

PROCEEDINGS

DTETA-2018

**International Conference on Diversification
Trends in Engineering Technology and
and Applied Sciences**

Venue: TKP Tokyo Station Yaesu Conference Center

Tokyo, Japan

Date: March 22-23, 2018



CONFERENCE BOOK OF ABSTRACT PROCEEDINGS

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Consortium of Engineering & Technology



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Book of Abstracts Proceedings

**International Conference on Diversification Trends in Engineering Technology
and Applied Sciences (DTETA)**

Tokyo, Japan
March 23-24, 2018
ISBN: 978-602-74955-6-2

Email: info@consortium-et.com

URL: www.consortium-et.com



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Proceedings of the International Conference on Diversification Trends in Engineering Technology and Applied Sciences (DTETA)

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***International Conference on Diversification Trends in
Engineering Technology and Applied Sciences (DTETA)***

Venue: TKP Tokyo Station Yaesu Conference Center

Conference Theme: Providing platform for enhancement of research
and developmental activities through networking.

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CONFERENCE TRACKS

- Computer and Software Engineering
- Mechanical & Metallurgical Engineering
- Electrical & Electronics Engineering
- Civil Engineering
- Bio-Technology & Food Technology
- Chemistry & Chemical Engineering
- Physical, Applied and Life Sciences
- Interdisciplinary

CONFERENCE CHAIR MESSAGE

Michael Sasaoka

“International Conference of Consortium of Engineering & Technology” is a platform that thrives to support the worldwide scholarly community to analyze the role played by the multidisciplinary innovations for the betterment of human societies. It also encourages academicians, practitioners, scientists, and scholars from various disciplines to come together and share their ideas about how they can make all the disciplines interact in an innovative way and to sort out the way to minimize the effect of challenges faced by the society. All the research work presented in this conference is truly exceptional, promising, and effective. These researches are designed to target the challenges that are faced by various sub-domains of the social sciences and applied sciences.

I would like to thank our honorable scientific and review committee for giving their precious time to the review process covering the papers presented in this conference. I am also highly obliged to the participants for being a part of our efforts to promote knowledge sharing and learning. We as scholars make an integral part of the leading educated class of the society that is responsible for benefitting the society with their knowledge. Let’s get over all sorts of discrimination and take a look at the wider picture. Let’s work together for the welfare of humanity for making the world a harmonious place to live and making it flourish in every aspect. Stay blessed.

Thank you.

Michael Sasaoka

Conference Chair

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CONFERENCE SECHDULE

Consortium-et-2018

Venue: TKP Tokyo Station Yaesu Conference Center

Time: Registration & Kit Distribution (09:00 am - 09:10 am)

Day:Thursday

Date: March 22, 2018

Venue: Room 1 & Room 2

09:10 am - 09:20 am	Introduction of Participants
09:20 am - 09:30 am	Inauguration and Opening address
09:30 am - 09:40 am	Grand Networking Session

Tea/Coffee Break (09:40 am - 10:00 am)

DAY 01 (March 22, 2018)

First Presentation Session (10:00 am 12:00 pm)

Venue: Room 1

Session Chair: Matli Chandra Sekhar

Track A: Business, Social Sciences and Management Studies

Presenter Name	Manuscript Title	Paper ID
Natpatsaya Setthachotsombut	Active Learning Effect to Thai Students Learning Outcomes	ITSBM-038-ANI101
Mikako Nobuhara	Components of the TOEIC Listening Section and Their Effects on Retention and Dictation in Classes: A Case Study in a Japanese College	ITSBM-038-ANI105
Nattapon Wathanachai	The Improvement of Processes in Logistics from the Car Booking to Point of Delivery of DHL Supply Chain (Thailand) Co.	ITSBM-038-ANI106
Chitpong ayasanond	The Applications of 7R in Logistics for Enhancing Service Quality of Outsourcing Motorbike Delivery Service in Bangkok Metropolitan Areas	ITSBM-038-ANI107
Sittichai Pintuma	The comparison of certificate of origin (Form D) and self-certification under the ASEAN Free Trade Area (AFTA): Case study Premium Lubricant International Co., Ltd.	ITSBM-038-ANI108
Putjai Indranoi	Pyramid of Personality Development	ITSBM-038-ANI109
Tai-Yi Sun & Tung-Chiou Huang	The Reconstruction of Positive Multicultural Environments Through Translingualism in Taiwan	ITSBM-038-ANI111 & ITSBM-038-ANI111C
Phitphisut Thitart	The Comparison of Community Educational Institutions: Development Roadmap of Donkeaw Community University of Health and Umong University of Technology on Citizenship Cultivation	ITSBM-038-ANI110

Lunch Break (12:00 am - 01:00 pm)

DAY 01 (March 22, 2018)

Second Presentation Session (01:00 pm 03:00 pm)

Venue: Room 1

Session Chair: Dr. Natpatsaya Setthachotsombut

Track B: Engineering and Technology, Computer, Basics and Applied Sciences

Presenter Name	Manuscript Title	Paper ID
Dr. Ebrahim Ghaderpour	Antileakage least-squares spectral analysis for seismic data regularization in higher dimensions	DTETA-MAR-105
Matli Chandra Sekhar	Experimental Studies on the Effect of Premixing Methods in Anaerobic Digester with Corn Stover	DTETA-MAR-106
Han-Shen Chen	Establishment and Applied Research on Small Island Ecosystem Services Evaluation Assessment Model	DTETA-MAR-107
Wu, Ching Yang	A Research of Focus Production System based on the Concept of TOC and JIT	DTETA-MAR-109
Ms Ting-Yu Lin	An Improved ELECTRE II Multi-criteria Decision Making Method with Technology of Groundwater Contamination Remediation as an Example	DTETA-MAR-111
Wei-Lun Tsai	Combining Data Envelopment Analysis and Competitive Dynamic Theory for Exploring Global Smartphone Manufacturers' Performance	DTETA-MAR-112
Zeng Bo-Jian	A Study of Approaches of Seasonal Chaotic Time Series Prediction	DTETA-MAR-113
Chin-Wei Chen	A Research of Multi-Bottlenecks and Bottleneck Shifting on Drum-Buffer-Rope Job & Shop Scheduling	DTETA-MAR-114

Track C: Medical, Medicine and Health Study

Gensichen Jochen	Long-term Effects in Sepsis Care - 24 month follow up of a Randomised Controlled Trial	TKM-438-101
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Tea Break: (03:00 to 03:15 pm)

DAY 01 (March 22, 2018)

Third Presentation Session (03:15 pm 05:00 pm)

Venue: Room 1

Track A: Business, Economics, Social Sciences and Humanities

Presenter Name	Manuscript Title	Paper ID
Azman Ismail	Effect of Training Management on Training Transfer	RM-MARCH-105
Polpat Kotrajaras	Future of E-Commerce In Thailand: How to Find the Appropriate E-Commerce Data Survey Methodology For Thailand	RM-MARCH-106
Hsien-Hsiu Chen	The Microinteraction of Impulsive Buying Behavior and Usability on E-Commerce	RM-MARCH-113
Tzu-ChenChang	The Effect Of Interface Design Of E-Commerce on Abandonment Rate of Shopping Cart -An Example of Progress Indicator	RM-MARCH-114
Ching-Chang Wu	Using Zaltman Metaphor Elicitation Technique To Observe Behavior Patterns of Serious Mobile Game PlayersTake Pokemon Go for Example	RM-MARCH-117
Marek R. Ogiela	Advanced Cognitive Informatics Approaches To Distributed Data Encryption and Management	RM-MARCH-118
Lidia Ogiela	Selected Aspects of Management Protocols with Application in Cloud Computing	RM-MARCH-119
Chin-Wei	Chen Effect of Training Management on Training Transfer	RM-MARCH-105
Pratoom Rerkklang	Sustainability Consciousness, Sustainable Behavior of Thais: the Effects on Quality of Life and Happiness	TKS-438-101

Ending Note

Participants Registered as Listener/Observer

The following Scholars/ practitioners who don't have any paper presentation, however they will attending the conference as delegates & observers.

Official ID: ITSBM-038-ANI103A

Thomas Celestine

YAnyinna Boutique and cosmetics company LTD

Official ID: DTETA-MAR-103A

Izzydor Kolisher

Technion - Israel institute of Technology, Isreal

Conference Day 02 (March 23, 2018)

Second day of conference will be specified for touristy. Relevant expenses are borne by Individual him/herself.

TRACK A

BUSINESS, SOCIAL SCIENCES AND MANAGEMENT STUDIES

Active Learning Effect to Thai Students Learning Outcomes

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Keywords: Active Learning, Creativity Based Learning, Learning Outcomes

This article aims to evaluate the learning outcomes of active learning and compare the learning outcomes of pretest and posttest. Using mixed research methodology, such as 1) Action Research 2) Quantitative research and 3) Qualitative research. The sample size are students 88 people from total 310 people. The populations using stratified random sampling, data analyze by Descriptive Statistics, Pearson Correlation and Paired Sample T-Test. The research found that. 1) The Learning Outcome in 5 domains of students have higher average after teaching by active learning between week 1 to 17. 2) The pretest and posttest in 5 domains such as, Moral and Ethics, Knowledge Skills, Interpersonal Skills and Responsibility and Numerical Analysis, Communication and Information Technology, which all of this have higher. However, when comparing weekly scores found that week 3 and week 4 the results in opposite. Posttest have lower than scores Pretest that -0.95 and -2.62 respectively. The implications of this, 1) Encourage the Thai students to make a questions 2) Improve or create a classroom atmosphere 3) Caring for learners 4) Integration Active Learning with other approach 5) The executive should encourage and support teachers and 6) Design classroom conditions to have a high impact on learning.

Components of the TOEIC Listening Section and Their Effects on Retention and Dictation in Classes: A Case Study in a Japanese College

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Keywords: Dictation, EFL Students, Listening, Motivation, Retention, TOEIC

The Test of English for International Communication (TOEIC) is used throughout Japan to evaluate students' abilities in English: for college entrance examinations, recognition of university credits, and even career development within a company. Here, the author analyzed features of listening-related questions in all four parts in the TOEIC and clarified how questions could be more effectively and accurately answered to obtain the maximum score in this area. Tips for tackling with the questions were given to classes of English students, who had opportunities to practice answering TOEIC questions in class. The subjects were all college students of EFL. Moreover, a series of English classes on TOEIC were conducted for the students, who also practiced retention and dictation in class, for about 8 months. They took a practice TOEIC in spring and a real TOEIC test in winter. Many students showed improvements in their scores in the test taken after the TOEIC classes from their scores before. In addition, useful information was obtained via a survey conducted after the period of the class: students were motivated to learn from the retention and dictation exercises.

The Improvement of Processes in Logistics from the Car Booking to Point of Delivery of DHL Supply Chain (Thailand) Co., Ltd.

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Keywords: Logistics Process, Sub Contract, Car Booking, Point of Delivery

The purpose of this research were; 1) study processes in logistics process from the car booking to point of delivery of DHL Supply Chain (Thailand) Co., Ltd. 2) study problems that occur in each activity in logistics processes from the car booking to point of delivery of DHL Supply Chain (Thailand) Co., Ltd. 3) study the improvement of activities in logistics process from the car booking to point of delivery of DHL Supply Chain (Thailand) Co., Ltd. The sample was 13 employees involved in the logistics process consist of 10 employees from DHL Supply Chain and 3 employees from Agilent Technologies. The instruments used in the study were observation and depth interviews those involved in the logistics processes from car booking to point of delivery. Researcher also collects information from related documents and researches to find solutions for increase the efficiency of the service. The results of research found that the majority of problems are caused by 2 factors; 1) Staffs of DHL Supply Chain both of coordinators and drivers do not provide customer with professionalism, coordination, solve the problem and service mind. Selection of the appropriate personnel and sufficient training are the key to increase customer satisfaction. 2) System processes and working equipment should be improved the system processes by easy to work and selection of the appropriate equipment for use can help make work easier and improve performance as well.

The Applications of 7R in Logistics for Enhancing Service Quality of Outsourcing Motorbike Delivery Service in Bangkok Metropolitan Areas

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Keywords: 7R Logistics, Logistics, Service Quality, Outsourcing, Outsourcing Motorbike Delivery Service

The purpose of this paper is to study the concept of logistics management to link and applying with enhancing service quality of outsourcing motorbike delivery service in Bangkok metropolitan areas (Pathumwan, Bangrak and Sathon) by adopted 7R in logistics management that include: Right Product, Right Quantity, Right Place, Right Time, Right Cost, Right Condition and Right Customer, in the view of enhancing service quality of outsourcing motorbike delivery service in Bangkok metropolitan areas. The tool was a questionnaire with the sampling group of 250 respondents (Pathumwan: 60, Bangrak: 70 and Sathon: 120). The statistics which used to compile the data were frequency, percentage, average and standard deviation. The research found that most respondents rated service quality at a high level ($= 4.18$, S.D. $= 0.50$) which consisting of Right Product ($= 4.24$, S.D. $= 0.66$), Right Quantity ($= 4.23$, S.D. $= 0.59$), Right Place ($= 4.19$, S.D. $= 0.59$), Right Time ($= 4.17$, S.D. $= 0.61$), Right Cost ($= 4.16$, S.D. $= 0.68$), Right Condition ($= 4.15$, S.D. $= 0.62$) and Right Customer ($= 4.12$, S.D. $= 0.64$) respectively.

The Comparison of Certificate of Origin (Form D) And Self-Certification Under the ASEAN Free Trade Area (AFTA): Case Study Premium Lubricant International Co., Ltd.

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Keywords: Free Trade Area, ASEAN, Certificate of Origin, Self-Certification, Import-Export Documents

This research is the qualitative research, the comparison of certificate of origin (Form D) and self-certification under the ASEAN Free Trade Area (AFTA): Case study Premium Lubricant International Co., Ltd. By study the relevance and Trade Area development under the ASEAN Free Trade Area. The samples were the staffs from head of import-export documents department and foreign trade department. Choosing a specific type of 5 people from data collection, interviewed and observations of those involved then analyze and summarize the study. Finding that, the opinions of samples were different to comparing about using certificate of origin (Form D) and self-certification under the ASEAN Free Trade Area (AFTA); self-certifications system can reduced the time and cost saving including fallibility less than certificate of origin (Form D) by using data electronic record system. The risk of self-certification error is less than certification of origin. The self-certification is no needs to save the data to electronic system, just identify domestic proportion of invoice to make less of error. But the risks in origin rules might be inspection and monitored by the foreign trade department.

Pyramid of Personality Development

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Keywords: Personality Development, Excepted Personality, Good Personality, Outstanding Personality, Pyramid of Personality Development

Personality is the collective nature of a person and the expression of behavior. This indicates individuality in adaptation to environment include the self-esteem, ability, motivation, emotional, reaction and habit that collected for life time. While we talk about personality, we talk about what we see by our own eye, what is a unique identity and actually personality. To develop personality, we may blend both visible and invisible thing. Symmetry of these components may build the outstanding excepted personality. Good personality consists of 1) knowing and understanding yourselves: make sure that who are you and who you would like to be, 2) knowing and understanding your environment: that you do may make conflicts of interest, 3) having a crystal clear-cut in that you want to be: by using Plan, Do, Check & Action model, 4) willing to work hard for your target goal: concentrate & not give up, 5) suit for yourself: what you like most, 6) train yourself till it becomes the new habit: train + time = habit, 7) not be embarrassed while you are training: whether suitable to you or not and 8) remarkable & acceptable: your new personality is accepted by social value & crown.

The Comparison of Community Educational Institutions: Development Roadmap of University of Donkeaw Healthy Community and Umong University of Technology on Citizenship Cultivation

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Keywords: Comparative Study, Community Education Institution, Knowledge Management

The study on The Comparison of Community Educational Institutions: Development Roadmap of University of Donkeaw Healthy Community and Umong University of Technology on Citizenship Cultivation was conducted as a comparative study on issues, factors and motivations to develop new universities for districts. According to the study, Donkeaw district is mostly a retirement community. Most of the people are old and have weak bodies. Knowledge on health is the main feature driving the University of Donkeaw Healthy Community to increase the happiness of their community in four dimensions: happiness in the body, happiness of the mind, happiness through wisdom and happiness for society. Umong district is going to focus more about city life. Umong people have become more distant from each other and were showing little care for their community. Civic responsibility is featured strongly to remind people about what is right, personal accountability and citizenship. Looking at different lifestyles, different folk wisdom and different environments are the key factors used to establish and develop both universities. Therefore, a deep knowledge of local life and good local folk wisdom are important factors to develop a community education institution which is unique, prominent and sustainable

The Reconstruction of Positive Multicultural Environments Through Translingualism in Taiwan

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Keywords: Translingualism, Phenomenological Method, Action Research

Translingualism is a process of empowerment, and this empowerment of us in our daily life might produce an environment that fosters maturity and responsibility (Steven G. Kellman 2000; Huang 2017). Diversity of race, language, culture, ethnicity, social class, and religion is a fundamental feature of interpersonal interactions and community structures. Life in Taiwan is an encounter with the blending of culture and nature, as well as different languages and cultures, and such kind of the circumstances have forced everyone to learn from each other in order to form positive heterogeneous relationships with people from various cultural backgrounds.

Sustainability Development Consciousness and Behavior of Thais: The Effects on Quality of Life and Happiness

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Keywords: Sustainability Perception, Sustainability Consciousness, Sustainable Behavior, Quality of Life, Happiness.

This research aims are the following: 1) Sustainability development perceptions, consciousness, behavior, including sufficiency economy behavior, religiosity, family relation, quality of life and happiness of Thais. 2) Correlation between sustainability development perceptions, consciousness, behavior, sufficiency economy behavior, religiosity, family relation, quality of life and happiness of Thais. 3) Effects of sustainability development perceptions, consciousness, behavior, including sufficiency economy behavior, religiosity, family relation on quality of life and happiness of Thais. This research used survey design to study Thais in nationwide. The sample composed of 1,517 Thais from 5 regions which were central, eastern, northern, and southern and Bangkok. The sample was sampling by proportional quota. Research data were collected by questionnaires which reliability was range from .889 to .968. Data were computerized and analyzed by the Statistical Package Software. The research results found that sustainability development perception had effects on sustainable development consciousness, behavior, sufficiency economy behavior, religiosity, family relation, quality of life and happiness. There was positive correlation between all variables. Sustainability development behavior had effect on quality of life and happiness when controlled effect of sustainability development perception, sufficiency economy behavior, religiosity and family relation. The finding suggest Thai government, business and education organizations collaborate on promoting perception, consciousness and behavior on sustainable development for the growth of nations.

Effect of Training Management on Training Transfer in Schools in Thailand

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Keywords: Training Management, Training Transfer, Smart PLS, Malaysia

According to the present literature connecting to organizational learning, training administration consists of three important elements: support, communication and delivery. Recent studies in this field highlight that the ability of management to appropriately implement training programs may have a significant impact on employee outcomes, especially training transfer. However, this relationship is interesting, the role of training management as an important predicting variable has been less emphasized in the organizational learning research literature. Thus, this study was done to evaluate the relationship between training management and training transfer. A survey method was employed to collect data from employees who work at a military based health organization. The results of Smart PLS path model analysis displayed that the ability of management to appropriately provide support, communicate the information about training programs and select delivery modes had been an essential determinant of training transfer. Additionally, this study provides discussion, implications and conclusion.

Using Zaltman Metaphor Elicitation Technique to Observe Behavior Patterns of Serious Mobile Game Players Take Pokemon GO for Example

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Keywords: ZMET, Pokemon GO, MEC, User Behavior

Nowadays the information science and technology development speed changes with each new day, the running gear popular degree has also promoted many, in addition moves the network more and more to facilitate, the modern people used the handset the frequency also greatly to promote. Along with running gear and network universalization, the people constantly all use the handset to access the net. Is all the rage global the hand to swim plays Pokemon GO to open officially in August 6, 2016 in Taiwan downloads. This research observes Pokemon GO specific weight to play family's use behavior, the penetration metaphor extraction technology obtains plays the family the reason which craves to Pokemon GO, then analyzes the use behavior. This research use fords into natural meter (RPII) to play Gao Sheru the family to take this research the object of study. And obtains Pokemon using metaphor extraction technology (ZMET) the GO specific weight to play the family innermost feelings truly to the Pokemon GO feeling. Between and penetrates the mental map to pursue the construction to read with the construction reads the relations, obtains Pokemon the GO specific weight to play family's use behavior. Provides refers for other game exploiter.

Advanced Cognitive Informatics Approaches to Distributed Data Encryption and Management

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Keywords: Information Management, Security Protocols, Database Engineering

In this paper will be described possible applications of cognitive and behavioural approaches in Fog and Cloud computing. In particular, will be presented the ways of using some personal behavioural characteristics for creation of securing protocols dedicated to confidential distribution and secure management of information over Fog infrastructure and Cloud environment. The new paradigm of cognitive cryptography will be also described.

Selected Aspects of Management Protocols with Application in Cloud Computing

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Keywords: Fog and Cloud Computing, Service Management, Protocols

In this paper will be presented a description of service management protocols. Especially, presented solutions will be dedicated to Cloud and Fog Computing. The main idea will be describing with application of semantic aspects, dedicated to service management application. Services management protocols in the cloud and the fog can be realized with application of secure important and strategic idea.

TRACK B

***ENGINEERING AND TECHNOLOGY, COMPUTER, BASICS
AND APPLIED SCIENCES***

Antileakage least-Squares Spectral analysis for seismic data Regularization in higher Dimensions

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³Michael P. Lamoureux

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Keywords: Antileakage, Regularization, Dimensions

The antileakage least-squares spectral analysis is a new method of mitigating the spectral leakages in the least-squares spectrum caused by non-orthogonality of the sinusoidal basis functions on irregularly spaced series. This method is robust when data series are wide-sense stationary, and it can be applied to non-stationary data series by an appropriate windowing strategy similar to the antileakage Fourier transform. We briefly describe this method and show how one may apply it to regularize seismic data in higher dimensions.

Combining Data Envelopment Analysis and Competitive Dynamic Theory for Exploring Global Smartphone Manufacturers Performance

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Keywords: Competitive Dynamic, Data Envelopment Analysis (DEA), BCG Matrix, Smartphone

According to the latest research report released by the GSMA (Global System for Mobile Communications Association), it is estimated that the number of mobile user will increase to 5.7 billion by 2020. Representing Mobile Communications and smartphones has changed the world. In the recent decade, the smartphone market has been booming. Taiwan manufacturers have entered the market early and have good performance. However, in recent years, smartphone annual market sales has gradually decreased, leading to intensified market competition. This study explores the well-known brand manufacturers in the smartphone market. In a dynamic environment, how the interaction between competitors affects the competition results and finally affects the business performance. This study uses the competitive dynamic theory as an analytical tool to explore the competitor's competitive process and apply data envelopment analysis (DEA) to calculate the performance of firms after competition. Finally, the results are combined with the BCG matrix to summarize the direction and suggestions for Taiwan manufacturers to improve further. The results of this study are 1. All of the competitors efficiency performance are maintained in a good condition. The key factor that impact on whether a company can continue to grow up or not is Malmquist Index. 2. Dominant Design Paradigm can be regarded as a demarcation point. Before that, patent application, trademark and intellectual property right as the main competitive advantage. After that, supply chain integration, marketing channel, brand value as the main competitive advantage.

Establishment and Applied Research on Small Island Ecosystem Services Evaluation Assessment Model

^{1*}Han-Shen Chen, ² Wen-Shin Huang

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Keywords: Climate Change, Island Tourism, Choice Experimental Method (CEM)

The situations caused by global warming and climate change are worsening. When natural disasters occur, ecosystems are threatened and operations of the tourism industry are affected. Small islands offer extraordinary natural landscapes with wild flora and fauna, which create rich and special sightseeing experiences and make these islands popular tourist destinations. However, these islands are particularly sensitive and susceptible to global climate change because they are economically vulnerable. Green Island, is located off southeast Taiwan. The island possesses rich geological and topographical features and distinctive biological and ecological resources. These factors contribute to its huge potential to become the new tourism hotspot. However, while tapping tourism resources, one must take into account the sustainable development of the ecology, economy, and society as well as minimize the impact of recreational activities. The study using the choice experimental method (CEM) to create sets of choices under various assumed scenarios, which lead to the construction of a utility function for the experiential attributes of island tourism that allows the respondents to select the appropriate alternative according to their preferences. The findings are used to evaluate the economic benefits of various proposals related to the ecological environment, socioeconomic development, and tourism of Green Island. Finally, according to the study results, countermeasures and suggestions are proposed for sustainable development of the environment of Green Island, providing references for the government and related authorities to make policies.

A Study of Approaches of Seasonal Chaotic Time Series Prediction

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Keywords: Chaos Theory, Artificial Neural Network, Seasonal Treatment

In recent years along with the developments of related forecasting-models, researches and applications in various areas, mutual combinations of various theories also boost the forecast accuracy. Forecasting methods based on the chaotic theory also have applied areas and good performance. But further improvements also exist. In this research, researches regarding the investigation of forecasting result distortion resulting from chaotic phenomena and how to analyze and capture such variations for reducing forecasting errors, would be incorporated. Besides, the research will focus on seasonal variation, the factor which causes forecasting result distortion in some type of data. Thus, this research observes that there are affect result by different data processing and methods. Therefore, this research will propose and investigate forecasting systems, which can be classified into five types. Based on that, different data processing and methods. (I) Original (II) SA (III) PS (IV) SAPS (V) PSFSA. Also, the research results will be executed with the comparisons of the proposed methods with other methods (such as conventional seasonal data forecasting method (the decomposition method), different ANN-type forecasting methods especially designed and applied for seasonal data forecasting, chaotic forecasting, seasonal autoregressive integrated moving average (SARIMA). In addition, this research will investigate data from different areas (such as energy demand, traffic flow, tourist arrival, raw material output, public database for forecasting, etc.) for validation of the proposed forecasting models. Presently preliminary experiment indicates that in most situations this researchs methods can have good performance.

A Research of Focus Production System based on the Concept of TOC and JIT

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Keywords: Production System, Theory of Constrains (TOC), Just in Time (JIT), Production Focus

Enterprises today operate in a turbulent environment full of risks and uncertainties. For all industries, businesses have to meet the compete fiercely and therefore, it is important to boost their competitive advantages. The key focuses of company competitive strategies are boosting the productivity through developing their own production system, increasing the effective output, controlling the cost, and increasing management effectiveness. When discussing the production system of an enterprise the two most well known production systems are the Theory of Constrains (TOC) by Israeli scholar Dr. Goldratt, or Just in Time (JIT) of Toyota of Japan. Both production systems are adopted by many companies. However, in practice, the style and approach of TOC and JIT are quite different. Hence, it is vital for a business to position itself to adapt either TOC or JIT as the vehicle to increase productivity. This study explored the focus on production system by analyzing five major business emphases: the application of production environment, management objectives, production planning and control, inventory, and relevant improvements. The aim of this study is to assist companies is finding a suitable production system in a volatile business environment that will increase their profitability.

Experimental Studies on the Effect of Premixing Methods in Anaerobic Digester with Corn Stover

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Keywords: Anaerobic Digestion, Premixing Methods, Corn Stover, Methane Yield, Volatile Solids

Agricultural residues are producing in large quantities in India and account for abundant but underutilized source of renewable biomass in agriculture. In India, the amount of crop residues available is estimated to be approximately 686 million tons. Anaerobic digestion is a promising option to utilize the surplus agricultural residues and can produce biogas and digestate. Biogas is mainly methane (CH₄), which can be utilized as an energy source in replacement for fossil fuels such as natural gas, oil, in other hand, digestate contains high amounts of nutrients, can be employed as fertilizer. Solid state anaerobic digestion (total solids 15%) is suitable for agricultural residues, as it reduce the problems like stratification and floating issues that occur in liquid anaerobic digestion (total solids < 15%). The major concern in solid state anaerobic digestion is the low mass transfer of feedstock and inoculum that resulting in low performance. To resolve this low mass transfer issue, effective mixing of feedstock and inoculum is required. Mechanical mixing using stirrer at the time of digestion process can be done, but it is difficult to operate the stirring of feedstock with high solids percentage and high viscosity. Complete premixing of feedstock and inoculum is an alternative method, which is usual in lab scale studies but may not be affordable due to high energy demand in large scale digesters. Developing partial premixing methods may reduce this problem. Current study is to improve the performance of solid state anaerobic digestion of corn stover at feedstock to inoculum ratios 3 and 5, by applying partial premixing methods and to compare the complete premixing method with two partial premixing methods which are two alternative layers of feedstock and inoculum and three alternative layers of feedstock and inoculum where higher inoculum ratios in the top layers. From experimental studies it is observed that, partial premixing method with three alternative layers of feedstock and inoculum yielded good methane.

A Research of Multi-Bottlenecks and Bottleneck Shifting on Drum-Buffer-Rope Job Shop Scheduling

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Keywords: Job-Shop, Multi-Bottleneck, Bottleneck Shifting

In real production planning, bottlenecks are one of the largest capacity loading work centers. Usually, there are work centers which may bear capacity loads that are very close to the bottleneck in real production environment. Due to the close capacity loads and often that the production environment may change, these work centers may change along, and work centers with the same largest capacity load may appear. Or it may replace the original bottleneck and becomes the new bottleneck. This results in the location of bottleneck shifting, and inevitably making the work centers a new constraint that cannot be ignored. This production environment thus has both multi-bottlenecks and bottleneck shifting characteristics. In this research, based on job shop scheduling planning, it proposes three types (Front back type, Intermediate type, Adjacent type) of orders and two methods of scheduling (mainly rely on front bottleneck and supplemented by back bottleneck, mainly rely on back bottleneck and supplemented by front bottleneck). Using Drum-Buffer-Rope with Genetic Algorithm, the research discusses a production environment that has both multi-bottlenecks and bottleneck shifting. It proposes a production scheduling method that makes the capacity utilization planning between bottlenecks which can be maximized. According to the system confirmed, compare with between two methods of scheduling, mainly rely on back bottleneck can get better scheduling results in all three types of orders.

An Improved ELECTRE II Multi-criteria Decision Making Method- with Technology of Groundwater Contamination Remediation as an Example

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Keywords: MCDM, ELECTRE II, Groundwater Contamination

According to the research report released by the National Development Council of the ROC, the ratio of industry to total GDP in 2016 was 35.04%. With the population growth of Taiwan and the need of industrial development, the demand for water resources is paid more attention. Wastewater of industrial is regarded as one of the major sources of water pollution in Taiwan. Therefore, groundwater contamination is a very important issue that can't be ignored. There are many technologies of groundwater contamination remediation. Each technology in different groundwater contamination problems is involved in different factors, so we must use multi-criteria decision-making to find the best remediation technology for groundwater contamination. Multiple Criteria Decision Making (MCDM) is a method that refer to the situation which many alternatives and the criteria need to be consider in order to find the best alternative. One of the most commonly used methods of multiple criteria decision making is Elimination et Choice Translating Reality II (ELECTRE II). ELECTRE II uses the alternatives, criteria and weights of criteria from decision maker to calculate the concordance index and the discordance index. Through these two indicators would be prioritizing. This study found that the concordance index and the discordance index consistency are not good enough. It will make the decision-making result too subjective and unreasonable. This study will revise the concordance index and the discordance index, and use the groundwater contamination remediation technology prioritization for the sustainability assessment case as an empirical study, to provide a more objective decision-making method.

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