diponegoro University, Indonesia.
- Dr.-Ing Novie Susanto, S.T., M.Eng, Diponegoro University, Indonesia.
- Dr.Eng. Erwin Widodo, S.T., ITS, Indonesia.
- Dyah Santhi Dewi, S.T., M.Eng.Sc, Ph.D., ITS, Indonesia
- Ir. Markus Hartono, S.T., M.Sc., PhD., UBAYA, Indonesia.
- Jati Utomo Dwi Handoko, S.T., M.M., M.Sc., PhD., Diponegoro University, Indonesia
- Maria Anityasari, S.T., M.E., Ph.D., ITS, Indonesia.
- Nani Kurniati, S.T., M.T., PhD., ITS, Indonesia.
- Niniet Indah Arvitrida, S.T., M.T., PhD., ITS, Indonesia.
- Nurhadi Siswanto, S.T., MSIE, Ph.D, ITS, Indonesia.
- Putu Dana Karningsih S.T., M.Eng.Sc, Ph.D, ITS, Indonesia.
- Ratna Sari Dewi, S.T., M.T., Ph.D., ITS, Indonesia.
- Retno Widyaningrum, S.T., M.T., MBA., Ph.D, ITS, Indonesia.
- Anny Maryani, S.T., M.T, ITS, Indonesia.
- Ary Arvianto, S.T., M.T, Diponegoro University, Indonesia.
- Diana Puspita Sari, S.T., M.T, Diponegoro University, Indonesia.
- Dyah Ika Rinawati, S.T., M.T., Diponegoro University, Indonesia.
- Muhammad Mujiya Ulkhaq, S.T., M.Sc., Diponegoro University, Indonesia.
- Nia Budi Puspitasari, S.T., M.T., Diponegoro University, Indonesia.
- Wiwik Budiawan, S.T., M.T., Diponegoro University, Indonesia.
- Yusuf Widharto, S.T., M.Eng., Diponegoro University, Indonesia.

# Table of contents

## Volume 1072

## 2021

◀ Previous issue      Next issue ▶

**Joint International Conference of The 2nd International Conference on Industrial and System Engineering (IConISE) and The 7th Annual Conference on Industrial and System Engineering (ACISE) 22th-23th July 2020, Surabaya, Indonesia.**

Accepted papers received: 22 January 2021

Published online: 01 March 2021

Open all abstracts

### Preface

**OPEN ACCESS** 011001

Preface

+ Open abstract       View article       PDF

**OPEN ACCESS** 011002

Peer review declaration

+ Open abstract       View article       PDF

### Papers

**OPEN ACCESS** 012001

Risk assessment for apartment building maintenance using Fuzzy-FMEA methods

A Reza, I Vanany and Machsus

+ Open abstract       View article       PDF

**OPEN ACCESS** 012002

Decision-making model for Auto-ID technology adoption in the banking industry

F Afrizal and I Vanany

+ Open abstract       View article       PDF

This site uses cookies. By continuing to use this site you agree to our use of cookies. To find out more, see our Privacy and Cookies policy.

012003

## Usability testing on developed FES device according to the operator perspective

K Leonardo, R S Dewi and A Sudiarno

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012004

## QFD applications for quality improvements online student learning

M H Assiddiqi and I Vanany

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012005

## Inventory model for multi-perishable goods with limited storage capacity

F F Afiffi and N I Arvitrida

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012006

## Modelling tank truck routing for city park watering problems in Surabaya

N I Arini, N Siswanto and A Rusdiansyah

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012007

## Design and implementation for performance measurement system in the power plant operation and maintenance company

P M Andrias and I Vanany

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012008

## An optimization model for course scheduling in Undergraduate Industrial Engineering Program of Universitas Sebelas Maret

M Pratiwi, C N Rosyidi and Yuniaristanto

[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012009

## Tensile properties of epoxy/1 wt% graphene nanocomposites prepared with ethanol

M S Saharudin, S Hasbi, C Okolo and F Inam















[+ Open abstract](#)[View article](#)[PDF](#)**OPEN ACCESS**

012010

This site uses cookies. By continuing to use this site, you agree to our use of cookies. To find out more, see our Privacy and Cookies policy.





- 
- OPEN ACCESS** 012045  
 Modeling opportunistic maintenance using discrete event simulation  
 A L Budiono, N Siswanto and N Kurniati  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012046  
 A safety-first portfolio selection framework: Estimating returns of exchange traded funds through regression analysis  
 M N Young  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012047  
 Economic evaluation of mobile screening station waterless system operation of nickel laterite ore  
 A Yustian, E Widodo and M L Singgih  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012048  
 Empty container reposition using max-min review system: Simulation approach  
 A Budipriyanto, M D Novianti and T Susanto  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012049  
 Utilization of facial expression analysis in the pricing strategy formulation  
 H Sari, M S Rahadian and A Rizkiana  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012050  
 Conceptual modeling of resilience measurement during natural disasters for SMEs  
 I D Utami, I Santosa and E Rifa'i  
 + Open abstract  View article  PDF
- 
- OPEN ACCESS** 012051  
 Analysis of usability and user experience on the *batik's* website design  
 S Hartomo and T S C Bakal  
 + Open abstract  View article  PDF
- 
- This site uses cookies. By continuing to use this site you agree to our use of cookies. To find out more, see our Privacy and Cookies policy.



Quality control of palm oil crude (CPO) using six sigma method in PT Karya Tanah Subur West Aceh regency 012052

Sofiyanurriyanti, G Putra and A R Arifin

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012053

Designing sweet biscuits packaging by considering the level of attractiveness based on eye tracking data

I M Ronyastra, A H Kusumo, M Hartono and E S Tantoisworo

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012054

The Reliability-Centered Maintenance (RCM) effect on plant availability and downtime loss in the process industry

R Khasanah, I Sodikin, A P Penirewod, B Rachmad and N A Pratama

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012055

Supplementary quality control features for the production department in Odoo ERP

A S Ahmadiyah, Y Y Ratna, N N Yotifa and I Dinillah

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012056

Design improvement of pallet in automotive industry

A Bakhtiar and S A Puspitasari

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012057

The development of Kansei-based mining model for robust service design

M Hartono

[+ Open abstract](#) [View article](#) [PDF](#)

**OPEN ACCESS** 012058

Analysis on acquisition of Philippine Civil Registry Documents and inclination towards paperless e-government

L E A Villena, R A C Robielos and Wei-Jung Shiang

[+ Open abstract](#) [View article](#) [PDF](#)

This site uses cookies. By continuing to use this site you agree to our use of cookies. To find out more, see

[our Privacy and Cookies policy.](#)

**OPEN ACCESS** 012059

## Eye-hand movement in 3D displays: A structural equation modeling approach

Y T Prasetyo and R Widyaningrum

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012060

## Kansei engineering application in redesigning *carica* packaging to support local-small industry in Central Java

H Prastawa, M Mahachandra and D A H Donida

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012061

## Trends and future studies on policies to improve renewable energy share

J Sulistio, B Wirjodirdjo and P D Karningsih

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012062

## IoT based kWh Meter Recorder System for Electrical Substation

Moh Khozain and Adhatu S Ahmadiyah

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012063

## Analysing the barriers of reverse logistics implementation: A case study

S N W Pramono, M M Ulkhaq and Z Aulia

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012064

## Data analytics in asset valuation under uncertainty: A case study of unexplored oilfields

F R Pratikto, S W Indratno, K D Suryadi and D Santoso

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012065

## Work system analysis on puncher bar repair process in the production division of Akademi Teknik Soroako (Soroako Technical Academy)

Burhanuddin and R S Dewi

[+ Open abstract](#) [View article](#) [PDF](#)

---

OPEN ACCESS

012066

This article studies the sustainable value stream mapping to improve manufacturing sustainability performance. see our Privacy and Cookies policy

Case study in a natural dye batik SME's



## Kansei engineering application in redesigning *carica* packaging to support local-small industry in Central Java

H Prastawa<sup>1,2</sup>, M Mahachandra<sup>1,3</sup>, and D A H Donida<sup>1,4</sup>

<sup>1</sup>Industrial Engineering Department, Faculty of Engineering, Diponegoro University, Jl. Prof. Soedarto, SH, Kampus Undip Tembalang, Semarang, **Indonesia** 50275

Email: <sup>2</sup>heru.prastawa@gmail.com, <sup>2</sup>manik.mahachandra@gmail.com, <sup>3</sup>deandyahd4@gmail.com

**Abstract.** Packaging is one of the important elements of product sales. The packaging is one form of branding business of a business party. This study was conducted to apply the principles of Kansei Engineering to packaging products of *Carica*, one of the MSMEs in Wonosobo. This research was conducted to find out what kind of design desired by consumers of *Carica* products to encourage them to make purchases of these products. The method used is the Kansei Engineering method which will then be collaborated with the Kano model method and conjoint analysis. Kansei Engineering will help this research in determining what aspects consumers want to feel when they buy a *Carica* product. After that, using the Kano model principle will be determined categories from each aspect that consumers feel into several parts, namely basic attributes, linear attributes, attractive attributes, and non-significant attributes. Aspects included in the non-significant attribute category are considered not suitable to be used as a new design concept of *Carica* packaging. Finally, the packaging aspects that consumers want to feel when buying these products will be linked to the new design using conjoint analysis. This research concludes that the new packaging will be square and made of glass and has a label that has a fruit picture and has an orange theme.

### 1. Introduction

*Carica* sweets are one of the most famous from Wonosobo, Central Java, Indonesia. The fruit *Vasconcellea Cundinamarcentis* generally grows around the hills which have a fairly cold climate. Nowadays, *Carica* sweets are even sold online, showing that the businesses are in the promising development phase. MSME Embun Pagi is one of more than 200 *carica* sweets confectionery industries in Wonosobo is a business that is fostered by us, which has been producing since 2016. To compete with other similar businesses, MSME Embun Pagi requires a good and distinctive image of the product. Currently, Embun Pagi packages *Carica* sweets in a 7.5 cm diameter and 4 cm height plastic cup. It is also equipped with a yellow color label, which was designed around two years ago. The packaging costs IDR1.750 today. Figure 1 shows the existing packaging.



**Figure 1.** Existing packaging of *carica* sweets of MSME Embun Pagi.



# A safety-first portfolio selection framework: Estimating returns of exchange traded funds through regression analysis

M N Young<sup>1</sup>

School of Industrial Engineering and Engineering Management, Mapu'a University, Manila, [Phillippines](#)

E-mail: [1mnyoung@mapua.edu.ph](mailto:1mnyoung@mapua.edu.ph)

**Abstract.** This research provides a possible variant of the basic framework of portfolio selection. First, for the return estimation, considering Asian exchange-traded funds as the selection pool for the investment, regression analysis is applied to generate future return scenarios. Second, for the assignment of weights, the likelihood of these scenarios are assumed to be equally likely. Third, for the portfolio selection model, the safety-first model is utilized with consideration of 5 different diversification factors. The proposed procedure is modeled as a linear programming model into AIMMS optimization software where the resulting portfolios show that safety-first portfolios can outperform the benchmark. These observations can pave the way to a new generic portfolio selection framework that can possibly help investors and may lead to alternative investment instruments.

## 1. Introduction

the basic framework of portfolio selection is composed of 3 parts namely return estimation, assignment of weights, and portfolio selection model. In the first part, this is where investment pools are identified and future returns are estimated based on the individual perception of investors on future performances of the market. Typically, one can use the historical returns as rough estimates for future returns or they can use sophisticated models to generate return scenarios e.g. regression equations and other technical forecasting techniques. After having these return estimates, the second part of portfolio selection is to provide appropriate weights to these future returns or return scenarios. This is still based on the individual perception of the investor where he/she provides the appropriate weights to the corresponding return scenarios. Commonly, equal weights can be given to returning scenarios or the SP/A (security, potential, and aspiration) theory of [9] can be applied wherein hopeful (fearful) investors will give more weights to favorable (unfavorable) scenarios. There are also other weighting schemes like prospect theory [10], cumulative prospect theory [11], etc. Now that we have the return estimates and corresponding probability weights, the chosen portfolio selection model can now be applied. Normally, the 2 most frequent models utilized are the mean-variance (MV) model [12] and safety-first (SF) model [13]. The basic idea in the MV model is that investors are assumed to be rational such that they will always choose the investment with the highest return (lowest risk) among choices with similar risk (return). In the MV model portfolio return is maximized and risk is minimized considering a risk-return trade-off parameter of the investor. SF model on the other hand is based on the logic that individuals will have their own risk level for corresponding mental frames of the investments [14] as such for each investment investor will have a different loss threshold and the loss probability threshold depending on the source of the invested capital. Thus, in the SF model portfolio return is maximized while limiting the probability of losing a certain percentage of the investment to a specified probability threshold. Thus, this research provides a simple variation of 3 parts of portfolio selection.

In today's investment world, an exchange-traded fund (ETF) is a relatively new investment instrument that aims to track a specific index. It is similar to a mutual fund (MF) in that regard but ETF can be traded multiple times within a trading day like stocks while MF can only be traded once a day. Moreover, the transaction costs for ETF is relatively cheaper than stocks and MFs.



# Analysis on acquisition of Philippine Civil Registry Documents and inclination towards paperless e-government

L E A Villena<sup>1,4</sup>, R A C Robielos<sup>2,5</sup> and Wei-Jung Shiang<sup>3,6</sup>

<sup>1</sup> School of Graduate Studies, Mapua University, 658 Muralla St., Intramuros, Manila, 1002 Metro Manila, Philippines

<sup>2</sup> School of Industrial Engineering & Engineering Management, Mapua University, 658 Muralla St., Intramuros, Manila, 1002 Metro Manila, Philippines

<sup>3</sup> Department of Industrial and Systems Engineering, Chung Yuan Christian University, No. 200, Zhongbei Road, Zhongli District, Taoyuan City, Taiwan

E-mail: <sup>4</sup>lizetteerinwillena@gmail.com, <sup>5</sup>racrobielos@mapua.edu.ph, <sup>6</sup>wjs001@cycu.edu.tw

**Abstract.** In the Philippines, the Civil Registry Documents (CRD) acquired from Philippine Statistics Authority (PSA) such as Birth Certificate, Marriage Certificate, Certificate of No Marriage and Death Certificate are being used as one of the requirements in different transactions in academics, government, travel, employment, religious matters and other transactions (e.g. proof of identification, Title/Career advancement, etc.). The current acquisition ways of these Civil Registry Documents are through online, PSA Office, Travel Agency/Courier Company and Satellite/Mobile PSA Office. In this study, the different acquisition ways of Civil Registry Documents are analyzed through service blueprint. Furthermore, a survey was conducted to determine the satisfaction rate and preferences of the CRD acquirers and was analyzed through crosstabulations. With the help of the analyzed Service Blueprints, the possible problems that arises on each process of acquisition were identified. This paper proposed an instant, electronic (involves bar coding/QR code/Reference number), paperless and less time-consuming substitute to the existing ways of acquiring Civil Registry Documents.

## 1. Introduction

### 1.1. Background

The power of the internet and web technologies has been clearly established in business, as epitomized by the enormous success of electronic commerce [1]. Technology lets people reap beneficial things interdependently. E-government as one of the subcategory of information technology, made it possible for the governments to provide the information and services efficiently as quickly and as less costly as possible through the use of modern information technology [2]. E-government is a strong and strategic tool for governance policy, as well as for improving the efficiency and effectiveness of government functions and to propel regularizations. All agencies must manage the challenges and tensions they encounter [3]. E-government also offers improved quality of information supply and fewer administrative burdens [4].

In Taiwan, every administrative agency or unit has its own website. Taiwanese people's lives currently appear to have been more convenient than before due to these well-developed web services. While, in South Korea the government is improving to a partnership-based framework whereas the government together with its citizens are working beyond bilateral participation. This was deemed necessary since demands are also increasing for e-government services to comply with the constant influences in the interactive services on social networks [5].

The utilization of Information and Communication Technology (ICT) by the government units has generated valuable improvements in the offer of public services being provided by the different levels



## Tensile properties of epoxy/1 wt% graphene nanocomposites prepared with ethanol

M S Saharudin<sup>1,5</sup>, S Hasbi<sup>2,6</sup>, C Okolo<sup>3,7</sup> and F Inam<sup>4,8</sup>

<sup>1</sup>Universiti Kuala Lumpur Malaysia Italy Design Institute (UniKL MIDI), 119 Jalan 7/91, Taman Shamelin Perkasa, 56100, Kuala Lumpur, **Malaysia**

<sup>2</sup>Department of Mechanical Engineering, Faculty of Engineering, National Defence, University of Malaysia (NDUM), Kem Sungai Besi, 57000, Kuala Lumpur, Malaysia

<sup>3</sup>Department of Mechanical and Construction Engineering, Northumbria University, Newcastle upon Tyne NE1 8ST, UK

<sup>4</sup>University of East London, Docklands Campus, 4-6 University Way, London E16 2RD, United Kingdom

E-mail: <sup>5</sup>mshahneel@unikl.edu.my, <sup>6</sup>syafawati@upnm.edu.my,  
<sup>7</sup>chinyere.okolo@northumbria.ac.uk, <sup>8</sup>f.Inam@uel.ac.uk

**Abstract.** In this research, solution casting technique was applied to produce four types of nanocomposites. Different ethanol dosages; 0g, 1g, 3g, and 5g were used to disperse graphene in the epoxy matrix. It was observed that 1g dosage of ethanol was the most effective concentration to disperse 1wt% graphene in the epoxy matrix. At 1 g dosage of ethanol used, the Young's modulus, tensile strength, and toughness were increased by 130% ,76%, and 187% respectively. SEM images illustrated that the graphene was able to inhibit the advancing cracks and detoured cracks propagation. It is observed that the ethanol needs to be removed completely during processing to ensure its effectiveness, otherwise, the remaining ethanol can cause porosity which is undesirable to the tensile properties of the nanocomposites.

### 1. Introduction

Composites are materials which are comprising at least two or more phases that are chemically and physically bonded. Composite materials have a number of advantages, such as good resistance to corrosion, high fatigue strength and very low weight. In industry, composite materials have been widely used in aerospace, automotive, military, biomedical and sports leisure goods [1].

Because of their excellent thermal, chemical stability and mechanical properties when combined with fillers. Epoxy resin are used in numerous industrial applications particularly in aerospace, automotive and construction industries [2][3][4]. In recent years, epoxy resins have gained research interest in engineering applications due to their unique balance of chemical and mechanical and advantages of ease of processing [4][5]. However, due to the crosslinking structures which make the epoxy prone to crack and brittleness, the applications of epoxy resins remain limited.

Various studies have been carried out to increase the epoxy toughness. One of the popular methods is by adding Nano-filler such as graphene in the epoxy. Graphene-based polymer composite has attained great attention since the explosion of graphene research in 2004 due to its excellent performance in terms of thermal, mechanical and gas barrier [6]. Graphene-based materials have been extensively used in various fields such as composites, coatings, electronic devices, energy storage, sensors and biomedical [6]. Asif et al in their previous research have established that the Young's modulus and micro hardness of multi-layer graphene/epoxy have improved by 26% and 18% respectively [7]. In addition, the glass transition temperature ( $T_g$ ) and storage modulus also improved in comparison to unreinforced epoxy.

