(CETAS-2019)



2nd International Conference on Current Challenges in Engineering, Technology and Applied Sciences Research

The Howard Plaza Hotel Taipei, Taiwan August 06-07, 2019



CONFERENCE BOOK OF ABSTRACT PROCEEDINGS

ESRDB

Engineering Science Research & Development Board



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2nd International Conference on Current Challenges in Engineering, Technology and Applied Sciences Research (CETAS-2019

Venue: The Howard Plaza Hotel Taipei, Taiwan

Conference Theme: : Exchange of ideas and providing prime networking opportunities for engineering and technology education stakeholders.



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CONFERENCE TRACKS

- Basic Science
- ICT
- Electrical Engineering
- Mechanical & Industrial Engineering
- Civil Engineering
- Business and Management Studies
- Electric Drives and Control
- Electrical Machines
- Instrumentation Engineering
- Power Generation, Transmission and Distribution
- Power System Engineering



CONFERENCE CHAIR MESSAGE

Ms. Mei Shu Lai

"International Conference of Engineering Science Research and Development Board" 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. Ms. Mei Shu Lai Conference Chair

Email: contact@esrdb.com



CONFERENCE AGENDA

Conference Name: 2nd International Conference on Current Challenges in Engineering, Technology and Applied Sciences Research (CETAS-2019)

Day & Date: Tuesday, August 06, 2019

Venue: The Howard Plaza Hotel Taipei

Timeline of Day 01

08:00 am - 08:05 am:	Registration & Kit Distribution
08:05 am - 08:10 am:	Introduction of Participants
08:10 am - 08:15 am:	Inauguration and Opening address
08:15 am - 08:20 am:	Grand Networking Session

Tea/Coffee Break (08:20 am - 08:30 am)



DAY 01 Tuesday (August 06, 2019)

Presentation Session (08:30 am - 12:00 pm)

Venue: Room 1

Track A: & Business, Economics, Social sciences & Humanities

Paper ID	Manuscript Title	Presenter Name
Rukchanok Chumnanmak	Cross-border Travel and Tourism: Mobility within the Border	AEMHS-AUG19-105
	Areas Becoming Special Economic Zone	
Nutchanat Somkaun	Formation and Process of Becoming Farmer-entrepreneur	AEMHS-AUG19-106
Wanichcha Narongchai	The Guideline for Creating Happiness for Elderly Persons in	AEMHS-AUG19-107
	Northeastern Thailand	
Kwannakorn Sonman	The Resolution of Doing Research for the Facultys Members	AEMHS-AUG19-108
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	University, Thailand.	
Chittima Phutthanathanapa	The Symbolic Utilization of Naga in Special Economic Zone,	AEMHS-AUG19-109
	Mukdahan Province, Thailand	
Jaggapan Cadchumsang	Soft Structures, Transborder Mobilities and Adaptive Strategies	AEMHS-AUG19-110
	of Local Entrepreneurs in Tak Special Economic Zone	
Wirat Wongpinunwatana	The concept that reflects through the current political party slo-	AEMHS-AUG19-111
	gans in Thailand	
Thinnawat Sroikudrua	Communication problems of patients with Bells palsy	AEMHS-AUG19-112
Piyaporn Punkasirikul	Writing Problems of EFL Learners: A Case Study of Khon Kaen	AEMHS-AUG19-113
	University	



DAY 01 Tuesday (August 06, 2019)

Presentation Session (08:30 am - 12:00 pm)

Venue: Room 2

Paper ID	Manuscript Title	Presenter Name		
Chang Wei-Ting	Mastering the payment life in one handresearch on the TTF and	AEMHS-AUG19-114		
	the UTAUT affecting the willingness to use cloud payment			
Pin-Hui Su	The Impact of Emotions Containing in Social Media Posts on	AEMHS-AUG19-118		
	User Responses - A Case Study of Taiwan Fan Page on Facebook			
Jhon Eddy	Strengthening Tax Crime Regulation and Tax Crime Responsi-	AEMHS-AUG19-119		
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Mella Ismelina	Wisdom of the Customary Law Community of Tatar Sunda	AEMHS-AUG19-120		
Farma Rahayu	In Preservation of Functions of Forests for Mitigating Climate			
	Change			
Wen-Hua Shu	The application of Deep Learning on E-commerce Recommen-	AEMHS-AUG19-124		
	dation			
Anthon F. Susanto	Sundanese Local Law Amid the Acceleration of Technology	AEMHS-AUG19-125		
Track B: Engineering, Technology & Applied Sciences				
Sumon Md Shariful	Improvement of output efficiency of a fuel cell by using Oxygen	CETAS-AUG19-TW101		
Islam				
Hirohisa Hirai	The Work-In-Process Valuation under the Process-Costing with	CETAS-AUG19-TW103		
	FIFO			
Hiroto Kataoka	The Work-In-Process Valuation under the Process-Costing with	CETAS-AUG19-TW103C		
	FIFO			

Lunch Break & Closing Ceremony (12:00 pm - 01:00 pm)



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: AEMHS-AUG19-121A Anthon F. Susanto Pasundan University, Indonesia

Official ID: AEMHS-AUG19-122A Liya Sukma Muliya Bandung Islamic University, Indonesia

Official ID: AEMHS-AUG19-123A

Daniel Hendrawan

Maranatha Christian University, Bandung, Indonesia



Conference Day 02 (August 07, 2019)

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



TRACK A BUSINESS, ECONOMICS, SOCIAL SCIENCES & HUMANITIES



Cross-border Travel and Tourism: Mobility within the Border Areas Becoming Special Economic Zone

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Keywords: Cross-Border Travel And Tourism, Mobility, Special Economic Zone

This article illustrates the dynamics of area changes in Nong Khai, Thailand and Vientiane, Lao PDR, two border cities promoted to be Special Economic Zone (SEZ) and its effects on human flows regarding to cross-border travel and tourist activities. This research employed qualitative research methodology having the unit of analysis both of individual and group levels. Data is collected from the in-depth interview with 12 participants, covering travel and tourism entrepreneurs. The researchers employed content analysis method in analyzing the data. The findings suggested that reasons for crossing borders have changed over time. Before becoming SEZ, the reasons for crossing borders were family visiting, sightseeing, traveling for medical care, and attending cultural ceremonies; however, after becoming SEZ in the year 2015, they are 1) traveling for pleasure, 2) training and seminars, 3) business meeting, 4) shopping, 5) daily working, 6) studying, and 7) receiving medical care. These changes were supported by structural factors such as the development of transportation infrastructure and the government policies which promoted tourist activities in the areas. The entrepreneurs in the areas also joined together in establishing institutional and social networks which positively affected cross-border travel and tourism. There were extensive networks of entrepreneurs that helped promote travel and tourism, including tour bus and rental car services, restaurants, and hotel businesses. Finally, the authors also emphasize the significance of a more holistic approach to the study of state development project and border mobility which recognises the interrelationship between socio-economic structure, human agency and its consequences.



Formation and Process of Becoming Farmer-entrepreneur

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Keywords: Formation, Process, Farmer-Entrepreneur

This article employed qualitative research methodology using both participant and non-participant observation and in-depth interviews with six farmer-entrepreneurs, one community wisdom, and one local official in Khon Kaen province, Thailand. The aim of this study was to illustrate the formation and process of becoming farmerentrepreneur in Khon Kaen area. The farmers were selected to participate in this study based on their knowledge and skills in agricultural production, business management, marketing, and goals in profit-making for their business. The researchers employed content analysis method in analyzing the data. The findings showed that most farmerentrepreneurs in Khon Kaen had no experiences in agriculture and worked outside agricultural field. However, they were agricultural enthusiasts who were discontented with their previous jobs or were retired. They either saw opportunities in agricultural business or wanted to improve social acceptance of farmer occupation. There were four steps of becoming the farmer-entrepreneur: 1) the phase of formation which included finding information, collecting knowledge, trying out planting and selling, 2) the phase of setting goals which included learning new techniques, understanding meanings and strategies of becoming farmer-entrepreneur, and improving production methods, 3) the phase of establishing networks to exchange knowledge on production and marketing techniques, and 4) the phase of becoming a full farmer-entrepreneur which is defined by having many distribution channels and quality products enough for sale. The fourth step illustrated a clear profit-calculated characteristic of business procedure.



The Guideline for Creating Happiness for Elderly Persons in Northeastern Thailand

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Keywords: Guideline for creating happiness, Happiness, Elderly, Northeastern Thailand

This article proposes a guideline for creating happiness among elderly persons in the northeastern region of Thailand. The study employs qualitative research methodology using interviews with a diverse population sample of twenty elders in the northeastern region of Thailand, both in urban and rural areas. The areas of study were selected based on their high ratio of aging population (over 60 years old) in both urban and rural areas, which included 1) Samliam community in Amphoe Muang, Khon Kaen province and 2) Baan O-lo in Amphoe Phu Khiao, Chaiyaphum province. The data was analyzed using content analysis. The findings show that elderly persons in this study create their own happiness in four main aspects: 1) health, 2) security, 3) family, and 4) supportive society. Health is specified by self-caring and following the rule of three-Es, which include eating well, exercising well, and staying emotionallywell. Security, for elders in the urban area, is demonstrated by their capability to save money, control expenses, and join a saving group and, for elders in the rural area, it is staying healthy in order to lower medical expenses. Regarding to family, both elders in the urban and rural areas that they seek to have good relationships with their family members, take care of each other, and have an important role in the family. Supportive society is the aspect that elderly persons create happiness by focusing on the long-term outcome. Elders in the urban area want to share knowledge with other people and view the collective good as being important. Similarly, elders in the rural area suggest that the community should have an association that people can discuss different issues with their neighbors and help the next generation members learn more about their skills, knowledge and local wisdom.



The Resolution of Doing Research for the Facultys Members at the Faculty of Humanities and Social Sciences, Khon Kaen University, Thailand.

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Keywords: Resolution of Doing Research; Facultys Members, Institutional Research

This article aims to study the resolution of doing research for the facultys members at the Faculty of Humanities and Social Sciences, Khon Kaen University. It is the quantitative research which the 24 facultys members who did not have the outstanding work-evidence in the last five years. The questionnaire is used to conduct the data, which consists of two parts. The first part is the general information, and the second part is the analysis of four aspects. The descriptive analysis is used for all mentioned aspects. The result found that the 24 facultys members who did not have the outstanding work-evidence in the last five years must be performed under the four aspects. The first aspect is research management in the faculty. The research training should be provided for the facultys members. The facultys members needs and the facultys missions must be taken into consideration. Also, the research supervisors should be provided for the purposes of supervising as well as increasing the research performance of the researchers. The second aspect is researchers or the facultys members. The research requirements should be clearly indicated in the job description in order to compulsory stimulate the research conducting of the facultys members. Plus, the training of reimbursement of the research funding should be provided for the facultys members so that the reimbursement process will be done correctly. The third aspect is research funding. The faculty should provide enough research funds for the facultys members both from domestic and international resources. The last aspect is research atmospheres. The faculty should create the research atmospheres by emphasizing the importance of doing the research. For example, the seminar about exchanging the knowledge and experiences in research conducting both formally and informally, research seminars, research proposal meetings, and joint-researches with other institutions should be gathered for the facultys members.



The Symbolic Utilization of Naga in Special Economic Zone, Mukdahan Province, Thailand

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Keywords: Naga, Symbolic Utilization, Special Economic Zone, Mukdahan

The purpose of this article is to examine the symbolic utilization of Naga in the Special Economic Zone (SEZ) in Mukdahan province, Thailand. The study employed qualitative research methodology using interviews with twelve key informants in the communities including community leaders, persons- in-charge at the places where Nagas were depicted, and local monks. Then the secondary data were synthesized and analyzed using content analysis guided by the conceptual framework of sociology of tourism. The findings showed that the symbolic utilization of Naga in the SEZ in Mukdahan often appeared in the forms of sacred icons (e.g., statues and architecture), amulets, and worshipping rituals. The stakeholders in the area, including governmental and private organizations, communities, and surrounding villagers, received benefits from the symbolic utilization of Naga in many ways. Firstly, they benefited economically as the local government and communities were able to establish tourist activities relating to Naga in the area. These activities accounted for the increasing number of tourists in each year, leading to higher income for the communities and service sectors in Mukdahan province. Secondly, the communities benefited socially from the symbolic utilization of Naga as its mythology has greatly influenced on several Isaan traditional lifestyles, such as agricultural ceremonies, arts, and architecture. Thus, Naga worshippers must follow rules and regulations specified by the communities folklores which, in turn, reinforced a form of social control in the communities. Lastly, Naga worshippers benefited in terms of health as they must behave themselves carefully under the Buddhist five precepts one of which was abstaining from drinking alcohol. The symbolic utilization of Naga also helped with the worshippers state of mind since the activities that aimed to promote tourism could help them relax and lessen anxiety, making the worshippers stay mentally healthy.



Soft Structures, Transborder Mobilities and Adaptive Strategies of Local Entrepreneurs in Tak Special Economic Zone

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Keywords: Special Economic Zone, Tak SEZ, Soft Structure, Adaptive Strategies, Local Entrepreneurs.

This paper fundamentally deals with the flexibility of a border, which significantly influences transborder mobilities of people, goods and capital; and the adaptive strategies of local entrepreneurs in Tak Special Economic Zone (Tak SEZ) geographically located the lower northern region of Thailand. The data employed in this paper were drawn from literature reviews and field research of which the latter was conducted in Mae Sot District, Tak Province. The data-collection techniques used in the fieldwork included participant and non-participant observations and key informant interviews. According to the research, infrastructure construction projects, which are essential for the development of Tak SEZ, have been heavily invested in Mae Sot by the Thai state since 2014. As 'solid structures', such an infrastructure appears in different forms ranging from the second Thailand-Myanmar Friendship Bridge construction, a bypass road building to airport and highway renovations. Meanwhile, 'soft structures' or border control regulations, which are the most crucial condition allowing for transborder movements in Mae Sot both before and after the emergence of Tak SEZ, are usually interpreted by officials as well as borderlanders-particularly the local entrepreneursand are negotiated among themselves from time to time in everyday practice of crossborder mobilities. The research also suggest that in the past the local entrepreneurs chiefly invested cumulative capital in order to expand and monopolize their business locally and internationally. However, the appearance of Tak SEZ in the multicultural and fast-growing border area like Mae Sot has led to the adaptive strategies of local entrepreneurs through flexible accumulation of capital on the basis of existing business, risk-taking, social network establishments, transborder trade skills, and cultural competence knowledge.



The concept that reflects through the current political party slogans in Thailand

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Keywords: Political Party Slogan, Language In Thai Slogan

The objective of this paper were to study the content and language that reflects through the current political party slogans in Thailand. Based on qualitative research, the data used for this paper were drawn from the current political party slogans in Thailand, and the data presentation was analytical research. According to qualitative content analysis, the contents of the current political party slogans in Thailand are proverty, economic problems, political conflict, social inequality and changes for development. The research also shows word usage that represent the promise, encouraging words to build confidence which include spoken words, vowel rhyme, repetition, word playing, questioning, and persuading.



Communication problems of patients with Bells palsy

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Keywords: Bells Palsy, Communication Problems, Pronunciation

This article aimed to explain the communication problems of patients with Bells palsy by reviewing related documents, interviewing and observing of the author having this disease. The study revealed that For communication problems, in addition to emotional expression through the face, the most important problem was the pronunciation of each syllable, affecting the clarity of the voice and the interpretation of the listener. The patients would have problems with syllabic consonants and vowel sounds as they are related to the organs above the vocal chords which are the lips and the upper teeth that are needed for rounding the lips. The most problematic phonemes were / f /, / ph / because the weak muscles were unable to hold the air at the lips. However, although speaking can be a hindrance and cause facial muscle fatigue, patients should practice speaking more often as it is physical therapy (treatment) and helps recover themuscles faster.



Writing Problems of EFL Learners: A Case Study of Khon Kaen University

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Keywords: Writing In EFL Context, Essay Writing, Writing Problems

Writing skill involves both linguistic and communicative competence. Therefore, it is challenging and causes problems especially for EFL learners. This study aims to investigate writing problems of Thai undergraduate EFL learners and possible causes of those problems. Writing samples were collected from 30 descriptive essays on the topic of Myself produced by the second years English majors, Faculty of Humanities and Social Sciences, Khon Kaen University. The results reveal that the writing problems can be categorized into three types: words and phrases, sentences, and coherence. These problems are inuenced by various causes including the influence of mother tongue, insufficient English proficiency, lack of ideas, and carelessness. The study ends with suggested remedial measures to improve Thai EFL learners writing skill such as vocabulary logs, essay analysis, summary of writing errors, self-evaluation, and peer and teacher feedback.



Mastering the payment life in one handresearch on the TTF and the UTAUT affecting the willingness to use cloud payment

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Keywords: Task Characteristics, Technology Characteristics, Task-Technology Fit (TTF), Unified Theory Of Acceptance And Use Of Technology (UTAUT), Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, User Intention

With the ever-changing nature of technology, the payment methods of consumption are become more diversification. Apart from many cash, the consumers wallet also has many cards, which not only increases the burden on consumers, but also make some awkward situation happen. Sometimes the store only accepts credit card, the consumer forgot to bring the credit card, and the cash wasnt enough. Therefore, many banks implemented cloud payment for payment method. Consumers can use the physical card in the wallet to bind the mobile device and can use it as payment method. However, this payment method hasnt deeply understood and used by many consumers. So, this study selects some consumers who are already use cloud payment and someone will use it in the future as a sample of this study and focus on the relationship between Task Technology Fit Model (TTF), Unified Theory of Acceptance and Use of Technology Model (UTAUT) and User Intention (UI). We collect 623 valid questionnaires this time, the results of this study show that: (1) Technological characteristics (TLC) will positively and significantly affect the task- characteristics fit (TCF). (2) Task characteristics (TC) will positively and significantly affect the task- characteristics fit (TCF). (3) Task- characteristics fit (TCF) will positively and significantly affect the performance expectancy (PE). (4) Task- characteristics fit (TCF) will positively and significantly affect the effort expectancy (EE). (5) Performance expectancy (PE) will positively and significantly affect the user intention (UI) (6) Effort expectancy (EE) are not related to user intention (UI). (7) Social Influence (SI) will positively and significantly affect the user intention (UI). (8) Facilitating Conditions (FC) will positively and significantly affect the user intention (UI).



The Impact of Emotions Containing in Social Media Posts on User Responses - A Case Study of Taiwan Fan Page on Facebook

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Keywords: Bayesian Statistics, Poisson Regression, Social Media, Emotional Categories

With the rise of "social media", in addition to the diversification of transmission media, the flow of information is also faster. The purpose of this study is to explore the relationship between the implied information marketing activities and emotional categories posted on the fan page of social media Facebook and user reactions e.g. like, share, or comment. To understand better the implied information of the posts, in addition to Plutchik's wheel of emotionsPlutchik, 1980, this study adds touching, assertiveness and marketing activities as implied information, 11 variables being used as the classification of the stickers in total. The result shows that surprise, sadness, and hate these three emotions were more likely to arouse the user's response. Besides, the data indicated that happy and trust, happy and surprise, happy and sadness, trust and sadness, fear and surprise, fear and expectation, surprise and sadness, and surprise and expectation these emotions presented more obvious correlation. As mentioned above, the study suggests that social media operators can take advantage of emotional inspiration to strike a chord from users by adding some descriptions of emotion in the simple context. On the other hand, if the post contents could impressive the users, it is more likely to arouse the user's response and feedback.



Strengthening Tax Crime Regulation and Tax Crime Responsibility for Corporation in Indonesia

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Keywords: Tax Crime, Corporate Crime And Tax Crime Responsibility

Through this paper, the authors will discuss about the strengthening of tax crime regulation and tax crime responsibility for corporation in Indonesia. This topic starts from introducing who is the subject of tax crime, whether the tax sanction can only be imposed on each person/human or natural resources or the tax sanction can also be imposed on legal entity or legal person, as well as discussion about the types of tax crimes which are regulated in Indonesian tax legislation. Subsequently, the authors will also discuss about the notion of tax, tax crime, the nature of tax crime sanctions, concepts and types of tax crime responsibilities theories. The discussion will cover on how the tax crime regulations are being practiced, the types of tax crime sanctions and which tax crime responsibilities theories are being applied in Indonesian tax legislation as well as how the application of the imposition of tax crime sanctions (for corporations) that has been in effect all this time. Finally, at the end of this paper, the authors will provide some suggestions on how to strengthen the tax crime regulations in tax legislation and amendments to the issue of tax crime responsibilities for corporations in Indonesia.



Wisdom of the Customary Law Community of Tatar Sunda In Preservation of Functions of Forests for Mitigating Climate Change

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Keywords: Indigenous Law Society, Forests, Climate Change

This article outlines the wisdom of the Tatar Sunda customary community in preserving the functions of forests that can contribute to climate change mitigation efforts that occur. As we know, forest destruction that has occurred has caused many impacts on the lives of living things, including climate change. The existence of forests for customary law communities is essentially not just a natural resource that they can use but is their identity in life and life. Forest damage that occurs can disturb the cosmic balance of life of the living creature itself. This paper is the result of a study that uses a sociological juridical approach method that uses primary data as the main data besides secondary data. Field studies are conducted to obtain primary data through interview and observation techniques. Data analysis was carried out by qualitative analysis until conclusions were deduced. The results of this study explain that the efforts of customary law communities in the preservation of forest functions are carried out through the determination of the division of forest protection and management areas which are divided into three areas, namely the leuweung (Forest) prohibition area, the leuweung cover area and the leuweung boundary area. Through the establishment of forest protection and management areas, it can prevent forest destruction, maintain the balance and harmony of the surrounding environment and prevent and slow down the occurrence of climate change.



The application of Deep Learning on E-commerce Recommendation

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Keywords: Electronic commerce, recommender systems, deep learning, Convolutional Neural Network

Recommender systems become available to sales and tube in a few E-commerce sites e-commerce platform a weapon. Many of e-commerce Websites are already using recommender systems to help their customers find products what are they purchase or find. In this paper we present how to improve the shortcomings of traditional recommendation systems and use deep learning on recommender systems to help E-commerce increase sales. Based on 1000 customers from the E-commerce supported our hypotheses and showed that deep learning is much accurate than other way.



Sundanese Local Law Amid the Acceleration of Technology

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Keywords: Religious Magical, Religious Digital Ecosystem Economics.

Local Law (Adat) in Indonesia has unique characteristics that are different from any law in the world. Human relations and the universe are always bound by spiritual aspects that are sacred and magical. Humans are essentially part of the universe and become an inseparable part, namely a kind of macro and micro-cosmic marriage. Any action that can cause or aim to destroy the environment of life is always associated with occult things such as plague, disaster and disaster. But in the current era of life such things have been very difficult to find. The era of spiritual life has undergone fundamental changes, especially when people enter the era of digital life which is known as the acceleration of technology. Through the law of acceleration the value of local values then undergoes transformation or can be said to reach the stage of convergence with global change and also market demands. This can be seen by the shifting of local legal values that are traditional (spiritual) to become "spiritual (economically) digital". For example religious ceremonies in the local legal tradition are shifted into a ceremony to gain image through spectacle in various lives which is ultimately oriented to the economic aspects. The value of magical religious values which are the hallmark of local law begins to shift towards economic value, namely obtaining profits. Acceleration (dromology), has encouraged the convergence of local values with global, religious values with economic value. Through the acceleration of technology and the climate of media culture, the community enters a new life that is fostered by the pretense of pretense, and public awareness about local laws that are religiously magical shifts into the "game" phase, namely simulacra.



TRACK B ENGINEERING, TECHNOLOGY & APPLIED SCIENCES



Improvement of output efficiency of a fuel cell by using Oxygen

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Keywords: Fuel cell, High efficiency, Increasing Output, Use of Oxygen in Fuel Cell, Polymer Electrolyte Membrane Fuel Cell (PEMFC).

In the era of this modern technology, fuel cell is the most effective and continuous power generation system. A fuel cell is a system where chemical energy is converted to electrical energy through an electrochemical reaction of hydrogen with an oxidizing agent such as oxygen. The author previously proposed the new PV generation system where surplus electric power is used for electrolysis of water to generate hydrogen, which is used to convert into electricity by fuel cell at nighttime or in the bad weather. In this system, oxygen is produced as a by-product in the process. Therefore, this paper investigates the use of this oxygen for the power generation, which makes the system more effective than the old system of fuel cell with the air. The experiment of using air and oxygen shows that when oxygen is used, fuel cell efficiency Increases by 12% and the output power is increased twice as much as of air. The latest fuel cell technology, polymer electrolyte fuel cell (PEMFC) is used for conducting the whole experiment for getting the best result.



The Work-In-Process Valuation under the Process-Costing with FIFO

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Keywords: Management Accounting, Process Costing, Work-in-Process, First-In-First-Out

Companies adopting a process costing system usually expect effective cost management and useful cost information in order to facilitate decision-making. According to the FIFO method of process costing, however, even if the system assumes that the beginning WIP is completed first, the beginning WIP cost in the previous-process affects the ending WIP cost in the post-process. Kataoka and Hirai (2015) built a model that assumes that the cost amounts of beginning WIP in the previous-process is defined as explanatory variables, although the costs (cost amounts) is equal to the unit costs (price factor) multiplied by the physical units (quantity factor). Therefore, we expand upon the concept of the degree of influence that the beginning WIP cost in the previous-process has on the calculation of the ending WIP cost in the post-process by incorporating both the price factor and the quantity factor into our analysis. In this paper, we have confirmed how both the price factor and the quantity factor of the beginning WIP cost in the previous-process affects the ending WIP cost in the post-process. As a result, we revealed that as the ending WIP quantity in the post-process increases, the greater the influence becomes. In addition, we have clarified the degree of influence to the ending WIP cost in the post-process regarding to both the beginning WIP quantity in the previous-process and the percentage of completion of the beginning WIP in the previous-process.



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