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Basic & Applied Sciences

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# CONFERENCE PROCEEDINGS

## BOOK OF ABSTRACT ECBA-2016

**International Conference on  
“Engineering & Technology, Computer, Basic & Applied  
Science”  
(ECBA-2016), Hong Kong**

# **Book of Abstracts Proceedings**

**International Conference on  
“ENGINEERING & TECHNOLOGY, COMPUTER, BASIC &  
APPLIED SCIENCE”  
(ECBA-2016)  
Hong Kong**

Office Address: Academic Fora  
125 JalanSetia 5, Jinjang Utara 52000  
Kuala Lumpur Malaysia  
Contact: +6 0 362 528131  
Email: [contact@academicfora.com](mailto:contact@academicfora.com)

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Science  
(ECBA-2016)”**

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**International Conference on**  
**“Engineering & Technology, Computer, Basic & Applied**  
**Science”**  
**Hong Kong**

**Venue: The Charterhouse Causeway Bay Hotel Hong**  
**Kong**

**ORGANIZING COMMITTEE**

**1. Ms. Ani Wahyu**

*Conference coordinator*

Email: [aniwahyu@academicfora.com](mailto:aniwahyu@academicfora.com)

**2. Mr. Leon Yap**

*Conference coordinator*

Email: [leonyap@academicfora.com](mailto:leonyap@academicfora.com)

**3. Mr. Metha Shahi**

*Conference Coordinator*

Email: [metha.shahi@gmail.com](mailto:metha.shahi@gmail.com)

**4. Ms. Petrel Qui**

*Conference Coordinator*

Email: [petrelqui@hotmail.com](mailto:petrelqui@hotmail.com)

## **PROGRAM COORDINATOR MESSAGE**

**Ms. Ani Wahyu**

International Conference on Engineering & Technology, Computer, Basic & Applied Science” serves as platform that aims to help the scholarly community across nations to explore the critical role of multidisciplinary innovations for sustainability and growth of human societies. This conference provides opportunity to the academicians, practitioners, scientists, and scholars from across various disciplines to discuss avenues for interdisciplinary innovations and identify effective ways to address the challenges faced by our societies globally. The research ideas and studies that we received for this conference are very promising, unique, and impactful. I believe these studies have the potential to address key challenges in various sub-domains of social sciences and applied sciences.

I am really thankful to our honourable scientific and review committee for spending much of their time in reviewing the papers for this event. I am also thankful to all the participants for being here with us to create an environment of knowledge sharing and learning. We the scholars of this world belong to the elite educated class of this society and we owe a lot to return back to this society. Let’s break all the discriminating barriers and get free from all minor affiliations. Let’s contribute even a little or single step for betterment of society and welfare of humanity to bring prosperity, peace and harmony in this world. Stay blessed

Thank you.

**Ms. Ani Wahyu**

Program Coordinator

Email: [aniwahyu@academicfora.com](mailto:aniwahyu@academicfora.com)

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# CONFERENCE PROGRAM

**DAY 01 Friday (February 19, 2016)**  
**Welcome Reception & Registration**

**9:00– 9:30 am**

**Opening Ceremony (09:30 – 10:00 am)**  
**Venue: Room 1**

09:30 – 9:40 am	Introduction of Participants
09:40– 9:50 am	Welcome Remarks – <b>Ms Santi Rahmawati</b> – Conference Coordinator Academic Fora
09:50 – 10:00 am	Group Photo Session

**Grand Networking Session and Tea Break (10:00– 10:30 am)**



**DAY 01 Friday (February 19, 2016)**

**Session 1 (10:30 am – 12:00 pm)**

**Venue: Room 1**

**Session Chair: Nelson Gee-Con Chen**

**Track A: Business Economics, Social Science & Humanities Study**

HKS-326-102	The Impact of Capital Structure and Internal Governance Mechanisms on Malaysian Manufacturing Firms' Performance	Goh Chin Fei
HKS-326-103	The Automobile Assembly Productivity Enhancement by Job Tasks and Sequencing	Supaporn Rianpradub
HKS-326-105	A Study on the Comparative Analysis of Volatility between Won-Dollar Exchange Rates and Won-Yen Exchange Rates according to the Mutation of Financial Environments	Jieun Choi
HKS-326-106	The Effect of U-City Security Service on Crime Rate	Hyewon Kim
HKS-326-107	Reconstitute Spatial Weight Matrix considering U-City Network Structure	Sunghwan KIM
HKS-326-108	A Comparative study of U-City and Smart City	Ye Jin Yoo

**Lunch Break (12:00 – 1:00pm)**



**DAY 01 Friday (February 19, 2016)**

**Session 2 (1:00 pm – 2:30 pm)**

**Venue: Room 1**

**Session Chair: Dr. Goh Chin Fei**

**Track B: Engineering, Technology and Applied Sciences**

HKE-326-101	Potassium Iodide Concentration in the Weissler Reaction with Gold Nanoparticle Presence	Nelson Gee-Con Chen
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**Track A: Business Economics, Social Science & Humanities Study**

HKS-326-110	Empirical study on relations between macroeconomic variables and the Korean stock prices: an application of a Vector Error Correction Model	Eunae Park
HKS-326-111	Microfinance and the Advancement of Smallholder Agriculture: Opportunities, Challenges, and the Role of Public Policy	Danuvus Sagarik
HKS-326-113	Aggregate Factor, Sectoral Factor and Taiwanese Stock Return	Liu De Chih

**Tea Break: (2:30 pm – 2:45 pm)**

**DAY 01 Friday (February 19, 2016)**

**Session 3 (2:45 pm – 4:00 pm)**

**Venue: Room 1**

**Session Chair: Dr. Goh Chin Fei**

**Track A: Business Economics, Social Science & Humanities Study**

HKS-326-117	Academic Institute Administration toward National Quality Award : A Qualitative Analysis	Supitcha Cheevapruk
HKS-326-118	Decision making processing and individual difference by motivation in situating potentially hazardous facilities	Huo Kuang Chung
HKS-326-119	Confirmatory Factor Analysis on Desired Attributes of the Graduates Program in Engineering and Science	Sageemas Na Wichian

**(Closing Ceremony)**

**(4:00 pm – 5:00 pm)**

## **DAY 02 Saturday (February 20, 2016)**

All participants will be free to carry on their own tourism and shopping activities in Hong Kong it's a free day for this purpose.



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## **TRACK A: ENGINEERING & TECHNOLOGY**

## Potassium Iodide Concentration in the Weissler Reaction With Gold Nanoparticle Presence

**Nelson Gee-Con Chen<sup>1\*</sup>, Wan-Ting Hong<sup>2</sup>, Yi-Chan Chiu<sup>3</sup>**

<sup>12,3</sup>Institute of Biomedical Engineering, <sup>1</sup>Department of Electrical and  
Computer Engineering, National Chiao Tung University, Hsinchu, Taiwan

### Abstract

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Ultrasound is sound with a frequency greater than 20-30 kHz, the upper limit of human hearing. It is a longitudinal mechanical wave formed from the compression and rarefaction of its travel medium. At sufficient intensity, ultrasound induces inertial cavitation, where bubbles with a diameter of approximately 100  $\mu$ m form within the sonicated liquid, grow, and subsequently implode. The implosion, lasting a fraction of a microsecond, creates extreme conditions, with temperatures exceeding 5000 K and pressures of approximately 1000 atm. These conditions drive various chemical reactions, and the field of sonochemistry has developed in its wake. Several methods of measuring inertial cavitation exist. A classic method is the Weissler reaction (1950) in which dissolved potassium iodide (KI) is converted to the triiodide ion, whose quantity is then measured. The amount of triiodide produced is relatively independent of iodide concentration. A typical value used experimentally is 0.1 M. In studies involving suspended gold nanoparticles however, the addition of KI causes the suspended nanoparticles to aggregate and precipitate. Such would affect studies investigating the effect of nanoparticles on inertial cavitation. We show that a KI concentration of 30 mM causes aggregation to occur at a minimal rate, with a change in signal of less than 10% over the course of 600 s over a range of particle sizes.

**Keywords:** Nanoparticles, Aggregation, Weissler Reaction

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\*All correspondence related to this article should be directed to Nelson Gee-Con Chen from National Chiao Tung University, Taiwan.

Email: [ngchen@nctu.edu.tw](mailto:ngchen@nctu.edu.tw)



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## **TRACK B: BUSINESS MANAGEMENT & ECONOMICS**



## The Impact of Capital Structure and Internal Governance Mechanisms on Malaysian Manufacturing Firms' Performance

<sup>1\*</sup>Chin Fei Goh, <sup>2</sup>Muhammad Harith Zulqarnain Bin Noor Helmy, <sup>3</sup>Amran Rasli1, <sup>4</sup>Sang Long Choi, <sup>5</sup>Owee Kowang Tan  
<sup>1,2,3,5</sup>Faculty of Management, Universiti Teknologi Malaysia, Malaysia  
<sup>4</sup>International Business School, Universiti Teknologi Malaysia, Malaysia

### Abstract

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This study examines the impact of capital structure and internal governance mechanisms on Malaysian manufacturing firms' performance. A total of 183 companies were selected from the list of listed companies in Bursa Malaysia within the year 2007 to 2010. We collect the corporate governance data from the annual financial data from Thompson Reuter's DataStream. The study shows the positive impact of capital structure on firm performance of manufacturing firms in Malaysia. However, this study found CEO duality and independent director do not affect firm performance. The implication of this study is that the manufacturing firms in Malaysia should achieve optimal capital structure in improving firm performance.

**Keywords:** Corporate Governance, Capital Structure, Internal Governance Mechanisms

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\*All correspondence related to this article should be directed to Chin Fei Goh, Faculty of Management, Universiti Teknologi Malaysia, Malaysia.  
Email: [gcfai@utm.my](mailto:gcfai@utm.my)

## The Automobile Assembly Productivity Enhancement by Job Tasks and Sequencing

<sup>1</sup>Supaporn Rianpradub, <sup>2</sup>Piyachut Jantiva

<sup>1,2</sup> College of Industrial Technology, King Mongkut's University of  
Technology North Bangkok

### Abstract

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Manufacturing factories are facing the operation challenges in processes, systems and work sequences in order to get high production efficiency. The automobile assembly lines are facing similarly the same challenges. This operational research in the automobile factory aimed to find the cause of the production problems and to solve the problems by managing both the human and material resources in order to enhance the production efficiency. The data analysis (standard time, production demand and production efficiency) were performed in order to re-arrange the job tasks and sequencing. After the line balancing implementation showed that the productivity was enhanced and reached the demand target without extra payment.

**Keywords:** Job Sequencing, Productivity Enhancement, Line Balancing

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\*All correspondence related to this article should be directed to Supaporn Rianpradub from College of Industrial Technology, King Mongkut's University of Technology North Bangkok.  
Email: supaporn.rpd@gmail.com

## A Study on the Comparative Analysis of Volatility between Won-Dollar Exchange Rates and Won-Yen Exchange Rates according to the Mutation of Financial Environments

**Jieun Choi**

Pusan National University, Department of Economics, Korea

### Abstract

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The major purpose of this study is to analyse comparatively the characteristics of this volatility between won-dollar exchange rates and won-yen exchange rates according to the mutation of financial environments. This study uses the GARCH model which considers the time-varying and clustering property and T-GARCH Model which additionally considers the asymmetry property to estimate the volatility of exchange rates. This study uses the daily exchange rate data from February 1990 when Korea introduces the Market Average Exchange Rate System to August 2008. Estimation results shows that there are the ARCH effects, the GARCH effects and asymmetries on the exchange rates. Also, the median log shows that the volatility of won/dollar exchange rate have a long stability to shock in the period after the foreign-exchange crisis. In the case of Japan, the volatility of won/yen exchange rate have a long stability to shock in the period before the foreign-exchange rate crisis. In addition, the asymmetry of won/dollar exchange rate volatility is bigger than won/yen exchange rate volatility. In conclusion, these characteristics of the exchange rates are helpful to make the trade policy for politicians and the trade strategy for firm.

**Keywords:** Volatility of Exchange Rates, The Asymmetry Effect of Volatility, T-GARCH

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\*All correspondence related to this article should be directed to Jieun Choi, Pusan National University, Department of Economics, Korea  
Email: [april3960@hanmail.net](mailto:april3960@hanmail.net)

## Reconstitute Spatial Weight Matrix considering U-City Network Structure

**KIM Sunghwan<sup>1</sup>, KIM Kabsung<sup>2\*</sup>**  
<sup>1,2</sup>Yonsei University, Korea

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### Abstract

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In this study, we reconstitute a spatial weight matrix for U-City Network Structure and construct a regression-based spatial analysis model among 16 major administrative areas. Existing spatial weight matrices for spatial autoregressive models commonly consider adjacency or invert distance weighting. But nowadays, a virtual network system is more important than actual distance to reveal spatial dependencies. Especially in Korea, U-City(or smart city) network structures have expanded rapidly by the government and reconstructed traditional urban systems. The most distinctive point from advanced research is that we consider the U-City network structure into the spatial adjacencies and interactions model. This result in a family of spatial OD models that represent an extension of the spatial regression models described in Anselin(1988).

**Keywords:** Spatial Weight Matrix, Spatial Connectivity, Spatial Economics, U-City

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\*All correspondence related to this article should be directed to KIM Kabsung faculty of Yonsei University, Korea.  
Email: [kabsung@yonsei.ac.kr](mailto:kabsung@yonsei.ac.kr)

## A Comparative study of U-City and Smart City

**Ye Jin Yoo<sup>1</sup>, Kim Kabsung<sup>2\*</sup>, Han Jihye<sup>3</sup>**  
<sup>1,2,3</sup> Yonsei University, Korea

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### Abstract

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The concept of Ubiquitous Computing leads new paradigm change in urban space creation. In Korea, new concept of U-City draws a lot of attentions. And U-City from Korea is competing with Smart City and USA to dominate the ICTs based urban development market of developing country. This paper aims at suggesting the U-City strategy based on comparing U-City and Smart City.

**Keywords:** Ubiquitous City, Smart City

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\*All correspondence related to this article should be directed to KIM Kabsung faculty of Yonsei University, Korea.  
Email: [kabsung@yonsei.ac.kr](mailto:kabsung@yonsei.ac.kr)

## Empirical Study on Relations between Macroeconomic Variables and the Korean Stock Prices: an Application of a Vector Error Correction Model

**Eunae Park**

Pusan National University, Department of Economics, Korea

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### Abstract

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The purpose of this study is to investigate whether current economic activities in Korea can explain stock prices by using a Cointegration test and Variance decomposition methods from a Vector Error Correction Model (VECM). On the basis of preceding researches and theoretical models, five macroeconomic variables that are expected to show close relationship with stock price index were chosen: consumer price index, foreign exchange rate, industrial production, interest rate, M2. Time series data were collected for the period from Oct 2000 to Aug 2015 and in addition to The global financial debacle was considered as another structural break point in this paper. Johansen Cointegration tests demonstrate that stock price levels are significantly related to industrial production, consumer price index, foreign exchange rate, interest rate, M2. Also long-run equilibrium relationship between stock prices and the set of macroeconomic variables exists. As a result of the Johansen Cointegration test, there is one cointegration relation at most in all period sample and there are 2 cointegration relations at most before The global financial debacle and 3 cointegration relations at most after The global financial debacle. Variance decomposition methods support the strong explanatory power of macroeconomic variables in contributing to the forecast variance of stock prices. The results of Variance decomposition methods indicate that foreign exchange rate, interest rate and M2 are more important than other variables on the Korean stock market after the global financial debacle. As a result of dividing into two different periods, there is a structural change in Korean capital market after the global financial debacle in 2008.

**Keywords:** Stock prices, Macroeconomic variables, VECM, Johansen Cointegration

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\*All correspondence related to this article should be directed to Eunae Park, from Pusan National University, Korea.  
Email: [junya2890@gmail.com](mailto:junya2890@gmail.com)

## Microfinance and the Advancement of Smallholder Agriculture: Opportunities, Challenges, and the Role of Public Policy

**Danuvus Sagarik**  
Rangsit University, Thailand

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### Abstract

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The agricultural sector is the heart of many developing and low-income economies. The economic centrality of smallholders makes them extremely important for catalyzing broad-based economic growth. They are sometimes considered to be grass root of the economy. One key tool in improving smallholder productivity may be in the rapidly growing area of microfinance, which refers to the provision of financial services to poor and low income people. The advocates of microfinance suggest that it will highlight more opportunities for farmers or the poor to improve their productivity and, hence, quality of life. Smallholder agriculture has not been paid much attention from microfinance institutions (MFIs) in the past but during the last few years the role of MFIs in advancing smallholders agriculture has become increasingly significant. Nevertheless, there are some issues that encounter the improvement of smallholder agriculture through microfinance. This paper aims to emphasize the challenges and issues of microfinance faced by smallholder agriculture and the grass root farmers, address the financial needs of smallholders, discuss methods by which MFIs and public policy to support MFIs can help improve agricultural production, point out challenges unique to rural financing, and illustrate a framework for mitigating these challenges.

**Keywords:** Microfinance, Agriculture, Developing Countries, Public Policy

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\*All correspondence related to this article should be directed to Danuvus Sagarik, from Rangsit University, Thailand.  
Email: danuvus.s@rsu.ac.th

## Aggregate Factor, Sectoral Factor and Taiwanese Stock Return

**Liu De Chih<sup>1\*</sup>, Liu Chih Yun<sup>2</sup>**

<sup>1,2</sup> Department of Economics National Taipei University, Taiwan

### Abstract

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This paper explores the nature of Taiwanese stock return fluctuation from 1992-2013. We employ a dynamic latent factor model that decomposes stock return fluctuations into aggregate, sectoral and granular components. In the full sample period we find that the aggregate factor contributes 45 percent of the stock return volatility, whereas the sectoral factor on average accounts for 10 percent of stock return variation. When sub-sample analysis is executed, we again fail to reject the importance of aggregate and granular factors. These results are closer to the aggregate paradigm rather than the sectoral paradigm.

**Keywords:** Stock Return; Aggregate Shock; Sectoral Shock

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\*All correspondence related to this article should be directed to Liu De Chih, from Department of Economics National Taipei University, Taiwan.

Email: [steveliu@mail.ntpu.edu.tw](mailto:steveliu@mail.ntpu.edu.tw)



## Academic Institute Administration toward National Quality Award: A Qualitative Analysis

Supitcha Cheevapruk<sup>1\*</sup>, Sageemas Na Wichien<sup>2</sup>, Veera Arunmongkol<sup>3</sup>, Rattana Attapoomsuwan<sup>4</sup>

<sup>1,2,3,4</sup> College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Thailand

### Abstract

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The qualitative research aimed to assess an academic institute's performance toward Thailand Quality Award and to study core indicators to be a quality institute. The large academic institutes with consistent research's objective were selected by using purposive method. The data was collected from administrators, academic staffs, supporting academic staffs, students, alumni and stakeholders by using interview, focus group, documentation analysis, observation and noted method. The data was analyzed and decoded then concept mapping was performed by using NVivo program. The result found that 1. the quality - academic institute need to have administrators with high leading skills. Good governance with social responsibility was taken into account together with the result from 5 aspects which were product and operation, customer, workforce, leading organization and good governance, finance and marketing. 2. the quality - academic institute's conditions consisted of 1) operation focus :operation process (reference = 16), 2)customer focus: voice of customer (reference = 15) and leading organization : organizational governance by senior leader (reference = 4) respectively.

**Keywords:** Academic Institute, Quality Organization, Governance

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\*All correspondence related to this article should be directed to Supitcha Cheevapruk from College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Thailand.

Email: [supitcha.c@cit.kmutnb.ac.th](mailto:supitcha.c@cit.kmutnb.ac.th)

## Confirmatory Factor Analysis on Desired Attributes of the Graduates Program in Engineering and Science

**Sageemas Na Wichian<sup>1\*</sup>, SupitchaCheevapruk<sup>2</sup>,  
SopidaTuammee<sup>3</sup>**

<sup>1</sup>Department of Social and Applied Science

<sup>2,3</sup>Department of Information and Production Technology Management  
College of Industrial Technology, King Mongkut's University of  
Technology North Bangkok, Thailand

### Abstract

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The purpose of this research was to analyze the factors of desired attributes towards the graduates Program in Engineering and Science. The sample group consisted of 776 graduates. The research instruments included questionnaires and Confirmatory Factor Analysis. The research result revealed that the model of desired attributes on the graduates Program in Engineering and Science was in accordance with the empirical data really well. This was considered by the Chi-Square which was different from zero by having no statistical significance (Chi-Square = 47.68, df= 39, P-value = 0.160, GFI = 0.99, AGFI = 0.98, respectively).

**Keywords:** Confirmatory Factor Analysis, Desired Attributes

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\*All correspondence related to this article should be directed to Sageemas Na Wichian, from King Mongkut's University of Technology North Bangkok, Thailand.  
Email: [sageemas.n@cit.kmutnb.ac.th](mailto:sageemas.n@cit.kmutnb.ac.th)



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## **TRACK C: SOCIAL SCIENCE AND HUMANITIES**

## The Effect of U-City Security Service on Crime Rate

**Hyewon Kim<sup>1</sup>, Kabsung Kim<sup>2\*</sup>, Joohyun Lee<sup>3</sup>**  
<sup>1,2,3</sup> Yonsei University, Korea

### Abstract

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Economy of Korea has grown rapidly after 1960s as urbanization rate soared from 39.1% in 1960 to 91.5% in 2013. However, unlike the rapid quantitative growth a slow trend of qualitative growth of the city has caused a number of urban problems, especially crime. Accordingly, there have been studies on the factors that affect crime rate and recent studies are considering the spatial effect of crime. Also, cities operating Ubiquitous Security service to prevent crime. In this background, this study aims to address the effect of Ubiquitous city(U-city) on Crime Rate within the metropolitan area of Seoul. First, it analyzes geographical distribution of crime rate. Then it verify spatial autocorrelation of crime rate within the metropolitan area of Seoul. Finally, it analyzes whether the execution of U-Security service affects crime rate as well as urban environmental characteristics that influence crime rate by applying spatial regression models.

**Keywords:** Crime Rate, Spatial Crime Pattern, Spatial Econometrics, Ubiquitous City, U-cit

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\*All correspondence related to this article should be directed to Kabsung Kim faculty of Yonsei University, Korea.  
Email: kimhw210@gmail.com

## Decision Making Processing and Individual Difference by Motivation in Situating Potentially Hazardous Facilities

**Huo Kuang Chung<sup>1\*</sup>, Yenming J. Chen<sup>2</sup>**

<sup>1,2</sup> National Kaohsiung First University of Sci&Tech, Taiwan

### Abstract

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In this study, we extend the discussion on accepting not-in-my-backyard (NIMBY) facilities and reveal the genuine need for a versatile composition of residents in the vicinity. And to convince the message will be the message of influence and there are differences in behavioral outcomes or goal statement. Only with fair segmentation of various types of residents can public policy balance the benefits among all segments and be tailored for each resident without creating a bias toward the residents who reject the NIMBY facilities most vehemently. Design/methodology/approach-Most of the previous studies on NIMBY-related issues have conducted gap analysis based on explicit demographic traits of local residents. However, an effective and holistic policy must pass through shallow claims and target the implicit desires of residents. In this study, cluster analysis, analysis of variance, regression, and classification analysis are conducted on 273 samples collected from residents of a typical industrial zone. Findings-Results indicate that portions of residents are highly sensitive to compensation, trust, and perceived risk, which implies the existence of multilevel requirements among the diverse composition of residents. Originality/value-In contrast to previous studies on segmentation by demographics, the current study segments similar residents based on discriminative characteristics of latent variables, which reflect the motivation traits of residents. Then, a balanced policy can equally emphasize each latent characteristic for each type of resident.

**Keywords:** (NIMBY), Goal Framing Effect, Environmental Impact, Cluster Analysis, Neighborliness, Compensation, Trust, Perceived Risk

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\*All correspondence related to this article should be directed to Huo Kuang Chung from National Kaohsiung First University of Sci&Tech, Taiwan.  
Email: [u9728901@nkfust.edu.tw](mailto:u9728901@nkfust.edu.tw)

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