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Contents

Contents

<u>Chair's Message</u>

The Committees of the International Conference on Innovation and Management (IAM2020 Winter) are pleased to welcome you to this meeting held at Sapporo, Japan on Feb. 4-7, 2020. On behalf of the organizers, I express my delight in sharing the time with the delegates from all around the world and hope you all have pleasant a stay here.

With the rapid development in e-business and technology, enterprises are now facing escalating competitions and vague opportunities. How to assist enterprises in gaining competitive advantages through technological and managerial innovations has become a crucial issue for both academicians and practitioners. The main objective of IAM International Conference is to provide a venue where business stakeholders, researchers and experts worldwide can share cutting-edge innovative technologies and managerial theories, exchange valuable experience and form collaborative relationships to promote business innovation and management. We believe it is of immense significance to have an opportunity to share the knowledge from all participants.

Among 59 excellent manuscript submissions from 13 countries, 42 of them come from 9 countries have been further selected for presentation in the conference. These papers provide unique insights and are regarded as the research forefront of the key areas including applications of innovation and management in selected industries, innovative systems and knowledge management, contemporary business behavior and data. We would like to express our gratitude to all those who contributed in helping deliver quality content of IAM2020W.

Looking forward for your participation again in our next event.

Conference Chair

<u>Schedule</u>

Feb. 4, 2020 (Tuesday)	
15:30-16:30	Registration (Lobby, 1F)

Feb. 5, 2020 (Wednesday) 09:30-16:00 Registration	
Room	**Delaware (3F)**
10:00-12:30	Session A
12:30-14:00	Lunch (Restaurant Vigne, 1F)
14:00-16:30	Session B

Feb. 6, 2020 (Thursday) 09:30-16:00 Registration	
Room	**Delaware (3F)**
10:00-12:30	Session C
12:30-14:00	Lunch (Restaurant Vigne, 1F)
14:00-16:30	Session D

Feb. 7, 2020 (Friday) 09:30-12:00 Registration	
Room	**Delaware (3F)**
10:00-12:30	Session E
12:30-14:00	Lunch (Restaurant Vigne, 1F)

<u>Agenda</u>

Feb. 5, 2020 (Wednesday)

Session A   10:00-12:30   **Room:** Delaware

Session Chair: Shu-hsien Liao
                  Tamkang University, Taiwan

Internal Auditor Characteristics and Internal Control Material Weakness Remediation: U.S. Evidence

Yu-Cheng Tsai	National Cheng Kung University
Hua-Wei Huang	National Cheng Kung University

The Pharmacy Management Comparison Study Between Taiwan and Mainland China Areas - Based on Shanghai Chain Pharmacy

Li-Jen Huang	National Changhua University of Education
Yung-Shun Wu	National Changhua University of Education
Shieh-Liang Chen	Asia University
Shih-Chi Chang	National Changhua University of Education

An Inquiry of OECD Countries' Energy Security Performance Under the UN SDGs Perspective

Shi-Wei Huang	National Taipei University
Tai-Hsi Wu	National Taipei University

The Effects of Abusive Supervision, Chinese Loyalty to Supervisor for Perceived Organizational Justice on Workplace Deviant Behavior: A Moderated Mediation Examination

Yung-Shun Wu	National Changhua University of Education
Shih-Liang Lee	National Changhua University of Education
Tsang-Kai Hung	National Changhua University of Education
Shu-Huei Liou	National Changhua University of Education

Consumers Choose the Homestay with Airbnb to Reorder the Actual Behavior in Taiwan: Empirically by Technology Acceptance Model

Hui-Min Hsieh	Da-Yeh University
T.K Hung	National Changhua University of Education

<u>Agenda</u>

Feb. 5, 2020 (Wednesday)

Session A   10:00-12:30   **Room:** Delaware

Session Chair: Shu-hsien Liao

Tamkang University, Taiwan

Research and Implementation of Roughly Estimation the Height and Weight Using Pixels

Chiung San Lee   Oriental Institute of Technology

The Relationships Between the Supply Chain Collaboration and Innovation

Shu-hsien Liao   Tamkang University

Yii-shun Shih   Tamkang University

Application of LSTM Neural Network in Stock Price Movement Forecasting with Technical Analysis Index

Ting-Chih Chen   National Changhua University of Education

Chin-I Lee   Ling Tung University

A Hierarchical Method of Cost Analysis for Software Development

Zi-Yi You   Ling Tung University

Yao-Ting Chen   Wistrend Technology Ltd.

I-Hui Li   Ling Tung University

Internal Auditor Characteristics and Internal Control Material Weakness Remediation: U.S. Evidence

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Abstract

The purpose of this study is to examine the association between internal auditor characteristics and internal control material weakness (ICMW) remediation. We find that the successor's gender has positive influences on the remediation of ICMWs after chief internal auditor changes. However, we fail to find evidence to support that the successor's position has significant impact on the remediation of ICMWs. This finding seems to partially cohere through PCAOB Auditing Standards No. 5 that competent and objective internal auditors can perform qualified work that is useful to the external auditor, thus has policy implication to the regulator and practice.

Keywords: Internal auditor characteristics, internal control material weakness, gender, position, U.S.

The Pharmacy Management Comparison Study Between Taiwan and Mainland China Areas - Based on Shanghai Chain Pharmacy

Li-Jen Huang[*], Yung-Shun Wu, Shieh Liang Chen and Shih-Chi Chang

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Abstract

Pharmacy retail industry has been trending multichannel management, due to the developing traits. Chain and combinative operation is becoming mainstream in pharmacy retail industry in Taiwan. Furthermore, the policy to pharmacy retailors has been getting open since China became a member of WTO (World Trade Organization). However, there is a quite shortage of research in pharmacy retail industry of China. Therefore, in order to offer some practical implementations for Taiwan pharmacy retailers to involve into China pharmacy retail industry, the current case study focused on in-depth interview and questionnaires to explore the experience of running pharmacy retail business in China, which including 4 pharmaceutical companies and 5 senior managers. By illustration on developing traits, pharmaceutical affairs act, value chain, and intangible assets in pharmacy retail industry between Taiwan and Mainland China, the study have concluded some recommendations to Taiwan pharmacy chain retailers. The results of the study revealed that incremental consociated model as the best business strategy and combinative operation is becoming mainstream. As for human resource exploitation, strengths approach to practice is the way to run cross-region business. Taiwan talents are more focused on operating and management, information use, and marketing, while strengths of purchasing and negotiating are on local talents.

Keywords: Value chain, balanced scorecard, strategy map

An Inquiry of OECD Countries' Energy Security Performance Under the UN SDGs Perspective

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Abstract

Climate change plays an important role on energy use. The regulation of carbon dioxide (CO_2) emissions has become an important determinant in the energy policies of various countries. Through an extensive review of the relevant literatures on the definitions of energy security and by incorporating the spirit of the United Nation's Sustainable Development Goals (SDGs), this study aimed to develop a more comprehensive Energy Security Performance (ESP) framework, with a particular emphasis on the role of governance innovation in energy security. The framework was then used to evaluate the ESPs of Organization for Economic Co-operation and Development (OECD) member states. The strategies employed by benchmark countries serve as a reference for the energy security policy planning in other countries. The results revealed that the ESPs performances of Australia, Canada, Switzerland, Germany, Denmark, and Sweden were more stable and better than those of other OECD member states. Based on a cross-check of the progress of the energy security indicators and the corresponding energy security policies and measures in the benchmark countries, important observations were proposed.

Keywords: Energy security, energy security performance, sustainable development, multi-attribute decision making, composite index

The Effects of Abusive Supervision, Chinese Loyalty to Supervisor for Perceived Organizational Justice on Workplace Deviant Behavior: A Moderated Mediation Examination

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Abstract

Abusive supervision is a warning signal for organizational development due to positively predicting workplace deviant behavior, which can cause a catastrophic loss. Some western researchers propose a commitment to a supervisor, including supervisor identification and internalization values. However, Chinese loyalty to supervisor is inclusive of personal attitude and behavior intention. Given thought to these two backgrounds, the current study probe into the difference of supervision. Chinese loyalty to supervisor is employed, moderating the process of abusive supervision to workplace deviant behavior. Paired-sample questionnaires conduct a questionnaire survey. One direct supervisor paired with 1 ~ 4 subordinates, sending out 60 other-reported questionnaires to supervisors and 165 self-reported questionnaires to subordinates, a total of 43 valid supervisor questionnaires and 165 valid subordinate questionnaires were collected. The result of the data analysis indicated that abusive supervision is significantly related to workplace deviant behavior. Based on the findings, the theoretical and practical implications of this research will offer suggestions for future research.

Consumers Choose the Homestay with Airbnb to Reorder the Actual Behavior in Taiwan: Empirically by Technology Acceptance Model

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Abstract

With the trend of backpackers and sharing economy development, this study aims to explore consumer acceptance and usage intentions for Airbnb in a technology acceptance model. The research method is a questionnaire survey, and the backpackers who have used the Airbnb website to order B&B are the research object and the effective questionnaire is 120. The results found that: First, Cconsumers of different background variables of perceived usefulness to Airbnb select, perceived ease of use, the use of attitude web reputation, behavioral intentions and actual behavior were not reorder presented significant differences. Second, backpackers will choose by Airbnb through perceptual usefulness, perceived ease of use, indicates that this web platform is not only very easy to use, but also easy to use to choose a homestay. Third, the website Airbnb for backpackers as cognitive behavioral intention and willingness to continue the positive influence ordered to use, and then there is a good degree of loyalty. From the research that will be backpackers, and to be selected to Airbnb through perceived usefulness, perceived ease of use, eWOM has a positive intention of behavioral. Based on this conclusion provide the network platform Airbnb and shared economic wishing to enter the relevant industry as a reference.

Keywords: Perceived usefulness, perceived ease of use, use of attitude, intention of behavioral, actual behavior

Research and Implementation of Roughly Estimation the Height and Weight Using Pixels

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Abstract

This paper focuses on an application that can be used to roughly estimate height and weight with pixels, to which the whole-body portrait is uploaded to calculate the pixels of the height and body surface area of the portrait. Using 50 centimeters as a ruler for the number of pixels, the application estimates the height of the person in centimeters and his/her weight in kilograms. Having obtained the approval of 37 students, this study took their whole-body photos and collected their actual height and weight, which is used for subsequent height and weight estimation. The experiments show that the average error of height estimation is about 2.03 centimeter (the percentage of height error is about 1%) and that of weight estimation is about 6.4 kg (the percentage of weight error is around 10%).

Keywords: Pixel, height, weight, rough estimation error

The Relationships Between the Supply Chain Collaboration and Innovation

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Abstract

The object of this study is to implement measurement tools to investigate the proposed theoretical model in the supply chain of Taiwan's optoelectronics industry. A total of 454 effective questionnaires were recovered. The relationships of supply chain collaboration, supply chain capability and innovative capability were tested through a structural equation model. Quality management was considered the existence of the effect of a moderated mediation in the research model. Furthermore, it was found that supply chain collaboration can directly and indirectly have a positive influence on innovation capability, and the effect of moderated mediation exists in the research model. The establishment of a collaboration supply chain mechanism can enable enterprises to obtain greater profits within a highly competitive business environment. These enterprises can then obtain sustainable competitive advantage based on superior supply chain capabilities and improvement of operating costs, product quality and innovation capabilities.

Keywords: Supply chain collaboration, supply chain capability, innovation capability, quality management, moderated mediation analysis

Application of LSTM Neural Network in Stock Price Movement Forecasting with Technical Analysis Index

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Abstract

There are many factors will be driving stock prices, such as earnings, economy, expectations, and emotion. Stock prices are volatile because these factors daily change frequently; it is a big challenge to accurately predict the future stock prices. Recently, there are lots of studies in the area of applying Machine Learning for analyzing price patterns and predicting stock prices, they would get satisfactory results in making instantaneous investment decisions. In this paper, we discuss the Long Short-Term Memory (LSTM) algorithms applied for stock trading to predict the rise and fall of stock prices before the actual event of an increase or decrease value in the stock market occurs. Aiming to raise up the rate prediction accuracy, we achieve to build a prediction model, execute a series of experiments, and then provide the index reference to buy a stock before the price rises, or sell it before its value declines.

Keywords: Stock market, machine learning, long short-term memory

A Hierarchical Method of Cost Analysis for Software Development

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Abstract

Software cost analysis has needed in software project management from the early days to the present. The early cost analysis method of software development is relatively simple. In recent years, due to the booming software engineering and the detailed definition of development process, the cost of software development can be analyzed more subtly. The closer to the real cost estimation method was used, the more efficient the project manager can allocate resources and manpower. Therefore, this study collected working items of software development, and established a hierarchical cost analysis method of software project development to make the estimation closer to the actual cost. The proposed approach allows the manager to negotiate the cost of each software development stage with the customer and also allows the customer to pay in stages. At the same time, the method can also estimate the lowest cost and the highest cost, so that the project manager has more bargaining space.

<u>Agenda</u>

Feb. 5, 2020 (Wednesday)

Session B   14:00-16:30   **Room:** Delaware

Session Chair: Chia-Chen Lin

               Providence University, Taiwan

Research on Dynamic Promotion Decision of Fresh Food in Chain Convenience Stores

Guan-Yu Lin	National Kaohsiung University of Science and Technology
Tsung-Yin Ou	National Kaohsiung University of Science and Technology
Pei-Yu Shi	National Kaohsiung University of Science and Technology

Applying Cluster Analysis on Medical Materials Management

Tzu Chun Tsai	Tunghai University
Nai-Chun Fang	Taichung Veterans General Hospital
Chuang-Chun Chiou	Tunghai University

Cost Analysis for Different Hospital Procurement Models

Sin-Ying Ciou	Tunghai University
Yu-Ru Huang	Tunghai University
Nai-Chuan Fang	Taichung Veterans General Hospital
Shao-Jen Weng	Tunghai University
Ming-Jong Yao	National Chiao-Tung University
Chuang-Chun Chiou	Tunghai University

Examining the Energy Security Performances for APEC Member States Using Data Envelopment Analysis Approach

Yung-Fu Chung	National Taipei University
Tai-Hsi Wu	National Taipei University

The Design of a Management System for Optimal Selection in Honey Bee Queen Breeding

Tai-Sheng Su	National Pingtung University of Science and Technology
Chin-Chun Wu	I-Shou University
Jyi-Chang Tsai	I-Shou University

<u>Agenda</u>

Feb. 5, 2020 (Wednesday)

Session B   14:00-16:30   **Room:** Delaware

Session Chair: Chia-Chen Lin

Providence University, Taiwan

Dynamic Dispatching Rule Considering Finite Workforce for Semiconductor Wafer Fabrication Process

Po-Hsun Chen   Tunghai University

Chuang-Chun Chiou   Tunghai University

Optimization of Preventive Maintenance Scheduling Integrated with Production Planning for a Critical Machine

Hung-Yuan Sung   Tunghai University

Chuang-Chun Chiou   Tunghai University

An Artificial Intelligent Procurement Agent for High-Tech Supply Chains

Hsin-Yao Liao   National Chengchi University

Hao-Chun Howard Chuang   National Chengchi University

A High-Capacity Data Hiding Method Based on Sudoku Games

Chia-Chen Lin   Providence University

Ran Tang   Anhui University

Chin-Cheng Chang   Feng Chia University

Wan-Li Lyu   Anhui University

Research on Dynamic Promotion Decision of Fresh Food in Chain Convenience Stores

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Abstract

Fresh foods in convenience stores are sold at high frequency and have short-term characteristics. Many manufacturers have introduced ordering systems combined with sales data from POS system to predict the recommended order quantity, and assist store manager to make appropriate order decisions, although consumer demand is difficult to predict such as newsboy problem. The problem of scrapping fresh food in convenience stores is a severe issue that CVS should face it seriously. This study uses real sales data and to simulate sales probability and apply Monte Carlo methodology to establish the most profitable dynamic promotion model by "Risk" software, proposes a "dynamic promotion decision" model, estimates the sales chances and profit maximization of fresh food, and reduces the unsalable situation caused by order shortage or changes in demand.

In this study, the actual sales data are collected from a convenience store POS system and carry out variable statistics by order quantity and sales volume. We can simulate the timing of setting the best inventory in the decision-making situation and explore the profit maximization situation under this condition to do the sales simulation of the commodity discount. Selected 10 fresh food products, the study found that 90% of the fresh food items increased their profits after the decision-making price change, and the overall profit increased by 50%, while the scrap amount decreased by 46% after the decision-making price change.

Keywords: Dynamic promotion decision, fresh food, newsboy problem, monte carlo methodology, simulation

Applying Cluster Analysis on Medical Materials Management

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Abstract

Examining the cost structure of hospitals, the cost of materials accounts for 30-40% of the operating costs. Under the premise of maintaining a certain service level, there are still many management possibilities for the reduction of the cost of medical materials supply. The investigated data of this study were collected from a medical center in central Taiwan. The total number of medical material items is up to 7,964. In order to manage such a large number of medical materials, an effective method is needed. For this reason, the information of how to cluster and classify the medical material will help the managers to achieve a better cost control. In this study, K-Means and K-Medoid in the clustering method were used to analyze the characteristics of different items. The clustering results show that K-Medoid is better than K-Means. In the findings, it differentiates item 5571 has high volume with 7,285,200 and cluster it in an individual cluster. In addition, in the results of K-Medoid, it was found that cluster 1 and cluster 2 accounted for 88.7% of the total items. It is also found that medical materials in cluster 5 are high demand items, and medical materials in cluster 4 are high-priced items. Furthermore, this study suggests that the hospital can first implement different management methods for cluster 1 and cluster 2 to reduce the related costs.

Keywords: Medical materials, clustering, K-Means, K-Medoid

Cost Analysis for Different Hospital Procurement Models

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Abstract

Different procurement models will affect the total cost and service level. Centralized procurement is an integrated models for replenishing the first tier and second tier demand units. Therefore, it can take the advantage of obtaining a higher discount from the supplier by ordering a larger volume. This model is commonly used in hospital medical supply systems. Especially, for the large scale medical center, this model can consolidate the demands of different demand units and branches. However, it will affect the efficiency and lower the service level. The purpose of this study is to establish a cost analysis model to assist managers in making procurement decisions. We proposed a different model (TO BE model) and conducted a comparison with the current model (As-Is). Cost drivers along the procurement process are analyzed and derived. The analysis models are applied to evaluate the impacts of different models by using empirical data from a medical center located in central Taiwan. Finally, a sensitivity analysis was performed to know the effect of the difference in parameter values on the total cost. This evaluation mechanism can also show the distribution of costs in procurement operations, making costs visible, and managers can develop further improvement plans.

Examining the Energy Security Performances for APEC Member States Using Data Envelopment Analysis Approach

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Abstract

Based on the literature review, this study constructs six dimensions for measuring the Energy Security Performances (ESP) for APEC member states, i.e. availability, accessibility, affordability, acceptability, efficiency and governance. Principal Component Analysis (PCA) is then used to generate apriori information as the main parameters to be used in Data Envelopment Analysis (DEA) method in order to rank the ESP of APEC members. Based on the results obtained, 20 APEC members are classified into 3 groups, i.e. stable group, progress group and regress group, respectively.

Taiwan's ESP is remarkable, mainly due to the good performances on indicators such as "renewable energy generation of total power generation", "PM 2.5", "carbon dioxide emissions per capita", "GDP per capita", "energy intensity" "power transmission and distribution losses", "government efficiency" and "political stability". After reviewing Taiwan's long-term energy policy and measures, it is discovered that these indicators reflect the effectiveness of energy policy planned and implemented during the past years. These findings may be valuable to other APEC members as a reference for their energy security policy planning in the future.

Keywords: Energy security performance, principal component analysis, data envelopment analysis/assurance region

The Design of a Management System for Optimal Selection in Honey Bee Queen Breeding

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Abstract

This work proposes the development of a system that will automatically evaluate quality honey bee queen species for breeding based on bee behavior. The queen breeding stages are set as the evaluation guidelines for queen bee and drone sources; the guidelines are then quantified using mathematical formulae. The work will also use sound sensors and database technology to complement JSP language and eclipse programming for system development. System functions will be designed based on actual operational needs, including establishing basic user information, the input of bee information, a blood relations structure, premium combinations and real-time monitoring. The system will integrate databases and real-time sound monitoring information to offer supervision over the queen breeding process in every bee breeding box. Using this system, honey bee queen breeding processes may be shortened by almost one month, which will increase the productivity of queen bee breeding.

Keywords: Honey bee queen breeding, sound monitoring, management system

Dynamic Dispatching Rule Considering Finite Workforce for Semiconductor Wafer Fabrication Process

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Abstract

Job dispatching plays an important role in semiconductor wafer fabrication processes, the goal is to decrease work-in-process (WIP), have a better yield rate, and to satisfy the due date. Most researches focus on how line balancing and WIP controlling effect the decision flow while dispatching, however, not every wafer fab process are fully automated. Factories that required operators to handle materials or works are considered semi-automated, and the finite workforce may cause materials waiting for operators to move or to monitor. As a result, a dynamic dispatching rule considering finite workforce is proposed for semi-automated wafer fab line. A case study is demonstrated by simulation to present the conclusion. The results show that finite workforce will decrease throughput amount and increase cycle time. By the dynamic dispatching proposed in this study, both throughput and cycle time have significant improvements.

Keywords: Dynamic dispatching, finite workforce, throughput, cycle time

Optimization of Preventive Maintenance Scheduling Integrated with Production Planning for a Critical Machine

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Abstract

In general, production and preventive maintenance are two independent activities but restrain each other in the same time. The time used for preventive maintenance could otherwise be used for production, but without preventive maintenance, the failure rate of equipment may increase. Due to this conflict relationship, it is difficult to schedule preventive maintenance in a critical machine. It may cause machine failure if preventive maintenance is postponed in most cases. In this paper, a Two-Stage model is formulated to resolve the preventive maintenance scheduling problem integrating with the production planning. First-stage model is to integrate the production planning into the preventive maintenance scheduling. According to the variation of production planning under each time periods, we can obtain the feasible time periods which have less impact on production line while performing preventive maintenance. Then, with the aim to minimize make-span of all jobs along with preventive maintenance by Second-Stage model, optimal schedule of preventive maintenance can be obtained. The result of Two-Stage model integrated with production planning and preventive maintenance scheduling is demonstrated by simulation experiment. The feasible time period result of First-Stage model are t3, t7, t9. Then, by Second-Stage model their respective make-span are 810, 855, 855. The scheduling result shows that our Two-Stage model is effective and able to provide the time window of preventive maintenance schedule.

Keywords: Production planning, preventive maintenance, scheduling, two-stage model

An Artificial Intelligent Procurement Agent for High-Tech Supply Chains

Liao, H. Y. and Chuang, H. H.[*]

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Abstract

An inventory policy provides guidelines for companies to place orders with upstream suppliers. An efficient policy ensures that companies can reduce cost and make a significant contribution to profitability. However, the intrinsic properties in high-tech supply chains, such as limited market life cycle and the stochastic demand from downstream, increase the difficulty of formulating an efficient ordering strategy. By working with the largest electronics distributor in the world, we develop a data-driven approach based on deep reinforcement learning (DRL), a branch of machine learning. DRL has received broad attention recently due to the salient performance of AlphaGo, an artificial intelligence (AI) system empowered by DRL. DRL is a model-free approach to develop near-optimal policies for sequential decision-making problems. With the aid of deep neural nets, a DRL agent can approximate the value/policy functions of a Markov Decision Process (MDP) and learn sophisticated decision rules from reinforcement learning (RL) environment. Intrigued by the success of DRL in various fields, we, in this study, assess the applicability of DRL to multi-period inventory control under stochastic demand, which is a classical MDP problem. Facing erratic and non-stationary product demand, the distributor could not infer the exact demand distribution and solve the inventory optimization problem analytically in a finite-horizon with lost sales setting. Hence, we propose a deep Q-networks (DQN) by specifying relevant state and decision inputs, and then designing a data-driven simulation environment, in which the agent is trained over thousands of episodes. For trained items, our proposed DQN specifically outperforms the current method used in the company in a few ways. First, achieving the same service level of the current method, DQN can lower inventory holding cost by 86%. Second, while the penalty for stockouts cost increases, DQN can even reduce inventory holding and stockouts cost by 16% and 80% respectively. For tested items, however, DQN's performance is compromised by the difficulty of transfer-learning.

Keywords: Reinforcement learning, deep learning, procurement, simulation, operations management

A High-Capacity Data Hiding Method Based on Sudoku Games

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Abstract

Steganography is both a methodology and science for data hiding that prevents anyone, except intended recipients, from noticing the delivery process of information (not just the content of information). The proposed method is inspired by Sudoku games. Any initialized Sudoku game matrix can be used to carry a secret message. Furthermore, an appropriate initial Sudoku matrix can be chosen based on the amount of the secret message that needs data hiding with our proposed method. Because the number of possible Sudoku solutions is very large, and the number of initialized Sudoku game matrices for each Sudoku solutions is also large, the proposed method is more secure than Sudoku methods by Li et al. and Chang et al. The experimental results show the visual quality of stego-image implemented by the proposed method is higher than 40 dB on average, while the embedding capacity of this method is 2.56 bit per pixel, which is greater than Chang et al.'s Sudoku method by 1 bpp.

Keywords: Data hiding, image steganography, Sudoku games, adjustable embedding capacity

<u>Agenda</u>

Feb. 6, 2020 (Thursday)

Session C   **10:00-12:30**   **Room:** Delaware

Session Chair: Rocio Rodriguez

Kristiania University College, Norway

The Enterprise Resource Planning as Path and Process for Improving Firm Business Model and Performance

Rocio Rodriguez   Kristiania University College

Francisco José Molina-Castillo   Murcia University

Göran Svensson   Kristiania University College

A Combined Decision Model for Assessment of Critical Success Factors in Smart Long-term Care Information Strategy

Chih Hao Yang   National Defense University

Yu Hui Chen   National Defense University

A Collaborative Learning Mechanism to Promote Learning Transfer Using the Groups Photo Pool on Flickr

KuoHua Huang   Ling Tung University

A jQuery-like Platform for Standardized Dataset Processing Logic

Marat Zhanikeev   Tokyo University of Science

Key Factors that Influence the Effective Renewals of a Property Management Company at the End of the Applicant Escrow Period

Pio-Go Hsieh   Hwa Hsia University of Technology

The Study of the Relationship between Perceived Justice, Perceived Betrayal and Behavioral Responses of Consumers

LI CHI LAN   National Taipei University

Wen Chang Fang   National Taipei University

Adopting Alternative Influence Strategies via Virtual Stickers

Chih-Ping Chen   Yuan Ze University

<u>Agenda</u>

Feb. 6, 2020 (Thursday)

Session C   10:00-12:30   **Room:** Delaware

Session Chair: Rocio Rodriguez

Kristiania University College, Norway

A Graphical Approach to Analyze Online Hotel Reviews Based on Text Mining

Li-Ching Ma   National United University

Zhi-Xuan Huang   National United University

Use HFMEA to Improve Patient Fall Events

Chen Kun Chih   I-Shou University

Wu Yu Lung   I-Shou University

Chen Chen Yu   Kaohsiung Chang Gung Memorial Hospital

Han Qiu Ping   Kaohsiung Chang Gung Memorial Hospital

The Enterprise Resource Planning as Path and Process for Improving Firm Business Model and Performance

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Abstract

This research analyses how enterprise resource planning (ERP) and business model innovation (BMI) are related and in turn what is the final impact on organizational performance. The sample consisted on 104 organizations from different industries, all of them used an ERP software. Structural Equation model was used to test the six hypothesis. The results indicate that the BMI constructs considered (i.e. value-generation and organizational complexity) mediate the impact of the ERP constructs (organizational adaptation and organizational resistance), in organizational performance. Successful ERP implementation is not an end itself for this companies, but merely, a path and a process for improving the business model with the aim improving performance in the marketplace. Business model innovation has received contributions from several domains such as entrepreneurship, management organization and strategic management among others. Nonetheless, the role of ERP in business model innovation is far from being understood and the few contributions focus only on technology per se. To the best of our knowledge this is the first study that has explored the connections of ERP and BMI and in turn the final outcome in organizational performance.

Keywords: Organizational performance, enterprise resource planning, business model innovation

A Combined Decision Model for Assessment of Critical Success Factors in Smart Long-term Care Information Strategy

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Abstract

An aging society has become an important part of the national sustainable development problem, accompany with declining fertility rates with increasing life expectancy, the number of older people requiring care service is increasing rapidly. Until 2026, the proportion of the elderly population in Taiwan will exceed 20%, becoming a member of the super-aged society. With the aging of the population and the diversified needs of care services, the government approved the "Ten-Year Long-term Care Plan 2.0" (LTC 2.0) in 2016 in response to the long-term care (LTC) problem of an aging society. In today's world, the smart information technology policy can promote the development of healthcare services and resource integration, thereby ensuring the healthcare service quality achievement under the patient-centered (care receivers) environment integrates hospitals, home care institutions, and communities. This study presents a multi-criteria decision-making (MCDM) model that focuses on the perspectives of health care governance, smart innovation service, sustainable financial development, and resource optimization integration, respectively. The MCDM model first applies the Decision-Making Trial and Evaluation Laboratory (DEMATEL) approach to construct interrelations among criteria. The second step is to obtain the criterion weights through the Analytic Network Process (ANP) and find out the sequence of critical evaluation criteria. The research results indicate that the prioritized evaluation criteria are Regulatory Compliance, followed by Long-term Care Industry Service Value, and Health Care Process Optimization. This study contributes to the smart healthcare operation issues, especially in regard to implementing smart long-term care information strategy, by utilizing a combined decision model for the smart long-term care information planning.

Keywords: Long-term care information strategy, critical success factors, MCDM, DEMATEL, ANP

A Collaborative Learning Mechanism to Promote Learning Transfer Using the Groups Photo Pool on Flickr

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Abstract

The Flickr platform has been used to improve students' learning effectiveness in computer software learning. Recently, Flickr has introduced the "New Groups Experience," rolling out a redesign of several Groups pages, which are an excellent environment for students' collaborative learning, as students upload screenshots and interact with each other to solve problems and complete assignments. As the aim of the study is to investigate how to promote learning transfer by using Flickr's Groups Photo Pool, task difficulty, online participation, and learning transfer were chosen as the basis for the research model. In addition, by applying the technology acceptance model (TAM), three factors, namely, perceived ease of use, perceived usefulness, and behavioral intention, were included. This research was organized as a six-semester investigation. The results, based on data collected from 259 students enrolled in the target course, namely the Linux operating system, indicated that students' perceived ease of use, perceived usefulness, and task difficulty is likely to significantly affect their behavioral intention, which in turn promote learning transfer. As it is imperative for educational organizations to enhance students' learning effectiveness by choosing proper social networking services to promote learning transfer, an important practical implication is the possibility that students' learning transfer could be prompted greatly by enhancing their intention to use Flickr's Groups Photo Pool while learning software instructions.

Keywords: Collaborative learning, learning transfer, task difficulty, technology acceptance model

A jQuery-like Platform for Standardized Dataset Processing Logic

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Abstract

The processing logic for datasets (including bigdata) cannot be easily standardized and shared among researchers. This is primarily due to the lack of a modeling language which can cover a wide range of selection and processing logic. For example, UML, even in its database schema sections, cannot fulfill this goal. This paper first notices the similarities between processing DOM elements in web applications and tuples in datasets, and the proposes to borrow the jQuery notation for dataset processing. Most concepts, such as (1) selectors, (2) methods, (3) processing chains, (4) callbacks for asynchronous (time consuming) tasks, and others enjoy a direct mapping to the proposed functionality. This paper also offers several examples which emphasize the usefulness of the proposed method.

Keywords: Dataset processing, bigdata, jQuery, selectors, noSQL databases

Key Factors that Influence the Effective Renewals of a Property Management Company at the End of the Applicant Escrow Period

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Abstract

In Taiwan, the escrow company commissioned by applicants often does not win the bid at the end of its escrow period when the first management committee of a community invites companies to tender after its establishment. As a result, the escrow company will lose its chance to renew the service. To ensure effective renewals after the escrow period, this study explores the influencing factors of effective renewals based on literature review and semi-structured interviews with experts. In addition to that, this study also conducted a questionnaire survey to select the key factors and established the Key Target Operating Procedure. The research results can be used as a reference for escrow companies regarding services and management during the escrow period to increase the chance of renewal after the establishment of the management committee.

Keywords: Property management, escrow period, renewal, service quality, relationship quality, satisfaction

The Study of the Relationship Between Perceived Justice, Perceived Betrayal and Behavioral Responses of Consumers

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Abstract

It's very important to maintain a good relationship between businesses and customers. Customers will be treated fairly as benchmark when they purchase products and services and they will express their feedback to the corporate. This research takes catering industry for example. After a service failure and a poor recovery, we want to know what's different between customer justice perception and their behavioral responses. The relational benefits play an important role in this research, so we need to find out more about it. The last section describes the methodology in Study 1, and Study 2, including the sample, data collection procedures, and measure development. In Study 1, we will know what kind of service compensatory measures is the fairest and the most unfair that customers think by the results of measurement. Then, we'll take such measures as the situation in our study when engaging in experimental design. We designed Study 2 to accomplish two things. We hope to establish a crisis management mechanism for the different stages of customers' negative behavior responses and find out the reasons for its occurrence. That is, which is the most important justice (three equity: distributive justice, procedural justice and interactional justice) in the customers' mind? The company can have a different response to timely decision-making, when dealing with service failure in the future.

Keywords: Perceived betrayal, customer justice perception, relational benefits, behavioral responses, service failure and recovery

Adopting Alternative Influence Strategies via Virtual Stickers

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Abstract

Nowadays, the lives of young adults have changed radically in the digital mobile communication and influence the identity and relational development. This study evaluated how socio-oriented FCPs affect Taiwanese young adults in virtual contexts, focusing on their use of influence strategies via virtual sticker interactions with parents. The methodological approach to this research followed the principles of interpretive phenomenology. The results show that female participants were more likely to use two influence strategies (cosplay, integrate strategies with cosplay and emotions) via virtual stickers to educate their parents in the process of reciprocal socialization while male participants tended to use four strategies (persuasion, cosplay, playing on relaxed emotions, synthesizing strategies with cosplay and playing on intimate emotions) to influence their parents. It suggests a potential way in which virtual stickers can be used to bridge the gap in gender-specific expectations, thereby managing the kinship relationships.

A Graphical Approach to Analyze Online Hotel Reviews Based on Text Mining

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Abstract

People in todays' world are under great pressure due to their busy work, and tourism has become one of the popular ways for people to relax. The demand for travel accommodation has gradually increased. With the popularity of the Internet, customers often browse online customer reviews as a reference before hotel booking. This study takes hotel reviews on Booking.com as an example to analyzes online customer reviews of three well-known tourist hotels in Taiwan including E-da Royal Hotel, Caesar Park Taipei and Howard Beach Resort Kenting. This study adopts text mining to analyze customer reviews of the three hotels and find high-frequency terms. Then, similarity analysis and genetic algorithm are employed to discover the coordinates of the high-frequency terms. All high-frequency terms are displayed on a 2-dimensional graph based on the concept of social network maps. Managers can quickly observe customers' needs and preferences, and then adjust their strategies to enhance their competitive advantages.

Keywords: Text mining, visualization, customer review, booking website, hotel

Use HFMEA to Improve Patient Fall Events

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Abstract

Using failure mode and effect analysis in "Using HFMEA to improve patient fall events", using the patient safety incident notification statistics, on-site service staff (patient safety team members, outpatient caregiver and volunteers) for outpatients in the medical building The medical safety environment and the improvement of falls, the panelists discussed and medically listed the risk priority index (RPN), and proposed appropriate preventive measures and countermeasures: Revision: ground slippage treatment mechanism, waxing operation standard specification, ground slippery instant processing artifact, New Standardized anti-skid operation in the rainy day hall. After the above improvement results: the incidence of falls decreased from 2.9% to 0%, the rate of mild injury caused by falls fell from 1 to 0, and the rate of moderate injury caused by falls was 1 Reduced to 0, the patient's severe injury rate caused by the fall improved from 1 to 0.

Keywords: Failure mode and effect analysis, HFMEA

<u>Agenda</u>

Feb. 6, 2020 (Thursday)

Session D   14:00-16:30   **Room:** Delaware

Session Chair: Syming Hwang

National Chengchi University, Taiwan

Analysis of the Crucial Success Factors for Tech-Based Startups

Shu-Hua He	Industrial Technology Research Institute / National Tsing Hua University
Chao-En Yu	National Tsing Hua University

Synthesis Knowledge form Productivity Development of a Creative Ceramics Industry for Competitive Advantage in Lampang Province.

Anurak Artitkawin	Lampang Rajabhat University
Nicha Naphaphon Jongkasikit	Lampang Rajabhat University
Kanokkanya Ruammaitree	Lampang Rajabhat University
Sorawit Moolintha	Lampang Rajabhat University

Production Process Development in Creative Ceramic Products of Small Entrepreneurs

Soravich Mulinta	Lampang Rajabhat University
THITIMA KHUNYOTYING	Lampang Rajabhat University
PONGSAK YOUMUNE	Lampang Rajabhat University

A Critique of a Biometrics-Based Authentication Key Exchange Protocol for Multi-Server TMIS Using ECC

Ya-Fen Chang	National Taichung University of Science and Technology
Che-Hui Lin	National Taichung University of Science and Technology
Wei-Liang Tai	Chinese Culture University

Comments on Light-Weight Hashing Method for User Authentication in Internet-of-Things

Ya-Fen Chang	National Taichung University of Science and Technology
Sheng-Jie Huang	National Taichung University of Science and Technology
Wei-Liang Tai	Chinese Culture University

<u>Agenda</u>

Feb. 6, 2020 (Thursday)

Session D   **14:00-16:30**   **Room:** Delaware

Session Chair: Syming Hwang

National Chengchi University, Taiwan

Modeling Derivatives Market Data with Artificial Intelligence Based on Fuzzy Logic to Automated Trading Algorithm for Individual Investors in Thailand

Kittinu Muayteng   Chulalongkorn University

Pornanong Budsaratragoon   Chulalongkorn University

C. Nuthong   King Mongkut Institute of Technology Ladkrabang

The Effect of Individual Innovation Characteristics on Apps Purchase

Hsiu-Li Liao   Chung Yuan Christian University

Su-Houn Liu   Chung Yuan Christian University

Chih-Chung Cheng   Chung Yuan Christian University

Analysis of the Crucial Success Factors for Tech-Based Startups

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Abstract

For the new era of digital economy, enterprises are now facing escalating competitions and ubiquitous opportunities. How to assist enterprises in gaining competitive advantages has become a crucial issue for both academicians and practitioners. Moreover, the governmental institutes need to face a crucial issue of "allocating limited resources" especially to support startups.

This paper collects 50 external / internal tech-based startups that would either succeed or fail to find out the crucial success factors through empirical analysis. First of all, we transfer and summarize the text of the entire articles from the research institutes into quantitative data. Secondly, the correlation between crucial success factors and startups is studied. Thirdly, to solve missing value problem that has a great influence on the results of a regression analysis, we deal it with various imputation methods. Fourthly, we try to do statistical analysis with logistic regressions and exact logistic regressions. Besides, to correct the sample selection bias, we use bootstrap method to estimate statistics of the population. Our results can be an important reference not only in predicting the potentially successful startups, but also in optimizing the allocation of constrained supporting resources.

Keywords: Tech-based startups, startups, crucial success factors, KSF, limited resources

Synthesis Knowledge form Productivity Development of a Creative Ceramics Industry for Competitive Advantage in Lampang Province

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Kanokkanya Ruammaitree and Sorawit Moolintha

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Abstract

This research article is a part of the research results "Development of Creative Ceramic Image Production for the Competitive Advantage of Lampang Province" by synthesizing knowledge from the sub-research project issues of value creation by creating identity through the development of product styles of small ceramic entrepreneurs to create competitive advantage in Lampang Province. There are Production process development results, Creative ceramic products of small entrepreneurs, and the results of the development of access to ceramic products with modern digital media. The results of the research found that the guidelines for the development of image production can be divided into 4 approaches that was synthesize from all of the respondent's comments and priorities by the most valuable as follow, the first way is to create ceramic pieces to be strange and different by designing to blend the Thai culture, Lanna style, the prototype of Lampang province. The second approach is to create by producing ceramic pieces as models or as a set. The third approach is the development of the production process for creative ceramic products production process of small entrepreneurs. And the last approach is knowledge about the development of Access channels to ceramic products with modern digital media for the competitive advantage of small entrepreneurs in Lampang Province.

Keywords: Productivity, ceramic industry, creative ceramics, competitive advantage, ceramic
entrepreneurs

Production Process Development in Creative Ceramic Products of Small Entrepreneurs

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Abstract

The objective of this research was to develop ceramic entrepreneurs of small and medium-sized enterprises (SME) to have the ability to develop creative ceramic product manufacturing processes. The research methodology was divided into 3 steps. Step 1 the researcher and the research team conducted a study of the general context data of the SMEs entrepreneurs participating in the research project. Step 2 the researcher and the research team improved and developed the production process, ceramic product quality improvement, ceramic product form development, and packaging in order to ensure product quality to meet community product standards. Providing entrepreneurs with the ability to develop product formats and help increase the value of the product. Step 3 the researcher and the research team carried out the main activities in the area of in-depth consultation and developed ceramic product model. The research results found that entrepreneurs of small and medium enterprises (SME) had the potential to develop themselves, but there were problems in some areas, such as quality control problems in the production process, problems in requesting to certify community product standards, expertise in the production techniques of newly designed products, technical problems in casting products, and quality control.

Keywords: Manufacturing process, ceramic industry, creative ceramics

A Critique of a Biometrics-Based Authentication Key Exchange Protocol for Multi-Server TMIS Using ECC

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Abstract

Telecare medical information system (TMIS) is system for a doctor to make diagnoses and provide treatment advice to a patient via the Internet. Because a patient and a doctor are communicating over a public and insecure channel, security mechanisms are required to protect the security of communication. Recently, Qi et al. proposed a biometrics-based mutual authentication scheme for TMIS. But after analyzing their scheme, we find that their scheme suffers from forgery attack and denial-of-service attack. In this paper, we will show how these found security flaws damage Qi et al.'s scheme.

Keywords: TMIS, authentication, biometrics, security, multi-server, key agreement

Comments on Light-Weight Hashing Method for User Authentication in Internet-of-Things

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Abstract

Via IoT (Internet of Things), devices used in our daily life can communicate with each other. IoT is also applied to various applications such as industrial automation and eHealth. However, messages exchanged among devices are transmitted via public channels such that proper security mechanisms are required. In order to protect the security of data, digital signature and hash function are usually adopted. Rao and Prema proposed an authentication scheme in IoT by using the customized BLAKE2b hash function, c-BLAKE2b, and the elliptic curve digital signature scheme, ECDSA. They claimed that their scheme could ensure security and efficiency at the same time for IoT devices with limited computational capability. After analyzing their scheme, we find that their scheme is vulnerable to impersonation attack and replay attack. In this paper, the found security flaws are shown and possible modifications are also given.

Keywords: Authentication, Internet of Things (IoT), Signature, Elliptic Curve Cryptography
(ECC)

Modeling Derivatives Market Data with Artificial Intelligence Based on Fuzzy Logic to Automated Trading Algorithm for Individual Investors in Thailand

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Abstract

Investment is the way to make one's wealth grow. One attractive investment is to invest in the derivatives market. Nowadays, The Securities and Exchange Commission of Thailand (SEC) allows Automated Trading Technology under regulations issued at the end of 2017 by using Algorithmic trading directly to the derivative market known as Thailand Futures Exchange (TFEX).

Financial Technology of Automated Trading Software using Broker business connected with Individual investors with new robustness trading algorithms required to develop product and process innovation. To create new values for Individual investors and to get opportunity to commercialize as a New Business Model such as subscription model, profit-sharing model, or commission model depending on management for financial innovation technology in the future trend.

Robustness Trading algorithm is an important part that developed from historical market data that contains a derivative's closing price, volume, and technical indicators.

The automated trading algorithm generates directional trading signals (buy and sell) for long and short positions. Since Algorithm trading cannot write down a formal mathematical model. However applying, Fuzzy logic approach enables a qualitative trading system. This work proposes the use of fuzzy logic to develop a trading algorithm that provides automated trading software for derivatives market in the case of SET50 Equity Index futures in Thailand.

The experimental results show Fuzzy logic approach has potential to predict the future performance of SET50 Equity Index futures up to 68.71% accuracy. However, the results can be improved by modifying parameters of the algorithms.

Keywords: Derivatives market, fuzzy logic, technical analysis, derivatives price prediction, automated trading software

The Effect of Individual Innovation Characteristics on Apps Purchase

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Abstract

Due to the popularity of smartphones and tablets, the development of applications on mobile platforms such as "App Store" from Apple, and "Google Play" from google is increasing rapidly. How to make users willing to download app and use it becomes an important issue. Therefore, the aims of this study are to understand the factors influencing users' App purchase intention. Our research centered upon the following research questions: (1) can the perception variable of innovation characteristics (PCI), price and environment variables predict individual's intention to purchase apps? (2) Do the different individual's innovation characteristics affect perceived characteristics of innovation, price and environmental variables? The research results show that individual innovation characteristics are positive related to relative advantage, external influence, but negative related to complexity. Complexity had a negative and direct effect on apps purchase intention. Interpersonal influence and price had a positive and direct effect on apps purchase intention. Interpersonal influence has the strongest impact on intention of apps purchase, followed by complexity and price.

Keywords: Perceived characteristics of innovation, purchase intention, price, individual innovation characteristics, interpersonal influence, external influence

<u>Agenda</u>

Feb. 7, 2020 (Friday)

Session E   10:00-12:30   **Room:** Delaware

Session Chair: Cheng-Kiang Farn

National Central University, Taiwan

Firm-Level Determinants of Strength in Corporate Governance

Hsueh-Tien Lu   Chinese Culture University

Financial Constraints and Private Equity Placements

Lee-Young Cheng   National Chung Cheng University

Kung-Chi Chen   National Chung Cheng University

Zhipeng Yan   New Jersey Institute of Technology

Yan Zhao   City College of New York

Research on Tibet's Religious Tourism Features Attractive, Pre-departure Expectations, Experience and Revisit Willingness

Chienwen Wang   Fujian College of Engineering

Yuxuan Wang   Xiamen University TanKan Kee College

Bihan Dong   Xiamen University TanKan Kee College

Zeyao Li   Xiamen University TanKan Kee College

Applying Importance-Performance Analysis to Production-Marketing Coordination of the Steel Pipe Manufacturing Plant in Southern Taiwan

Nai-Chieh Wei   I-Shou University

Yu-Ting Tseng   I-Shou University

Shu-Chuan Hsu   I-Shou University

Cheng-Hao Chen   I-Shou University

Environment Safety and Visual Communication: An Exploration of Children's Comprehension on Safety Pictograms

Mei-chun Chang   Tungnan University

<u>Agenda</u>

Feb. 7, 2020 (Friday)

Session E   10:00-12:30   **Room:** Delaware

Session Chair: Cheng-Kiang Farn

National Central University, Taiwan

The Analysis of Emotional Exhaustion on Pilots

Chih Chi Kuang   National Taipei University

Kuei Min Wang   Shih Chien University

Kuang Hui Chiu   National Taipei University

Optimized Competency Model for Maximization of Job Performance

Chien-Chun Chen   Chung Hua University

Chiu-Chi Wei   Chung Hua University

Chiou-Shuei Wei   LungHwa University of Science and Technology

Framework for Adaptive Change: Towards Sustainable Innovation

Emőke Takács   ERI Hungary - European Research Institute

Toon Abcouwer   University of Amsterdam

Firm-Level Determinants of Strength in Corporate Governance

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Abstract

I examine determinants of strength in corporate governance for 1,482 firms rated corporate governance in 2016. I find that a firm's with strength in corporate governance is positive related to the ultimate controlling shareholder's ownership-control rights divergence and firm size, but negative related to the ultimate controlling shareholder's cash-flow rights, firm age and extreme income growth. Further, I define stronger corporate governance using 20%, 35%, and 50% cutoff points. And, I find that firms with stronger corporate governance tend to be larger, younger, with extreme income growth, with lower ultimate controlling shareholder's cash-flow rights, or with higher ownership-control rights divergence. Based on similar assessments for ranking of corporate governance performance, this results have implications for other economies that have adopted ACGS or other comprehensive evaluation system for listed firms.

Keywords: Corporate governance, emerging markets, agency theory

Financial Constraints and Private Equity Placements

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Abstract

This study examines whether and to what extent that private equity placements reduce issuing firms' financial constraints in the Taiwan Stock Exchange. We find that private equity placements mitigate financial constraints and potentially provide a source of value by enabling issuing firms to improve their investment policy. We further show that the post-placement performance of issuers is significantly improved due to the reduction of financial constraints. Finally, we show that offerings subject to higher financial constraints are more heavily discounted and there is a negative relationship between the offering price discounts and financial constraints.

Research on Tibet's Religious Tourism Features Attractive, Pre-departure Expectations, Experience and Revisit Willingness

Chienwen Wang[1], Yuxuan Wang[2*], Bihan Dong[2] and Zeyao Li[2]

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Abstract

This paper reviews and analyzes the research literatures on religious tourism at home and abroad, and summarizes the research status of Tibetan religious tourism, characteristic attraction, pre-departure expectation, experience and revisit willingness.

The focus of this paper is to use the characteristic attraction of Tibetan religious tourism as the main indicator of evaluation, to deeply analyze the influence of characteristic attraction on the pre-departure expectations and experience of tourists, and to further explore whether the expectations of touriets before the trip and the actual experience are It will have an impact on the willingness of visitors to revisit, and whether the activity experience provided by the tourism activities meets the needs of tourists, in order to have correct management of tourists and tourism activities. For the above reasons, this paper hopes to achieve the following objectives through this research:

One: Discussion of the relationship between the attractiveness of Tibetan religious tourism and the expectation of visitors before the trip and the feeling after their trip

Two: The experiment proves the correlation between the expectation before travel and the willingness of tourists to revisit

Three: Based on the conclusions of the research, give suggestions for improvement are proposed and then provided this to the Tourism Bureau for reference.

The paper reaches a conclusion that in Tibet tourism, the three major factors of natural scenery, religious architecture and folk beliefs are the attractive attractions that attract people to travel, which can relieve people's pressure, stay away from the city and relax. Therefore, the Tibetan authorities should protect natural resources and religious buildings. At the same time, it is possible to develop distinctive religious tourism and add new life. And through the scenic spot to carry out preferential policies for the revisited tourists to improve the revisit rate.

Keywords: Religious tourism, Attractiveness, Pre-departure expectation, Actual experience, Revisit willingness

Applying Importance-Performance Analysis to Production-Marketing Coordination of the Steel Pipe Manufacturing Plant in Southern Taiwan

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Abstract

This paper conducted a case study with a steel pipe manufacturing plant in southern Taiwan by interviewing and issuing questionnaires with use of the theory of constraints, the Balanced Scorecard (BSC), the Importance-Performance Analysis (IPA) and the Logistic Regression Analysis. We found the maximum constraint of production-marketing coordination is the sales forecast accuracy in internal process perspective. Thus, enterprises need to use their maximum strengths and core issues as the Key Performance Indicators (KPI) of production-marketing coordination, and actively invest in relevant resources to carry out improvement actions, in order to achieve higher overall performance and enhance organizational competitiveness.

Keywords: Theory of constraints, balanced scorecard, production-marketing coordination, importance-performance analysis, logistic regression analysis

Environment Safety and Visual Communication: An Exploration of Children's Comprehension on Safety Pictograms

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Abstract

According to the statistics on the causes of death from the World Health Organization (WHO) over the years, accidental injuries ranked first among the causes of death for child. Observation of the child safety sign design reveals that there are cartoon characters used in the safety signs both at home and abroad. This study took the sign of "mind your hands", which is commonly seen in public places, as the subject, and explored the environmental dangers, animal characters, and images to identify the problems with children's image recognition. Preschool children aged between 4 and 6 were the subjects of this study, and 67 children were tested through a questionnaire survey and interviews. The results show that: (1) in the image of "mind your hands", the "animal (koala)" was the highest for all children (49.17%), 4-year-old children mainly chose the "animal (koala)" (80.0%), while 6-year-old children mainly chose the "crying face" (54.08%); the results show that there were obvious differences in the "crying face" (P=0.002); (2) 6-year-old children indicated that the combined image of "crying face" and "koala" is clear and simple; the exaggerated painful expression is easily associated with the consequence of hands being pinched; (3) children mentioned that, in the image of the "koala", its hand got pinched, but without any description of the consequences of the pinch injury. Finally, this study suggested that interviews should be conducted with kindergarten teachers, parents, and sign designers, in order to understand children's recognition of safety pictograms and environments from different perspectives.

Keywords: Environment safety, preschool children, safety pictograms, recognition, visual communication

The Analysis of Emotional Exhaustion on Pilots

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Abstract

The air combat scenarios are an essential issue for the pilot from each service of the military. This issue is rarely studied due to the confidential reason. This paper aims at the connectivity between the various military services pilot and the emotional exhaustion in Taiwan. We proposed main factors of emotional exhaustion that could impact the pilot's performance for analyzing the level of connectivity in between. Since this is a multiple layers analysis and it is not easy to be processed simply by statistics, the Saaty's analytical hierarchy process (AHP) is used instead for processing the complex issue. The result has shown the ranking of main factors, among which the pilot thought the level of connectivity to them, is as: Physical work environment > work characteristics > mental working environment > family matters > personal issues. And the ranking of the main level of factors' connectivity to pilots from various services is as: Air Force >Army> Navy.

The contribution of this paper is valuable for being able to prove the connectivity between emotional exhaustion and military pilots, with which the main factors of emotional exhaustion can be an effective pre-examination checking list for the state of pilot's readiness. The restriction is with the limited sample from military pilots due to the cause of confidential reason. However, most of the interviewed pilots were senior with long flight hour that can be treated as an expert, with which the sample size would not hurt the accuracy of the result that much.

Keywords: AHP, emotional exhaustion, factors, pilot, ranking

Optimized Competency Model for Maximization of Job Performance

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Abstract

Human resource is a key factor for winning the global competition in new era. For a business, human resource is not just about recruiting, training and keeping talents. The right assignment of personnel is a key to the success for business performance, since no matter how good a business strategy is, it all comes down to the people who put it in practice. A carefully developed strategy is as good as no strategy if the wrong person is placed at the wrong position, because the wrong person will do things wrong. Previous studies were mostly focused qualitatively on competency and job performance and derived their compositions. However, there was not quantitative relationship between competency and job performance. It is the intension of this study to propose a quantitative mathematical model that identifies the key elements of personnel competency for the optimized job performance. The model was designed to verify the discrete and continuous relationship of the competency elements and their synergetic effects. It was found that the model proposed did provide results that indicate the values of employee competency elements that lead to optimized job performance, which could be helpful for the optimized deployment of human resource.

Keywords: Competency, job performance, mathematical model, human resource

Framework for Adaptive Change: Towards Sustainable Innovation[1]

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Abstract

The rapid changes in our dynamic world increase competitions and forecasting the future developments is more and more difficult. Many scientists and new sciences try to find the recipe for long-lasting success. Analysing and testing these advices, using a logical way of reasoning for reaching long-term objectives, challenges the managements of the organisations both in 'doing the things right' (the manager) as well as 'doing the right things' (the leader), - as Peter Drucker (2001) stated. The role of human resources is crucial in this respect.

Our discussion paper is based on many years of research work on identifying the continuous developments of an organisation, analysing the different requirements for adaptation by the human resources in the different phases during the life cycle of an organisation, the role of knowledge and information, thus the role of education. The authors believe that organisations can only reach their objectives (reaching competitive advantage in the profit sector or societal effectiveness for governmental organisations and NGOs) via collaboration, networking and by sharing knowledge, skills and expertise. While the technological and managerial innovations and developments are available, the mindsets of human resources to share knowledge- and skills do not yet assure the fit of employees for their future.

How to ensure sustainable success? - that is the question the authors are searching answers for. Given the fact that we are trying to understand the dynamically changing context organisations are facing, to proof it is hard. On the moment that we have a relevant set of cases to be studied, the context already changed that much, any prediction is useless.

Keywords: Resilience, adaptivity, sustainability, innovation, learning

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[1] All illustrations in this article are original work of the authors.

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Authors Schedule Index

Search for Session

Search for Paper ID

Name	PID
A, B, C	
Abcouwer, Toon	P0158
Artitkawin, Anurak	P0105
Budsaratragoon, Pornanong	P0152
Chang, Chin-Cheng	P0153
Chang, Mei-chun	P0120
Chang, Shih-Chi	P0130
Chang, Ya-Fen	P0136, P0138
Chen, Cheng-Hao	P0114
Chen, Chien-Chun	P0116
Chen, Chih-Ping	P0112
Chen, Kung-Chi	P0107
Chen, Po-Hsun	P0142
Chen, Shieh-Liang	P0130
Chen, Ting-Chih	P0144
Chen, Yao-Ting	P0133
Chen, Yu Hui	P0123
Cheng, Chih-Chung	P0159
Cheng, Lee-Young	P0107
Chih, ChenKun	P0108
Chiou, Chuang-Chun	P0132, P0134
	P0142, P0145
Chiu, KuangHui	P0109
Chuang, Hao-ChunHoward	P0150
Chung, Yung-Fu	P0137
Ciou, Sin-Ying	P0134
D, F, H	
Dong, Bihan	P0148
Fang, Nai-Chuan	P0134
Fang, Nai-Chun	P0132
Fang, WenChang	P0110
He, Shu-Hua	P0129
Hsieh, Hui-Min	P0121
Hsieh, Pio-Go	P0131
Hsu, Shu-Chuan	P0114

Name	PID
Huang, Hua-Wei	P0115
Huang, KuoHua	P0154
Huang, Li-Jen	P0130
Huang, Sheng-Jie	P0138
Huang, Shi-Wei	P0155
Huang, Yu-Ru	P0134
Huang, Zhi-Xuan	P0149
Hung, T.K	P0121
Hung, Tsang-Kai	P0113
J, K, L	
Jongkasikit, NichaNaphaphon	P0105
KHUNYOTYING, THITIMA	P0127
Kuang, ChihChi	P0109
LAN, LICHI	P0110
Lee, Chin-I	P0144
Lee, ChiungSan	P0124
Lee, Shih-Liang	P0113
Li, I-Hui	P0133
Li, Zeyao	P0148
Liao, Hsin-Yao	P0150
Liao, Hsiu-Li	P0159
Liao, Shu-hsien	P0118
Lin, Che-Hui	P0136
Lin, Chia-Chen	P0153
Lin, Guan-Yu	P0122
Liou, Shu-Huei	P0113
Liu, Su-Houn	P0159
Lu, Hsueh-Tien	P0102
Lung, WuYu	P0108
Lyu, Wan-Li	P0153
M, N, O, P, R	
Ma, Li-Ching	P0149
Molina-Castillo, FranciscoJosé	P0104

Name	PID
Moolintha, Sorawit	P0105
Muayteng, Kittinu	P0152
Mulinta, Soravich	P0127
Nuthong, C.	P0152
Ou, Tsung-Yin	P0122
Ping, HanQiu	P0108
Rodriguez, Rocio	P0104
Ruammaitree, Kanokkanya	P0105
S, T	
Shi, Pei-Yu	P0122
Shih, Yii-shun	P0118
Su, Tai-Sheng	P0111
Sung, Hung-Yuan	P0145
Svensson, Göran	P0104
Tai, Wei-Liang	P0136, P0138
Takács, Emőke	P0158
Tang, Ran	P0153
Tsai, Jyi-Chang	P0111
Tsai, Tzu Chun	P0132
Tsai, Yu-Cheng	P0115
Tseng, Yu-Ting	P0114

Name	PID
W, Y, Z	
Wang, Chienwen	P0148
Wang, KueiMin	P0109
Wang, Yuxuan	P0148
Wei, Chiou-Shuei	P0116
Wei, Chiu-Chi	P0116
Wei, Nai-Chieh	P0114
Weng, Shao-Jen	P0134
Wu, Chin-Chun	P0111
Wu, Tai-Hsi	P0137, P0155
Wu, Yung-Shun	P0113, P0130
Yan, Zhipeng	P0107
Yang, Chih Hao	P0123
Yao, Ming-Jong	P0134
You, Zi-Yi	P0133
YOUMUNE, PONGSAK	P0127
Yu, Chao-En	P0129
Yu, ChenChen	P0108
Zhanikeev, Marat	P0156
Zhao, Yan	P0107

Sort by Paper ID

PID	Paper Title	Author(s)	Session
P0102	Firm-Level Determinants of Strength in Corporate Governance	Hsueh-Tien Lu	E
P0104	The Enterprise Resource Planning as Path and Process for Improving Firm Business Model and Performance	Rocio Rodriguez, Francisco José Molina-Castillo, Göran Svensson	C
P0105	Synthesis Knowledge form Productivity Development of a Creative Ceramics Industry for Competitive Advantage in Lampang Province.	Anurak Artitkawin, Nicha Naphaphon Jongkasikit, Kanokkanya Ruammaitree, Sorawit Moolintha	D
P0107	Financial Constraints and Private Equity Placements	Lee-Young Cheng, Kung-Chi Chen, Zhipeng Yan, Yan Zhao	E
P0108	Use HFMEA to Improve Patient Fall Events	Chen Kun Chih, Wu Yu Lung, Chen Chen Yu, Han Qiu Ping	C
P0109	The Analysis of Emotional Exhaustion on Pilots	Chih Chi Kuang, Kuei Min Wang, Kuang Hui Chiu	E
P0110	The Study of the Relationship between Perceived Justice, Perceived Betrayal and Behavioral Responses of Consumers	LI CHI LAN, Wen Chang Fang	C
P0111	The Design of a Management System for Optimal Selection in Honey Bee Queen Breeding	Tai-Sheng Su, Chin-Chun Wu, Jyi-Chang Tsai	B
P0112	Adopting Alternative Influence Strategies via Virtual Stickers	Chih-Ping Chen	C
P0113	The Effects of Abusive Supervision, Chinese Loyalty to Supervisor for Perceived Organizational Justice on Workplace Deviant Behavior: A Moderated Mediation Examination	Yung-Shun Wu, Shih-Liang Lee, Tsang-Kai Hung, Shu-Huei Liou	A
P0114	Applying Importance-Performance Analysis to Production-Marketing Coordination of the Steel Pipe Manufacturing Plant in Southern Taiwan	Nai-Chieh Wei, Yu-Ting Tseng, Shu-Chuan Hsu, Cheng-Hao Chen	E
P0115	Internal Auditor Characteristics and Internal Control Material Weakness	Yu-Cheng Tsai, Hua-Wei Huang	A

PID	Paper Title	Author(s)	Session
	Remediation: U.S. Evidence		
P0116	Optimized Competency Model for Maximization of Job Performance	Chien-Chun Chen, Chiu-Chi Wei, Chiou-Shuei Wei	E
P0118	The Relationships Between the Supply Chain Collaboration and Innovation	Shu-hsien Liao, Yii-shun Shih	A
P0120	Environment Safety and Visual Communication: An Exploration of Children's Comprehension on Safety Pictograms	Mei-chun Chang	E
P0121	Consumers Choose the Homestay with Airbnb to Reorder the Actual Behavior in Taiwan: Empirically by Technology Acceptance Model	Hui-Min Hsieh, T.K Hung	A
P0122	Research on Dynamic Promotion Decision of Fresh Food in Chain Convenience Stores	Guan-Yu Lin, Tsung-Yin Ou, Pei-Yu Shi	B
P0123	A Combined Decision Model for Assessment of Critical Success Factors in Smart Long-term Care Information Strategy	Chih Hao Yang, Yu Hui Chen	C
P0124	Research and Implementation of Roughly Estimation the Height and Weight Using Pixels	Chiung San Lee	A
P0127	Production Process Development in Creative Ceramic Products of Small Entrepreneurs	Soravich Mulinta, THITIMA KHUNYOTYING, PONGSAK YOUMUNE	D
P0129	Analysis of the Crucial Success Factors for Tech-Based Startups	Shu-Hua He, Chao-En Yu	D
P0130	The Pharmacy Management Comparison Study Between Taiwan and Mainland China Areas - Based on Shanghai Chain Pharmacy	Li-Jen Huang, Yung-Shun Wu, Shieh-Liang Chen, Shih-Chi Chang	A
P0131	Key Factors that Influence the Effective Renewals of a Property Management Company at the End of the Applicant Escrow Period	Pio-Go Hsieh	C
P0132	Applying Cluster Analysis on Medical	Tzu Chun Tsai, Nai-Chun	B

PID	Paper Title	Author(s)	Session
	Materials Management	Fang, Chuang-Chun Chiou	
P0133	A Hierarchical Method of Cost Analysis for Software Development	Zi-Yi You, Yao-Ting Chen, I-Hui Li	A
P0134	Cost Analysis for Different Hospital Procurement Models	Sin-Ying Ciou, Yu-Ru Huang, Nai-Chuan Fang, Shao-Jen Weng, Ming-Jong Yao / Chuang-Chun Chiou	B
P0136	A Critique of a Biometrics-Based Authentication Key Exchange Protocol for Multi-Server TMIS Using ECC	Ya-Fen Chang, Che-Hui Lin, Wei-Liang Tai	D
P0137	Examining the Energy Security Performances for APEC Member States Using Data Envelopment Analysis Approach	Yung-Fu Chung, Tai-Hsi Wu	B
P0138	Comments on Light-Weight Hashing Method for User Authentication in Internet-of-Things	Ya-Fen Chang, Sheng-Jie Huang, Wei-Liang Tai	D
P0142	Dynamic Dispatching Rule Considering Finite Workforce for Semiconductor Wafer Fabrication Process	Po-Hsun Chen, Chuang-Chun Chiou	B
P0144	Application of LSTM Neural Network in Stock Price Movement Forecasting with Technical Analysis Index	Ting-Chih Chen, Chin-I Lee	A
P0145	Optimization of Preventive Maintenance Scheduling Integrated with Production Planning for a Critical Machine	Hung-Yuan Sung, Chuang-Chun Chiou	B
P0148	Research on Tibet's Religious Tourism Features Attractive, Pre-departure Expectations, Experience and Revisit Willingness	Chienwen Wang, Yuxuan Wang, Bihan Dong, Zeyao Li	E
P0149	A Graphical Approach to Analyze Online Hotel Reviews Based on Text Mining	Li-Ching Ma, Zhi-Xuan Huang	C
P0150	An Artificial Intelligent Procurement Agent for High-Tech Supply Chains	Hsin-Yao Liao, Hao-Chun Howard Chuang	B
P0152	Modeling Derivatives Market Data with Artificial Intelligence Based on Fuzzy Logic to Automated Trading Algorithm	Kittinu Muayteng, Pornanong Budsaratragoon, C. Nuthong	D

PID	Paper Title	Author(s)	Session
	for Individual Investors in Thailand		
P0153	A High-Capacity Data Hiding Method Based on Sudoku Games	Chia-Chen Lin, Ran Tang, Chin-Cheng Chang, Wan-Li Lyu	B
P0154	A Collaborative Learning Mechanism to Promote Learning Transfer Using the Groups Photo Pool on Flickr	KuoHua Huang	C
P0155	An Inquiry of OECD Countries' Energy Security Performance Under the UN SDGs Perspective	Shi-wei Huang, Tai-Hsi Wu	A
P0156	A jQuery-like Platform for Standardized Dataset Processing Logic	Marat Zhanikeev	C
P0158	Framework for Adaptive Change: Towards Sustainable Innovation	Emőke Takács, Toon Abcouwer	E
P0159	The Effect of Individual Innovation Characteristics on Apps Purchase	Hsiu-Li Liao, Su-Houn Liu, Chih-Chung Cheng	D