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Chair's Message

The committees of the International Conference on Innovation and Management (IAM2017 Winter) are pleased to welcome you to this meeting held at Tokyo, Japan on Feb. 7-10, 2017. On behalf of the organizers, I express my delight in sharing the time with the delegates from all around the world and hope you will have good stay here.

With the rapid development in e-business and technology, enterprises are now facing fiercer threaten and vague opportunity. How to assist enterprises in gaining competitive advantages through technological and managerial innovation has become a crucial issue to the industrial and academic societies. 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 108 excellent manuscript submissions from 14 countries, 82 of them come from 8 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 IAM2017W.

Looking forward for your participation again in our next event.



Conference Chair

Schedule

Feb. 7, 2017 (Tuesday)	
15:00-16:30	Registration (HATSUNE 初音, 5F)

Feb. 8, 2017 (Wednesday) 08:00-16:00 Registration	
Room	HATSUNE 初音 (5F)
08:30-10:10	Session A
10:10-10:30	Social Time (Refreshment)
10:30-12:10	Session B
12:10-13:30	Lunch (RILASSA 3F, リラッサ 3階)
13:30-15:10	Session C
15:10-15:30	Social Time (Refreshment)
15:30-17:10	Session D

Feb. 9, 2017 (Thursday) 08:00-16:00 Registration	
Room	HATSUNE 初音 (5F)
08:30-10:10	Session E
10:10-10:30	Social Time (Refreshment)
10:30-12:10	Session F
12:10-13:30	Lunch (RILASSA 3F, リラッサ 3階)
13:30-15:10	Session G
15:10-15:30	Social Time (Refreshment)
15:30-17:10	Session H

Feb. 10, 2017 (Friday) 08:00-16:00 Registration	
Room	HATSUNE 初音 (5F)
08:30-10:10	Session I
10:10-10:30	Social Time (Refreshment)
10:30-12:10	Session J
12:10-13:30	Lunch (RILASSA 3F, リラッサ 3階)
13:30-15:10	Session K
15:10-15:30	Social Time (Refreshment)
15:30-17:10	Session L

Agenda

Feb. 8, 2017 (Wednesday)

Session A

08:30-10:10

Room: HATSUNE

Session Chair: Wenchieh Wu

St. John's University, Taiwan

Going Global: Investigating The Relationship Between CQ and In-role Performance with the Moderating Effect of Host Country Language Ability

Angela Shin-Yih Chen National Taipei University

Pei-Yen Chen National Taipei University

The Effect of Cultural Intelligence on Foreign Worker Performance in Taiwan: The Moderating Effect of International Experience

Angela Shin-Yih Chen National Taipei University

Yu-Jung Cheng National Taipei University

The Relationship between Goal Orientation and Job Involvement with the Mediating Effect of the Psychological Capital

Angela Shin-Yih Chen National Taipei University

Chieh Huang National Taipei University

The Use of Social Network Sites for Job Search by Generation Y

Yu-Cheng Ku National Taiwan Normal University

C. Rosa Yeh National Taiwan Normal University

Embodiment – The Missing Link in Creative Innovation

Hannelie Salome Pienaar The Inspiration Gap

A Study to Team Decision Performance and Quality

chou kang chiu National Taichung University of Education

Wei en Chang National Taichung University of Education

Implementation of E-Governance Programs in Developing Countries: Benefits, Challenges and Examples

Stephen John Beaumont Centro de Tecnología para el Desarrollo (CENTED)

Going Global: Investigating the Relationship between CQ and In-role Performance with the Moderating Effect of Host Country Language Ability

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Abstract

The purpose of the current study is to examine the effect of cultural intelligence (CQ) on individuals' in-role performance with the moderating effect of host country language ability. We collected data from Taiwanese international managers living and working in Vietnam. Online questionnaires were established by MySurvey.com and delivered through the Internet via E-mails and Facebook community site. A pilot test was completed by 30 international managers to ensure the reliability of the instrument, and the result was acceptable. A total of 283 online questionnaires were returned within two months. The total amount of valid questionnaires collected via two channels was 232 copies and the return rate was 82%. We adopted hierarchical regression to analyze the data and to test the effect of CQ on in-role performance after controlling for gender, age, and education, respectively. Moreover, we examined the moderating effect of host country language ability on the relationship between CQ and in-role performance. The results demonstrated that CQ had a positive effect on individual's in-role performance. Moreover, we also found that host country language ability moderated the relationship between CQ and in-role performance. Our findings contribute new knowledge to the field of cross-cultural studies. In addition, the results of the study discovered that individuals with high CQ and host country language ability would be helpful for individuals to adapt effectively in different cultural settings. With respect to managerial implications of our findings to human resources operations and strategies, organizations should select people with high CQ to be their international managers. We expect studies in the future could investigate different countries as research background to generalize our findings and use different time point to test the model in order to draw a stronger conclusion. Moreover, we encourage future research to investigate other factors between cultural intelligence and work-related behavior to get more insight into the issue of cross-cultural effectiveness.

Keywords: Cultural intelligence, host country language ability, Taiwanese international managers

The Effect of Cultural Intelligence on Foreign Worker Performance in Taiwan: The Moderating Effect of International Experience

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Abstract

The purpose of the present study was to study the role of cultural intelligence (CQ) and its effect performance of foreign workers in Taiwan. In addition, this research also examined the moderating effects of the previous international experience aboard on the relationship between CQ and performance. We selected the Philippine laborers who worked on the production lines in high-tech electronic manufacturing located in central Taiwan as our research samples and decided to approach them by attending their Sunday church service in order to distribute a larger amount of questionnaires at the same time. The valid return questionnaire was 40.0% (n = 384). Based on 384 Philippine laborers' responses, the results revealed that CQ was positively related to the performance. Furthermore, this study found that the previous international experience positively moderated the relationship between CQ and performance. Because of the globalization, many workers will have more opportunities to work in cross-cultural surroundings. Compare with the expatriates, foreign labors will face more different cultural settings. Therefore, the ability to overcome these situations is more important than ever before. Individuals who have higher CQ could adapt to a different cultural workplace well and tend to have better performance. Those foreign workers who have international experience can learn how to deal with the obstacles of different culture from their previous oversee working or long-stay trip experience. Consequently, they are likely to have good job performance. Our findings contribute new knowledge to the field of cross-cultural studies. According to our findings, we suggest that a host country employer should consider who have higher CQ as the most appropriate foreign employees or provide some cross-cultural training to help foreign employees get familiar with the host country. We recommend studies in the future could investigate different countries as research background and increase the sample size to generalize our findings. We also suggest that subsequent studies should adopt a longitudinal design when carrying out tests over different time periods. Moreover, we encourage future research to investigate the moderating effect of different length international experience.

Keywords: Cultural intelligence, international experience, performance

The Relationship between Goal Orientation and Job Involvement with the Mediating Effect of the Psychological Capital

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Abstract

The purpose of the current research was to examine the effects of goal orientation and psychological capital (PsyCap) on job involvement. We collected data from general workers in northern Taiwan. 318 copies of paper-based questionnaires were distributed, and 234 valid copies were returned, representing a 74% return rate. We adopted hierarchical regression to analyze the data and to test the effects of learning goal orientation (LGO) and performance goal orientation (PGO) on psychological capital and job involvement after controlling for gender, age, and education, respectively. In addition, we examined the mediation effect of PsyCap on the relationship between goal orientation and job involvement. The consequences confirmed that learning and performance goal orientation had a positive effect on job involvement. Furthermore, we found that goal orientation was an essential determinant of an individual's PsyCap. Also, PsyCap mediated the relationship between goal orientation and job involvement. Our findings contribute new knowledge to the field of job involvement studies. Additionally, our study discovered that learning and performance goal orientation may be the predictors of one's PsyCap, so both elements can help individuals to immerse in their job.

Keywords: Goal orientation, learning goal orientation, performance goal orientation, psychological capital, job involvement

The Use of Social Network Sites for Job Search by Generation Y

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Abstract

There has been a lack of research to examine how Generation Y job seekers take the advantage of social network sites to enhance their job search experience. Adopting the Unified Theory of Acceptance and Use of Technology (UTAUT), the study draws on an in-depth analysis of qualitative data collected from 22 participants in Taiwan. The findings indicated social network sites have been considered as a way to look for job-related information and to seek for evaluations from others to enhance job search experience. In addition, “Interactivity” and “Immediacy” are potential constructs to be incorporated in UTAUT model for future study. It is also suggested that recruiters should adjust recruitment strategies to become more attractive and to reach a wider range of potential young talents on social network sites.

Keywords: Social Network Sites, Generation Y, Job Search, UTAUT

Embodiment – The Missing Link in Creative Innovation

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Abstract

In the late 20th century innovation was much about Thought Leadership as the Internet allowed human beings easy access to information and knowledge. Think Tanks and Brain Storming were the prevailing methods to innovate with the focus on mental capabilities. Attention was directed to WHAT and HOW, giving life to many Leadership Academies and Innovation Hubs.

In the early 21st century we find ourselves in an interconnected world where thousands of books and millions of academic papers are written annually; where thousands of courses are available; where an infinite amount of information on the internet is accessible; and where we are daily flooded by numerous electronic messages and opportunities to engage in Social Networks and other Online Forums. Yet, we fail to find solutions to the multitude of social, economic and political issues that humanity are facing.

The overload of information and numerous requests for attention bring about the need for new skills to contextualize and discern what is needed and appropriate, what to keep, what to spend time on, what to enhance and develop, what to save for later, and what to let go off. More importantly, humans need to activate new skills and abilities to innovate in rapid changing and evolving complex environments. Innovation is no longer purely mental, but conceptual, which in itself requires the need to enact different intelligences to sense into and anticipate what we will need in the future.

The WHO and WHY become important to be able to access all the intelligences available to us to conceptualize, internalize, integrate and articulate innovations within relevant contexts and across various disciplines. There is a direct link between how we see, feel and think about ourselves, our creative potential, others, our environments and the world at large and our ability to be innovative and creative.

I will refer to the WHO and WHY as Embodiment for the purposes of this paper. Embodiment provides sustenance and the foundation for self-autonomy, self-trust and confidence that are needed for creative innovation to be relevant, successful and impactful.

Modern day leaders and managers need to understand how to harness, direct and leverage their people's creative potential in the most appropriate way in order for all to thrive in rapid changing and challenging times and to innovate successfully.

A Study to Team Decision Performance and Quality

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Abstract

Drawing upon a resource-based view and the social cognitive theory, this work develops a model that validates the formation of team decision quality and team performance. The model is empirically tested with data obtained from work teams from Taiwan's banking and insurance industry. The statistical results reveal that team performance is indirectly related to collective efficacy and participatory sense making via the full mediation of team decision quality, while collective efficacy and participatory sense making are directly related to knowledge internalization and resource adequacy. At the same time, the effect of participatory sense making on collective decision quality is negatively moderated by team hypercompetition. Finally, managerial implications and limitations based on the empirical findings are provided.

Keywords: Knowledge internalization, participatory sense making, decision quality

Implementation of E-Governance Programs in Developing Countries: Benefits, Challenges and Examples

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Abstract

E-Governance is modifying the way that State affairs affecting individuals is implemented on a daily basis. Although the potential for improvement is not questioned, the practical implementations are still quite challenging. This is why a deeper understanding of these issues must be achieved in order to transcend the current limitations. The mainstream conclusion about the purpose of implementing e-governance procedures is that these enhance good governance. This good governance is generally characterised by participation, transparency and accountability. This has proven to be a major problem in many developing countries. In this paper we analyze the benefits that can be achieved by implementing E-Governance programs, the challenges these innovations face and also we present some practical cases of implementation of e-governance programs.

Keywords: E-Government, governance, transparency

Agenda

Feb. 8, 2017 (Wednesday)

Session B

10:30-12:10

Room: HATSUNE

Session Chair: Chang-Lin Yang

Fu Jen Catholic University, Taiwan

Using Social Network Analysis to Explore the Patent Citation Relationship – Taking Smartphone Companies as an Example

Chieh-Yuan Tsai Yuan Ze University

Yi-Wen Liu Yuan Ze University

The Informational Association between the S&P 500 Index and VIX Options Markets

Wei-Che Tsai National Sun Yat-sen University

Leverage and Employee Compensation - The Perspective of Human Capital

Hsuan-Chu Lin National Cheng Kung University

Shao-Huai Liang National Cheng Kung University

Chieh-Yuan Chen National Cheng Kung University

She-Chih Chiu National Cheng Kung University

The Performance Evaluation and Development of Social Enterprises

Chang-Lin Yang Fu Jen Catholic University

Yu-Ping Lin Fu Jen Catholic University

Performance of Value Portfolios under Time-Varying Variance Scaling

Hung-Chou Chang National Chung Cheng University

Managing Pre-installed Apps in Smart Handheld Devices Market

JHIH-HUA JHANG-LI Hsing Wu University

I-Cheng Robert Chiang Fordham University

Agenda

Feb. 8, 2017 (Wednesday)

Session B

10:30-12:10

Room: HATSUNE

Session Chair: Chang-Lin Yang

Fu Jen Catholic University, Taiwan

Fairness and Channel Conflict in Dual Channels Coordination

Yenming J. Chen

National Kaohsiung First University of Science and
Technology

Frank S.C. Tseng

National Kaohsiung First University of Science and
Technology

Hsien-Tzu Wang

National Kaohsiung First University of Science and
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Using Social Network Analysis to Explore the Patent Citation Relationship – Taking Smartphone Companies as an Example

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Abstract

It is clear that competition among companies has been extended to the patent war. Owning more patents not only can protect companies' intellectual property rights but also earn infringement revenue through suing infringement competitors. However, most popular patent analysis methods and researches used quantity of patents been cited or citing as a major index to judge patent strength of a company. Fail to consider patent citation relation among companies make managers hard to deploy their patent strategy in more detail. In order to bridge this gap, this study proposes a social network analysis (SNA) approach to analyze patent citation network. In this study, the patent usage strength (PUS) and patent relationship strength (PRS) is developed to explore company's research and development (R&D) strength and patent citation strength. To illustrate the feasibility of the proposed approach, twenty leading smartphone companies are used as an example. It is found that the R&D performance of Samsung and LG is highest since they reveal high PUS in multiple periods. In addition, the analysis found that Samsung and LG conduct frequent patent cooperation with other companies due to their high PRS.

Keywords: Social network analysis, patent citation analysis, smartphone industry

The Informational Association between the S&P 500 Index and VIX Options Markets

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Abstract

We set out in this study to investigate the informational association between the S&P 500 index and VIX options markets by examining the relationship between trading activity in VIX options and changes in the VIX in a high-frequency framework. As opposed to any lead-lag relationship, our results reveal a consistent and significant contemporaneous relationship and thus support the informational efficiency between the two options markets. The informational association is particularly strong when we examine the crisis period encompassing the collapse of Lehman Brothers and when the variables are compiled only from out-of-the-money options.

Keywords: S&P 500, options, VIX, trading activity

JEL Classification: C53, G13

Leverage and Employee Compensation - The Perspective of Human Capital

Shao-Huai Liang¹, Hsuan-Chu Lin², Chieh-Yuan Chen³ and She-Chih Chiu⁴

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Abstract

This paper empirically tests the predictions in Titman (1984) and Berk et al. (2010) which indicate that firms with higher leverage will pay CEO and employee more. In addition, this paper examines whether financial distressed firms utilize leverage as a bargaining tool to reduce labor costs. Based on a sample of U.S. publicly held companies during the period between 2006 and 2013, this paper finds that firms with higher leverage tend to compensate employees for their human capital risk, and that financial distressed firms consider leverage as a bargaining tool to depress labor costs, which leads to less employee compensation as compared to those of financially healthy firms.

Keywords: Capital structure capital structure, CEO compensation, employee pay, human capital risk

The Performance Evaluation and Development of Social Enterprises

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Abstract

Social enterprise is promoted by government departments, universities, academic institutions, non-profit organizations and general enterprises in recent years. In order to understand the operational performance of social enterprises, this study proposes a complete and dynamic adjustment social enterprise performance evaluation system which considers social mission and corporate operations of social enterprises. This evaluation system consists of three dimensions: social enterprise essence, social value creation and business management. The results of the evaluation will be used as a basis for internal business, government funding, and the general public to meet the requirements and expectation for social enterprise performance.

Keywords: Social enterprise, performance evaluation system, social enterprise essence, social value

Performance of Value Portfolios under Time-Varying Variance Scaling

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Abstract

Value strategies perform differently depending on contemporaneous market excess returns. Their performance also differs during normal periods and periods of market crashes. In terms of risk, we observe value risk is highly variable over time but predictable. We propose a method to take advantage of this predictability to manage value risk by leveraging or deleveraging the plain (unlevered) value portfolio in accordance to the predicted value risk. Results show that managing value risk by this method considerably improves the stability of value strategy returns, even during market crashes. The risk-managed value portfolios yield higher return and Sharpe ratio than the plain value strategy. Moreover, there is greater stability in the cumulative abnormal return of the value strategy after risk management. Additional robustness tests show that the value portfolio constructed using the 8th decile book-to-market stocks yields a better risk-managed Sharpe ratio than the more common 10th decile value portfolio.

Keywords: Anomalies, value strategy, time-varying risk

Managing Pre-installed Apps in Smart Handheld Devices Market

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Abstract

As Android shows dominance as the operating systems (OS) for mobile devices, nearly all major device manufacturers have agreed to the Mobile Application Distribution Agreement before participating in an ecosystem anchored by Google Play. Though the open-source operating system is being distributed free of charge, Google can still monetize the software by generating revenue from its apps market and mobile advertising. To enhance the ad revenue generated from its mobile services, the OS producer can demand high number of pre-installed apps in the agreement to create opportunities to show ads. However, too many pre-installed apps on the home screen leads to low product differentiation among manufacturers. The OS provider can change the optimal number of pre-installed apps by sharing app revenues with device manufacturers. The OS provider can better control the home screen by making/selling branded devices via a contract manufacturer. We found an open-source OS provider can use a revenue-sharing program to increase the number of pre-installed apps. Interestingly, when launching its own product line the OS provider would opt to have less pre-installed apps on the home screen.

Keywords: Open source, ecosystem, apps market, advertising, product differentiation

Fairness and Channel Conflict in Dual Channels Coordination

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Abstract

In order to achieve the purpose of increasing corporate profits, manufacturers often use a variety of ways to shorten the length of the supply chain. According to previous studies, when manufacturers use self-built access strategy, it usually induces channel conflict with the existing intermediaries. In order to reduce channel conflict, manufacturers tried a lot of practices.

Fairness is often discussed in channel studies while we considering people are not all rational when they are making decision. Cui et al. present the impact of fairness on firms under traditional channel. This study explores the effects of fairness in dual channels.

We use the Newsvendor model to compute profit function and utility function to maximize the profit of the dual channels system. The results show that, according to Cui et al., the fairness mechanism in the traditional channel, can maximize the profit of the entire access system. However, when the dual channel is formed, this fairness mechanism makes the profit of the whole channel system increase, but it cannot achieve profit maximization.

Keywords: Channel conflict, fairness, demand variability

Agenda

Feb. 8, 2017 (Wednesday)

Session C

13:30-15:10

Room: HATSUNE

Session Chair: Rafael Aita

Universidad de Lima, Peru

Determinants of Open Government Data Adoption among Business Organizations

Hui-Ju Wang

Fo Guang University

Jin Lo

National Dong Hwa University

Understanding Predictors of Telehealth Acceptance: A More Comprehensive Perspective

Chung-Hung Tsai

Tzu Chi University of Science and Technology

Jin-Yuan Wang

National Chiao Tung University

Shih-Wen Wang

National Chiao Tung University

Factors Affecting the Intention to Adopt Apple Pay: An Empirical Study in China

Felix T. S. Chan

The Hong Kong Polytechnic University

Xiaodie PU

The Hong Kong Polytechnic University

Alain Y.L. CHONG

University of Nottingham

Are Religious Social Norms associated with Corporate Innovation?

wenhsin Hsu

National Taiwan University

Sophia Liu

National Taiwan University

Bidding and Selling Behavior of Non-Practicing Entities in the Patent Auction Market

Jong-Rong Chen

National Central University

Chia-Hua Chung

Cathay United Bank

Chih-Hai Yang

National Central University

Measurement of Information in the Core of Planning and Organization of the New Century

Rafael Aita

Universidad de Lima

Agenda

Feb. 8, 2017 (Wednesday)

Session C

13:30-15:10

Room: HATSUNE

Session Chair: Rafael Aita

Universidad de Lima, Peru

The Changes of Employees' Performance under Internet Evolution - A Case Study of High-tech Company

Chia-Shen Chen

National Taiwan University

Lin-Heng Chang

National Taipei University

Determinants of Open Government Data Adoption among Business Organizations

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Abstract

With an emerging interest in open government data (OGD) around the world, there has been an increasing need for research on the determinants of OGD adoption. This study aims to examine factors influencing the adoption of OGD among business organizations in Taiwan to fill the existing knowledge gap. Based on previous research on innovation adoption, this study attempts to systematically develop and examine a research model that integrates the technology–organization–environment (TOE) framework via multiple approaches combining qualitative and quantitative techniques. The results are expected to reveal significant factors that influence the adoption of OGD by business organizations. This study will have significant management implications for policy practitioners of the Taiwanese government and business organizations, and create a valuable reference for other countries in the early stages of OGD initiatives.

Keywords: Open government data, innovation adoption, the technology–organization–environment (TOE) framework

Understanding Predictors of Telehealth Acceptance: A More Comprehensive Perspective

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Abstract

This study integrated psychosocial, technological, and health factors into a single unified behavioral model of telehealth systems (Psychosocial-Technological-Health model; PTH model) by applying social capital theory, social cognitive theory, technology acceptance model (TAM), and health belief model (HBM). The structural equation modeling (SEM) was used to assess the proposed model which sample data obtained for the current study were collected from residents of a rural community in Taiwan. The findings illustrated that the joint effects of psychosocial factors on usage intention were mediated by technological and health factors. Furthermore, cues to action, followed by social participation in order, has the strongest total effects on usage intention relative to the other factors. In addition, PTH model provided more explanatory power than TAM and HBM for the behavioral intention of telehealth. The integrated PTH model is thus a valuable guideline toward reinforcement and promotion of community healthcare services in health institutions.

Keywords: Telehealth, social cognitive theory, technology acceptance model, health belief model, Psychosocial-Technological-Health model

Factors Affecting the Intention to Adopt Apple Pay: An Empirical Study in China

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Abstract

With the rapid development of technology, the providers of mobile payment services are expanding the spectrum of their service propositions. Among the many promising technologies, Near Field Communication (NFC) has the most auspicious potential to transform the traditional payment experience by offering customers a simple yet secure “tap and go” payment method. Taking the advantages of NFC technology, Apple released its Apple Pay mobile payment service, and the service has been officially launched in the China market recently. Because NFC-based mobile payment service is still a new type of transaction method, it is important to understand customer acceptance towards it in order to facilitate future market success. This research thus aims to study the factors influencing the behavioral intention to adopt Apple Pay. The conceptual model is an extension of the Technology Acceptance Model (TAM) with additional constructs that include the technology and personal characteristics. We collected data from 148 iPhone users in China to test the model. Perceived usefulness is identified as significant drivers of behavioral intention to adopt Apple Pay. Reliability is suggested the most important determinant for perceived usefulness and perceived ease of use. Personal innovativeness and mobile payment knowledge are significant antecedents to perceived ease of use.

Keywords: Apple pay, mobile payments, personal characteristics, technology characteristics

Are Religious Social Norms associated with Corporate Innovation?

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Abstract

We examine whether religious social norms affect corporate innovation. Using the level of religious adherents in the region where firms are headquartered as a proxy for religious social norms, we hypothesize and find that firms in more religious areas are associated with smaller innovation outputs, consistent with the notion that high religious social norms indicate risk-aversion environmental atmosphere surrounding the firms' headquarters that curbs corporate innovation activities. We also find that the previously documented positive association between CEO overconfidence and corporate innovation (see Galasso & Simcoe, 2011; Hirshleifer et al., 2012) is weaker for firms headquartered in the high religiosity areas, suggesting that the effect of CEO personality trait, overconfidence on corporate innovation is mitigated by the local social religious norms.

Keywords: Religious social norms, corporate innovation, patent, CEO overconfidence

Bidding and Selling Behavior of Non-Practicing Entities in the Patent Auction Market

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Abstract

This paper investigates the role of non-practicing entities (NPEs) plays on patent transfer. Based on the unique transaction price information from patent auctions hosted by Ocean Tomo, empirical analyses find NPEs play a considerable role, in terms of buyers and sellers, on affecting the transaction price. NPEs bid patents with a slight price premium, meanwhile, being sellers, their patents are also easy to transfer and be sold at a higher price. Combined with NPEs' behavior in terms of buyers and sellers, it complicates the debate regarding whether NPEs are trolls or market-makers of technology. Moreover, the age of a patent is negatively related to the probability of a successful auction and transfer price, while forward citations, patent claim and scope are positively related to it. In addition, the patent's auction price is higher if it is renewed within one year prior to auction.

Keywords: Non-practicing entity, patent transfer, patent auction, patent value

JEL Classifications: O34, G32, G21, L65

Measurement of Information in the Core of Planning and Organization of the New Century

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Abstract

The new century brings to companies a transition to a society of information and knowledge, however, organizational and planning tools are still static and not very flexible, as the organizational chart and the situational analysis. This article proposes two tools that are based on measuring information as its center. The first one, the complex network measures the entropy increase in the company by increasing its size and complexity. The second one, calculates the maximum planning horizon based on the information available in the environment. Both tools provide a new strategic approach so the organization can adapt to an increasingly dynamic and turbulent environment.

Keywords: Complex systems, uncertainty, complex network, entropy

The Changes of Employees' Performance under Internet Evolution - A Case Study of High-tech Company

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Abstract

The evolution of information and communication technology (ICT) changes the working types of existing business, as well as affecting our life style deeply for the past two decades. The Internet evolution from Information Technology (IT) to Data Technology (DT) does not only impact the people, but also the enterprise, and even the whole society. With the new evolution, to understand the employee performance is critical. Whether the new technology improves their performance or becomes a threshold of their jobs. This is what we would like to explore in the study.

High technology industry is deeply related to the Internet Evolution (IE) because of its capital and engineering resource intensive characteristics. High quality employees are the key assets of high-tech company since it needs employees to learn new things to catch up with the rapid technology changes. Therefore, employee and organization's overall performance is of high priority for management team to make sure the company could maintain high competitive advantage and keep the growth.

The study is an investigation of a high-tech company to figure out the employee and organization's performance when they face the Internet Evolution (IE) via the interview with different levels of management team members. After the first-stage investigation, we found two key findings which can be the initial result of the study. Firstly, it is obvious that the IE brings the performance to both employees and the company. With the new internet technology, employees have the right tools to enhance their performance. At the same time, it improves organization's performance. Secondly, when the IE grows with "intelligence", it becomes a powerful tool to increase the company competence, however, it seems a threat to employees to keep their jobs and for further promotion.

This could be the foundation of future study with further contribution to high-tech industry.

Keywords: Internet evolution (IE), information technology (IT), data technology(DT), employee performance

Agenda

Feb. 8, 2017 (Wednesday)

Session D

15:30-17:10

Room: HATSUNE

Session Chair: Min-Tsai Lai

Southern Taiwan University of Science and Technology, Taiwan

A Model for the Sorghum Wines Production Planning Problems

Peng Sheng You

National Chiayi University

Ta-Cheng Chen

Asia University

Yi-Chih Hsieh

National Formosa University

Data Mining for Product Line and Brand Extension

Shu-hsien Liao

Tamkang University

Chung-Hsin Wu

Tamkang University

Optimal (T,n) Replacement Policy with Cumulative Repair Cost Limit for a Two-unit System under Shock Damage Interaction

Min-Tsai Lai

Southern Taiwan University of Science and Technology

Taqwa Hariguna

Southern Taiwan University of Science and Technology

Integrated Inventory Model for Deteriorating Items with Collaborative Preservation Technology Investment under Carbon Cap and Trade

Chih-Te Yang

Chien Hsin University of Science and Technology

Chung-Yuan Dye

Shu-Te University

An Interval-valued Forecasting Model using Time-interval Information for Computer Product Sales

Chi-Jie Lu

Chien Hsin University of Science and Technology

Wensheng Dai

Renmin University of China

Hui-Wen Lee

Chien Hsin University of Science and Technology

The Willingness of Disclosure to Personal Medical Record - Effects of Data Usage Purpose, Authorized Recipient, and Perceived Risk

yi-yuan chen

National Taipei University

Agenda

Feb. 8, 2017 (Wednesday)

Session D

15:30-17:10

Room: HATSUNE

Session Chair: Min-Tsai Lai

Southern Taiwan University of Science and Technology, Taiwan

How Mobile Payment Affect Consumer Payment Behavior

Chih-Kae Guan National Taipei University

Kuang-Hui Chiu National Taipei University

Perceived Interactivity and Continuance Intention of Mobile Apps – A Study of Mobile Health App

Wang-Sheng Chen National Taipei University

A Model for the Sorghum Wines Production Planning Problems

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Abstract

This paper deals with a production planning problem for sorghum wine's manufacturers. The process of sorghum wines belongs to the multistage production planning systems. We propose a mixed integer programming model to determine the purchasing and inventory decision for materials, the inventory and production decisions for yeasts, initial distillation and the sorghum wines for a sorghum liquor company. Sensitivity analysis was also conducted to investigate the impacts of the variation in purchasing costs, demands, producing capacities to profits.

Keywords: Sorghum liquor, production planning, mixed integer linear programming

Data Mining for Product Line and Brand Extension

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Abstract

To distinguish the brand extension from the other item(s) under the primary brand, the retailer can either add secondary brand identification or add a generic brand. This paper investigates product line and brand extension issues in the Taiwan branch of a leading international retailing company, Carrefour, which is a hypermarket retailer. This paper develops a relational database and proposes Apriori algorithm and K-means as methodologies for association rule and cluster analysis for data mining, which is then implemented to mine customer knowledge from household customers. Knowledge extraction by data mining results is illustrated as knowledge patterns/rules and clusters in order to propose suggestions and solutions to the case firm for product line and brand extensions and knowledge management.

Keywords: Retailing, product line extension, brand extension, data mining, association rules, cluster analysis, knowledge extraction

Optimal (T,n) Replacement Policy with Cumulative Repair Cost Limit for a Two-unit System under Shock Damage Interaction

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Abstract

In this paper, we propose an optimal (T,n) replacement policy, incorporating with cumulative repair cost limit, for a two-unit system suffered shock damage interaction between units. Each failure in unit 1 causes a random amount of damage to unit 2 and these damages are additive. Unit 2 will fail when the total damage of unit 2 exceeds a failure level K, and such a failure makes unit 1 fail simultaneously, resulting in a total failure. When unit 1 fails, if the cumulative repair cost till to this failure is less than a predetermined limit L, then unit 1 is corrected by minimal repair, otherwise, the system is preventively replaced. The system is also replaced at scheduled time T, at the n-th unit 1 failure, or at total failure. The long-term expected cost per unit time is derived as the optimality criterion and the existence and uniqueness of the optimal policy are proved. Some special cases of this replacement model are also introduced.

Keywords: Shock damage interaction, two-unit system, cumulative repair cost limit, minimal repair, bivariate replacement policy

Integrated Inventory Model for Deteriorating Items with Collaborative Preservation Technology Investment under Carbon Cap and Trade

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Abstract

This study investigates an integrated production-inventory model for deteriorating items under Carbon Cap and Trade and collaborative preservation technology investment. We first establish the total profit and carbon emissions functions of the buyer and supplier, respectively and then develop the joint total profit per unit time of the integrated inventory system under Carbon Cap-and-Trade. The main purpose is to determine the optimal production, delivering, ordering and investing policies for the buyer and supplier in which maximizes the joint total profit per unit time when considering various carbon emissions policies. Further, several numerical examples will be presented to demonstrate the solution procedures, and sensitivity analyses of the optimal solutions with respect to major parameters will be also carried out to find several managerial implications which provide manager a useful decision tool.

Keywords: Supply chain, inventory, deteriorating items, Carbon Cap-and-Trade, preservation technology investment

An Interval-valued Forecasting Model using Time-interval Information for Computer Product Sales

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Abstract

Sales forecasting has long been crucial for every company since accurate forecasting results can improve business decision performance. Interval-valued time series forecasting indicates possible future outcomes for upper and lower bounds of interval-valued data and generates a prediction interval. Since the time-interval information contains valuable information about data structure and interval boundaries, it can be utilized to construct an effective forecasting model which can generate more accurate predicted values of the bounds of interval-valued data. Therefore, this study uses time-interval information to construct interval-valued sales forecasting model. The features which can be used to represent time-interval information of the interval-valued data are served as the inputs of support vector regression (SVR) to build the interval-valued sales forecasting model. A real data of computer product sales collected from a multinational electronics company is used as illustrative examples to evaluate the performance of the proposed model. Experimental results revealed that the proposed interval-valued sales forecasting scheme outperforms the two competing models and hence is an effective alternative for interval-valued sales forecasting for computer products.

Keywords: Interval-valued time series forecasting, sales forecasting, computer products, support vector regression

The Willingness of Disclosure to Personal Medical Record - Effects of Data Usage Purpose, Authorized Recipient, and Perceived Risk

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Abstract

The application of medical big data has caught the attention of hospitals, research, insurance companies, and medical related organizations in the present era. In order to enhance the applications of medical data and to obtain the most unbiased result requires data from various areas and industries. However, due to personal data protection law, medical law, and other data regulation-related law, the collection of medical data had been restricted and made difficult for industries who wish to gain insight from medical big data. In addition, the public values highly on the protection of personal information. All in all, these factors had drag down the development of medical big data applications.

This paper will investigate the public's willingness to disclose personal medical records and the factors that influence such attitudes. This paper studies the public's willingness to disclose medical record by examining the three influencing factors, including data usage, data recipients, and the public's perceived risk. Besides, to explore more on how the type of information playing a role of moderator between perceived risk and willingness to disclose personal medical records.

With the goal of providing recommendations and insight on how we can reach a balance between privacy and data disclosure, we will enhance the applications of medical big data limited by the issue of restricted data. In conclusion, to provide suggestions on how to disclose the data and its scope, as well as to provide insight for future regulation-related laws development.

Keywords: Medical records, patient's privacy, perceived risk, personal data protection, authorized recipient, data usage purpose

How Mobile Payment Affect Consumer Payment Behavior?

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Abstract

There are some different mobile payments been promoted by current leading companies in different industries worldwide, such as Google Wallet, Apple Pay, Ali Pay, Visa payWave. However, some of them are widespread but some are not. In this study, we investigate the current usages of two common approaches of mobile payment: (1) virtualization of credit card, and (2) account for top-up, and suggest that convenience and system design of the two modes are the antecedent variables to perceived usefulness and perceived ease of use.

Previous studies have suggested that technology anxiety has negatively impact on the relationship between adopt intention and actual adoption behavior; we include it in this study and see if the moderating effect is still exist between perceived usefulness and perceived ease of use and consumer's intention to use. For the purpose of the study, the Technology Acceptance Model (TAM) is adopted as the main theoretical framework.

Mobile payment is the trend for almost every kind of transaction surrounding us such as retails, bank, transportation, food and beverage ...etc. The results of this study are intended to provide an understanding of the perceived value, acceptance, and willingness of Taiwan consumers to pay for their actions in the context of Taiwan's active promotion of Finance 3.0 and provide some insights for companies who want to or are implementing mobile payments as their strategy.

Keywords: Mobile payment, TAM, perceived usefulness, perceived ease of use, perceived risk, technology anxiety

Perceived Interactivity and Continuance Intention of Mobile Apps - A Study of Mobile Health App

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Abstract

Recently, there has been a rapid increase in the development and use of health apps on smartphones or smartwatches. Except research on mobile technologies, there exist considerable gaps between health app usage and mobile technology. Therefore, this paper investigates the impact of perceived interactivity (include four dimensions: control, playfulness, connectedness, and responsiveness), perceived service quality, and confirmation on users' continuance intention to the use of mobile health apps.

Previous research on health apps seldom focused on the continuous usage behaviors of mobile technologies. To address and fill the gaps in health app research, this study has developed and tested a model to explain the micro-mechanism that determines the continuance intention to use mobile health apps based on the expectation-confirmation model and the perceived interactivity.

This model will help researchers to further examine health-related technologies, particularly mHealth-oriented ones. Furthermore, the findings would support health apps providers to increase consumers' continuance intention to use health apps.

Keywords: Expectation-confirmation model, continuance intention to use, perceived interactivity, health apps

Agenda

Feb. 9, 2017 (Thursday)

Session E

08:30-10:10

Room: HATSUNE

Session Chair: Cheol Park

Korea University, Republic of Korea

Using Interactive Multimedia Games to Introduce Knowledge of Sewage Treatment: A Case Study of Taichung Futian Water Reclamation Center

Tzu-Chuen Lu Chaoyang University of Technology

Yu-Ci Chen Chaoyang University of Technology

Cian-Hua Wang Chaoyang University of Technology

The Study of the Relationship between Perceived Justice and Behavioral Intentions of Consumers - From the Perspective of Psychological Contract Violation

Chih Wen-Hai National Dong Hwa University

Chiu Tao-Sheng National Dong Hwa University

Lan Li-Chi National Taipei University

Fang Wen-Chang National Taipei University

Establishment of Diagnostic Tool for Sustainability of Winery Tourism in Taiwan

Josefa, Ju-Yun Lin National Taipei University/Taiwan Shoufu University

Wen-Chang Fang National Taipei University

Match or Mismatch? The Influence of Brand-Celebrity Endorser Personality Congruity on Brand Evaluation: Fashion Brand as the Example

Chih-Huang Lin Feng Chia University

Panning Photograph Simulation using Blur Techniques

Chu-Hui Lee Chaoyang University of Technology

Hsi-Yung Chen Chaoyang University of Technology

The Role of Psychological Factors in Prejudice Formation under Crisis

Eun Mi Lee Changshin University

Jung Ok Jeon Pukyong National University

Jeong-hoan Seo Changwon National University

Agenda

Feb. 9, 2017 (Thursday)

Session E

08:30-10:10

Room: HATSUNE

Session Chair: Cheol Park

Korea University, Republic of Korea

Differences in Competency of Mobile Information and Quality of Life among Korea, China, and USA

Cheol Park

Korea University

Using Interactive Multimedia Games to Introduce Knowledge of Sewage Treatment: A Case Study of Taichung Futian Water Reclamation Center

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Abstract

We developed an interactive multimedia game about water reclamation by incorporating the Kinect dynamic photography and an adorable animation character, "Shuibao." The game engages players with the importance and principles of sewage treatment. To ensure the process of sewage treatment is comprehensible in all ages, we included a series of demonstrating videos showing the five stages of water reclaiming process with vivid animation and lively music in the game, to enhance the player's understanding of sewage treatment. The complicated sewage treatment process is simplified in the game, and the players can explore different stages of the sewage treatment process and learn new knowledge through the interactive activities. A lively animation character (Shuibao) was created to lead the player throughout the story in the game, helping the player to understand the importance of water resources, and eventually enhance the player's learning experiences. Furthermore, the player's motions in each section of the game were designed to accord with health, rehabilitation or sport purposes; therefore, not only exercise effects, but also fun and participation experiences are promoted through this interactive game. The analysis of experimental questionnaires showed that most of the players approved the game with high respect and praised the game's educational significance. The game was relatively difficult for junior students, but most senior students found it easy to play.

Keywords: Kinect, shuibao, water resources, water treatment process

The Study of the Relationship between Perceived Justice and Behavioral Intentions of Consumers - From the Perspective of Psychological Contract Violation

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Abstract

This study investigates the relationship between consumers' perceived justice and their behavioral intentions and explores the effects of psychological contract violation on this relationship. Study 1 conducts sampling through the field survey after restaurant dining of consumers. Data were collected from 400 respondents and analyzed by SEM. The results indicate that consumers who experience higher level of distribution justice and interaction justice are more likely to have repurchase intentions. To avoid the problem of internal validity, study 2 adopts experimental design to understand the relationship between perceived justice and psychological contract violation/repurchase intention through the manipulation of consumers' perceived justice. The results indicate that psychological contract violation of low distribution justice low interaction justice and low distribution justice high interaction justice is significantly higher than high distribution justice high interaction justice, respectively. However, repurchase intention of high distribution justice high interaction justice is significantly higher than low distribution justice low interaction justice and high distribution justice low interaction justice, respective.

Keywords: Distribution justice, procedure justice, interaction justice, psychological contract violation, repurchase intention

Establishment of Diagnostic Tool for Sustainability of Winery Tourism in Taiwan

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Abstract

Wine tourism has been a popular topic for years. However, studies concerned with wine tourism are from western countries mostly. Most related studies from Taiwan are about service qualities, customer satisfaction, and revisit intention on tourism management. Not many studies concentrated on wine tourism are explored in Taiwan. Due to the private brewing liberalization in 2002, the winery tourism is grown strongly and rapidly in Taiwan. Therefore, how a traditional winery takes its own competitive advantages and differentiation for sustainability is an important issue. To establish and apply an efficient diagnostic tool for sustainability on wine tourism is extremely necessary and beneficial for winery managers, and it would be discussed and discovered in this study.

Keywords: Wine tourism, sustainability, diagnostic tool

Match or Mismatch?
The Influence of Brand-Celebrity Endorser Personality Congruity on
Brand Evaluation:
Fashion Brand as the Example

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Abstract

This study examined the Match-up Hypothesis (Kahle & Homer, 1985) in celebrity endorsement from attractiveness and expertise to personality aspect and investigate the impact of brand personality and celebrity personality congruity on brand and endorsement evaluation. The real brand and celebrities were used as experiment stimuli and brand preference was examined. The experimental result indicated that personality congruity and incongruity were observed to have influence on evaluations toward the endorsement, while brand preference has direct impact on brand-related evaluations. Moreover, there was no interaction between brand preference and personality congruity. Marketing and managerial implications based on the findings and the following-up future research directions were discussed. The inherent limitations were as well outlined.

Keywords: Brand personality, celebrity endorsement, congruity, brand evaluation

Panning Photograph Simulation using Blur Techniques

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Abstract

In the current society, everybody carries a hand-held machine (camera, cell phone), which can be taken the pictures conveniently and powerfully. However, more photography effects are desired than ever. For example, the panning photograph is attractive artifice photography. In order to take such picture, we have to rely on high-standard camera and depend on superb technology in the past. These cameras are not affordable to the general people usually. In this paper, we will implement panning effect by image process for hand-held machine. The suitable filters are explored for the special effects. So that user could obtain the image which is similar to the picture taken by high-standard camera without the lots of work. Moreover, it can achieve the panning photography work much easier by this method.

Keywords: Motion blur, convolution, panning photography

The Role of Psychological Factors in Prejudice Formation under Crisis

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Abstract

The psychological mechanism caused by crisis event has influenced on consumer response. To do this, this study explored the formation process of prejudice and examined the mediated moderation effect of intentionality among psychological factors. We experimental research strategy and used structural equation model and equality constrained model techniques of testing proposed hypothesis.

The results indicate that perceived crisis had not a direct effect on prejudice whereas negative affect and stereotype have significantly effect on prejudice, which negative prejudice in crisis situation should is formed by full mediators (negative affect, stereotype).

Particularly, for high intentionality focused on internal causes, the effect of negative affect on prejudice is more likely to increase than stereotype. On the other hand, for low intentionality focused on external causes, the effect of stereotype on prejudice is more likely to increase than negative affect.

Keywords: Crisis, negative affect, stereotype, prejudice, prejudice reduction strategies

Differences in Competency of Mobile Information and Quality of Life among Korea, China, and USA

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Extended Abstract

Due to the spread of smart phones, mankind has been able to access and use a variety of mobile information anywhere, anytime. Mobile competency, the capability of accessing and using mobile information is affect the quality of the individual's life. In this study, 1,290 South Korean, Chinese, and American responded on mobile competency and quality of life. As a result, Korean had highest score in mobile information accessibility, but American in mobile information utilization. Korea showed lowest rating in improvement of quality of life due to mobile competency. The result shows that Korean do not properly utilized mobile information for higher quality of life although they use longest time of mobile internet. Also, consumer innovativeness had the greatest influence on the utilization of mobile information among individual variables.

Keywords: Mobile Information, quality of life, information accessibility, information utilization, SNS, smartphone, mobile internet, Korea, USA, China

Agenda

Feb. 9, 2017 (Thursday)

Session F

10:30-12:10

Room: HATSUNE

Session Chair: ChunHung Lee

National Dong Hwa University, Taiwan

Valuing the Public's Preferences toward the Land Use Planning Associate with the Ecosystem Services in the Forest Park, Taiwan

ChunHung Lee

National Dong Hwa University

Innovation in IT Services: New Framework to Improve the Effectiveness and Efficiency of ITSM Processes, Projects and Decision Support Management

Pablo Cardozo Herrera

FFMM Innovation

Using HFMEA to Reduce the Specimen Rejection Rate in a Hospital: A Case Study

Li-Fei Chen

Fu Jen Catholic University

Chao-Ton Su

National Tsing Hua University

Hsuan-Hao Lin

Fu Jen Catholic University

Chih-Chun Tai

Taipei Medical University-Shuang Ho Hospital

Data Hiding Method based on Center Folding Strategy and Pixel-based Pixel Value Ordering on Dual Image

Tzu-Chuen Lu

Chaoyang University of Technology

Yu-Ching Lu

Chaoyang University of Technology

A Steganographic Image Method Based on Least-significant-bit Substitution and Pixel Value Differencing

Chin-Feng Lee

Chaoyang University of Technology

An-Tong Shih

Chaoyang University of Technology

Swirly Bokeh Photograph Simulation Using Blur Techniques

Chu-Hui Lee

Chaoyang University of Technology

Ya-Rong Lin

Chaoyang University of Technology

Agenda

Feb. 9, 2017 (Thursday)

Session F

10:30-12:10

Room: HATSUNE

Session Chair: ChunHung Lee

National Dong Hwa University, Taiwan

Leveraging Online Review Data in Quality Function Deployment for Enhancing Mobile Application Service Quality

Minkyu Kim Seoul National University

Yeongseon Park Seoul National University

Yongtae Park Seoul National University

Valuing the Public's Preferences toward the Land Use Planning Associate with the Ecosystem Services in the Forest Park, Taiwan

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Abstract

This paper aims to build up a preference function to evaluate the public benefits for the type of agricultural farming, biodiversity, water provision, land use type, ecotourism mode, and a monetary attribute (environmental trust fund) associated with ecosystem service and land use program in a forest park. This study used the choice experiments to build random utility model, analyze the average preference for above land use attributes based on the conditional logit, and use latent class model to test the issue of heterogeneous preferences for the land use planning in forest park, and estimate the welfare from varies land use programs. The empirical result shows that: (1) the increase of organic farming area, species biodiversity maintaining the status quo, increase the surface water provision, increase the area of custom flora, increase the wetland area, set a integrated framework for the ecotourism, will increase the public's preference for the land use program; (2) we also found that respondents have heterogeneous preferences for alternative land use program features; (3) natural conservation program within biodiversity, water provision, and land use type was the most preferred scenarios than other land use program scenarios.

Keywords: Land use preference, ecosystem service, natural conservation

Innovation in IT Services: New Framework to Improve the Effectiveness and Efficiency of ITSM Processes, Projects and Decision Support Management

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Abstract

In a dynamic market of IT Services¹ and with high quality demands and high performance requirements in decreasing costs, it is imperative that IT companies invest organizational effort in order to increase the effectiveness of their ITSM² processes through the improvement of ITSM project management and through a solid support to the strategic decision-making process of IT directors. In this article, the author presents an analysis of common issues of IT companies around world, with strategic needs of information unmet that provoke their ITSM processes and projects management do not achieve the effectiveness and efficiency expected of theirs results. In response to the issues raised, the author proposes a new framework consisting of an innovative theoretical framework model of ITSM management and a technological solution aligned to the ITIL³ good practices guidance and ISO/IEC 20000-1⁴ requirements. The article describes a research that proves the proposed framework is able to integrate, manage and coordinate in a holistic way, measurable and auditable all ITSM process and projects of IT organization and utilize the effectiveness assessment achieved for their strategic decision-making process increasing the process maturity level and improving the capacity of an efficient management.

Keywords: Innovation in IT Services, ITSM processes, ITIL and ISO/IEC 20000-1, IT service management, IT service excellence

¹ IT Services: Information Technology Services

² ITSM: Information Technology Service Management

³ ITIL, formerly an acronym for Information Technology Infrastructure Library, is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business.

⁴ ISO/IEC 20000-1:2011 is a service management system (SMS) standard. It specifies requirements for the service provider to plan, establish, implement, operate, monitor, review, maintain and improve an SMS. The requirements include the design, transition, delivery and improvement of services to fulfil agreed service requirements.

Using HFMEA to Reduce the Specimen Rejection Rate in a Hospital: A Case Study

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Abstract

Healthcare failure mode and effect analysis (HFMEA) is a systematic and proactive risk assessment approach that has been widely adopted to evaluate the high risk and vulnerability in the medical process. This study aims to use HFMEA to identify all potential failure modes in the specimen delivery process in the case hospital laboratory and to subsequently reduce the specimen rejection rate. Using HFMEA, over 50 potential failure modes were identified from the emergency, inpatient, and outpatient departments of the case hospital. Some action plans were suggested by investigating the top failure modes. The specimen rejection rate significantly decreased from 2.5% to 1.1% after the implementation of HFMEA.

Keywords: Healthcare failure mode and effect analysis (HFMEA), specimen rejection rate, risk analysis

Data Hiding Method based on Center Folding Strategy and Pixel-based Pixel Value Ordering on Dual Image

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Abstract

Dual image techniques have been widely used for reversible data hiding in recent years. The center folding strategy proposed by Lu et al. generates two stego-images that are very similar to the original image. We observed that the stego-image generated by Lu et al.'s method is suitable for the second embedding phase.

In the second embedding phase, in order to achieve minimum distortion, the pixel-based pixel value ordering (PPVO) method is used for embedding. According to the PPVO method, the largest modification is 1. Thus, good capacity and image quality can be obtained with the secret data embedded in two stego-images through an averaging method. In spite of the secret data break-up, a security problem still exists. To solve this problem, the secret data must be encrypted first by an exclusive-or operation and then embedded. As a result, one of the stego-images obtained by an attacker cannot be extracted as overall secret data for reducing the stolen rate. The experimental results show that the stego-image with the second embedding phase causes the PSNR to only reduce by 1 db. Our method improves the capacity of complex images in the second phase as compared with the method proposed by Qu et al.

Keywords: Data hiding, dual image, pixel value ordering, center folding strategy

A Steganographic Image Method Based on Least-significant-bit Substitution and Pixel Value Differencing

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Abstract

This study presents a steganographic method using least-significant-bit (LSB) substitution and pixel value differencing (PVD). Inspired by the method of Khodaei and Faez, our method also partitions a cover image into non-overlapping blocks each of which contains three consecutive pixels. The central pixel of a block is a pivot which can carry k bits of secret data in the first embedding stage by using LSB substitution. Then, the pivot with both boundary pixels of the same block can be derived into two virtual transforms. The secret data can be concealed within a virtual pixel alone with one end pixel by applying PVD method. The difference between the virtual pixel value and one end pixel value in the block determines how many secret bits can be concealed. The experimental results show that the proposed method can embed a large amount of secret data while maintaining an acceptable visual quality of the stego-images. The analysis and comparisons among PVD-based methods are discussed.

Keywords: Pixel Value Differencing (PVD), least-significant-bit (LSB) substitution, digital image steganography

Swirly Bokeh Photograph Simulation Using Blur Techniques

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Abstract

In recent years the popularity of smartphones, many of the things that happen in life are accustomed to record on the smartphone, such as taking pictures or videos. The camera has a lot of professional function and upgrade frequently at this time. However many special effects still need skill to take a shoot. For non-professionals, purchasing advanced equipment and long-term learning time are needed. We hope everyone can use a lightweight mobile phone to take a picture with special effects easily by using image processing. In this paper, we will study the corresponding blur functions for bokeh photograph and radial rotation. With this effect, the main object appears with speed and stereoscopy. The suitable blur function will be explored in this paper.

Keywords: Blurry image, blurry function, swirly bokeh

Leveraging Online Review Data in Quality Function Deployment for Enhancing Mobile Application Service Quality

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Abstract

With the explosive emergence in mobile application service, users frequently share feedbacks for downloaded apps. These feedbacks contain plentiful opinions on the mobile application service and produce significant information to assess and enhance service qualities. This study proposes an approach to diagnosing current quality of mobile application service and exploring needs and service features that require improvements from the analysis of online review data. Specifically, we firstly apply text mining and sentiment analysis to unstructured review data and extract available information of user needs, service attributes, and their interrelationships and emotional preferences. Then, those information is leveraged as the inputs for developing quality function deployment that prioritizes needs and service attributes in terms of relationship scores and sentiment scores. The proposed matrix can offer the implication for finding the users' practical demands and associated service features, their importance, their satisfaction level, and their likes and dislikes, which help identify the opportunities to improve mobile application quality.

Keywords: Mobile application, service quality, quality function deployment, online review data, sentiment analysis

Agenda

Feb. 9, 2017 (Thursday)

Session G

13:30-15:10

Room: HATSUNE

Session Chair: Ya-Fen Chang

National Taichung University of Science and Technology, Taiwan

An Image Authentication Scheme with Tamper Detection and Self-recovery

Wei-Liang Tai Chinese Culture University

Zi-Jun Liao Chinese Culture University

Comments on a Secure Anonymous Authentication Scheme for Wireless Communications Using Smart Cards

Ya-Fen Chang National Taichung University of Science and Technology

Chih-Hsuan Peng National Taichung University of Science and Technology

Wei-Liang Tai Chinese Culture University

A Critique of An Anonymity-preserving Three-factor Authenticated Key Exchange Protocol for Wireless Sensor Networks

Ya-Fen Chang National Taichung University of Science and Technology

Ren-Kai Huang National Taichung University of Science and Technology

Wei-Liang Tai Chinese Culture University

The Application of Big Data Analysis - Euthanasia of Stray Animals Shelters in Taiwan as the Example

Shu-Ching Wang Chaoyang University of Technology

Kuo-Qin Yan Chaoyang University of Technology

Yi-Syuan Ciou Chaoyang University of Technology

Shun-Sheng Wang Chaoyang University of Technology

The Application of Analytic Hierarchy Process - To Inherit the Business Intelligence of a Traditional Industry

Kuo-Qin Yan Chaoyang University of Technology

Shu-Ching Wang Chaoyang University of Technology

Shun-Sheng Wang Chaoyang University of Technology

Yan-Zhen Li Chaoyang University of Technology

Agenda

Feb. 9, 2017 (Thursday)

Session G

13:30-15:10

Room: HATSUNE

Session Chair: Ya-Fen Chang

National Taichung University of Science and Technology, Taiwan

Disaster Resilience Improvement by using Never Die Mobile Ad-hoc Network

Shun-Sheng Wang Chaoyang University of Technology

Shu-Ching Wang Chaoyang University of Technology

Kuo-Qin Yan Chaoyang University of Technology

Yu-Jun Wang Chaoyang University of Technology

A Secure Authentication Scheme for Sharing Economy Using One-time Password

Sue-Chen Hsueh Chaoyang University of Technology

Cheng-Tien Wu Chaoyang University of Technology

An Image Authentication Scheme with Tamper Detection and Self-recovery

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Abstract

In this paper, an effective block-based fragile watermarking method for image tamper detection and self-recovery is proposed. The proposed scheme embeds watermarks consisting of the authentication data and the recovery data into image blocks. To tamper detection and self-recovery, we use chaotic map to generate the embedding sequence and intensity-relation check to thwart various malicious attacks. In the tamper detection process, a hierarchical tamper detection strategy is adopted to achieve high tamper detection accuracy. To reduce the smoothing blocking effect of recovered images, we use the wavelet transform rather than the average as recovery data to enhance the image contrast. Experimental results show that the proposed scheme can effectively resist collage attack, vector quantization (VQ) attack and constant-average attack, while sustaining superior accuracy of tamper localization.

Keywords: Fragile watermarking, wavelet, tamper detection, self-recovery

Comments on a Secure Anonymous Authentication Scheme for Wireless Communications Using Smart Cards

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Abstract

Wireless communication applications are common and popular while the security becomes an urgent and tough issue. In 2015, Lu et al. found that Kuo et al.'s mobility network authentication scheme suffers from some flaws and proposed an improvement to ensure security, anonymity, and user-friendly for wireless communications. After analyzing Lu et al.'s scheme, we find that it is vulnerable to three weaknesses. First, it cannot resist replay attack. Second, it cannot ensure user anonymity as claimed. Third, a mobile user may not be authenticated by the home agent because of the lack of one random number chosen in registration phase. In this paper, we will explicitly indicate how three weaknesses damage Lu et al.'s authentication scheme for wireless communications.

Keywords: Authentication, wireless communication, replay attack, anonymity

A Critique of an Anonymity-preserving Three-factor Authenticated Key Exchange Protocol for Wireless Sensor Networks

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Abstract

Recently, Amin et al. proposed three-factor authenticated key exchange protocol for wireless sensor networks. They claimed that their protocol could ensure user anonymity, provide identity and password update, and enable smartcard revocation. After analyzing their protocol, we find that it suffers from two security flaws. First, user anonymity cannot be ensured. Second, it suffers from desynchronization attack. In this paper, we will show how these two security flaws threaten Amin et al.'s protocol.

Keywords: Wireless sensor networks, user anonymity, key exchange, authentication

The Application of Big Data Analysis - Euthanasia of Stray Animals Shelters in Taiwan as the Example

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Abstract

Big Data are generated from a variety of sources having different representation forms and formats, it raises a search question as how important data relevant to a business context can be captured and analyzed more accurately to represent deep and relevant business insight. According to the zero euthanasia policy of stray animals in Taiwan in February 2017, no stray animals will be accepted for euthanasia after 12 days of announcement. Therefore, it is worth considering how many shelters with limited space can be safely enforced. In this study, the big data analysis will be used, and the risk indicators for stray animals will be defined. In the study, assuming that future zero euthanasia policies would be successful; hence, the deaths risk indicator within the shelter would be developed. According to the risk of no adoption and no risk of death within the county, the receiving reliability index is defined. Finally, the status of shelters in Taiwan is investigated to ascertain whether there is a need to improve the conditional gap in the future implementation of zero euthanasia.

Keywords: Big data, environment, stray animals, public health, euthanasia

The Application of Analytic Hierarchy Process - To Inherit the Business Intelligence of a Traditional Industry

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Abstract

Due to the operating variables severe increasingly, the complex environment is difficult to predict by traditional industries. The problems of experienced staff of traditional industries have emerged by employees aging and a shortage of talent. Because of advances in information technology, the traditional industries will be changed. In this study, the case of traditional industry sector, a venture company has more than a decade, has four major problems: the old master dying, the old tool cannot pass on, youth are unwilling to invest and knowledge management. With the development of science and technology, the concept of customer oriented service and the thinking of globalize economy had affected different industries rapidly. In this study, the Analytic Hierarchy Process (AHP) is used to help the case traditional industry to inherit the business intelligent of the enterprises, in order to enhance the competitiveness of company.

Keywords: Business intelligent, analytic hierarchy process, case-based reasoning, service level agreement

Disaster Resilience Improvement by using Never Die Mobile Ad-hoc Network

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Abstract

When an ultra large disaster occurs, communication networks would be severely disconnected by the damages of network nodes. In the early stage of a disaster, disaster information such as life safety and evacuation shelters becomes extremely important for the people. For the sake of such situations, Never Die Network (NDN) is one of the resilient network approaches. The Mobile Ad Hoc Network (MANET) has attracted significant attentions recently due to its features of infrastructure less, quick deployment and automatic adaptation to changes in topology. In the real world, the military takes advantage of highly mobility of MANET to communicate, emergency disaster rescue operation, and law enforcement. In this study, an Adaptive Routing Protocol (ARP) for MANET-based NDN is proposed to improve the disaster resilience. In ARP, the features of proactive (table driven) routing protocol and reactive (on-demand driven) routing protocol of MANET is combined to achieve a NDN environment.

Keywords: Never die network, mobile ad hoc network, routing protocol, disaster resilience

A Secure Authentication Scheme for Sharing Economy Using One-time Password

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Abstract

The booming development of the mobile technology accelerates the use of mobile devices. The proliferation of mobile payments promotes the rise of sharing economy, which activates idle resources. Consumers are showing a robust appetite for the sharing economy. A number of sharing platforms have emerged which enable individuals to share goods and services like cars, houses, household products and services. Uber and Airbnb are the well-known platforms in the sharing economy. However, the resource providers and the consumers do not know each other at first. Mutual authentication of both the identity and the credit is unavailable. Although the platform is associated with the ease approach of identification and payment mechanisms, there are not enough to provide the security protection for all the users. The transaction process in using the sharing-economy services involves a significant amount of user-sensitive information being transmitted across the network. In this paper, we will propose a secure transaction protocol for the sharing economy model.

The protocol will apply the one-time password to achieve the authentication and verification requirements, that malicious users couldn't forge and impersonate the authentic identity of the users in our protocols. The user must provide registered information for two-factor authentication. Using the encryption mechanism in the transmission of confidential information to prevent from the interception by attackers and to avoid double spending attacks against to payment. Our protocol uses the one-time password for mutual authentication to improve the static password security problems, but also avoid the shortcomings of high cost in smart card and biometric identification.

Keywords: One-time password, sharing economy, information security, authentication

Agenda

Feb. 9, 2017 (Thursday)

Session H

15:30-17:10

Room: HATSUNE

Session Chair: Shu-Fei Sophy Wu

Tamkang University, Taiwan

The Study on the Process Capability Index Generalized C_{pw}

shu-fei sophy wu

Tamkang University

A Practical Case of Building Low-cost NAS Cloud Storage Server For SMEs

YU-LUNG LO

Chaoyang University of Technology

Bin-Fong Hong

Chaoyang University of Technology

Textbook Evaluation Method and System – The Example of Information Management

Textbooks

Gen Ming Guo

Southern Taiwan University of Science and Technology

An Examination of the Effects of Thai Government's strategy on SMEs' Decision to Adopt Information and Communication Technology in Thailand

Jirapon Sunkpho

Thammasat University

Tawicha Trakulyingyong

Thammasat University

A New Mobile Payment Scheme with Anonymity Based on the Trusted Service

Manager

Jen-Ho Yang

Kainan University

Pei-Yu Lin

Yuan Ze University

Chi-Shiang Chan

Asia University

The Optimal Order Quantity Allocation for Supplier Selection in a Multi-Stage Inventory Model

S. C. Chang

Chung Yuan Christian University

C. T. Chang

Chang Gung University

Expansion of RT-Mart in China - Effects of Corporate Social Benefits

WU XIAOLONG

National Chengchi University

The Study on the Process Capability Index Generalized C_{pw}

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Abstract

The process capability index generalized C_{pw} is defined by Spiring [1]. In this paper, we used the three Efron and Tibshirani's [2] bootstrap interval estimate techniques to construct the confidence intervals for the generalized C_{pw} and compare the performance of coverage probability for these three bootstrap intervals by simulation study. The simulation results show that the third Efron and Tibshirani's method (BCPB method) always has the highest coverage probability than the other two methods. Therefore this method is recommended for use.

Keywords: Process capability index, bootstrap method

A Practical Case of Building Low-cost NAS Cloud Storage Server for SMEs

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Abstract

Digitizing of enterprise information and storing in computer becomes more and more important today. High percentages of enterprises are small and medium in Taiwan. Most of them cannot afford the cost of large-scale servers, and are not intent to invest in such costs. Therefore, many small and medium enterprises (SMEs) using personal computers act as data servers. However, the significant enterprise data stored in these PC servers is often disregarded the importance of security and backup. That is, complete data preservation is not established yet in most of the SMEs. The business will encounter obstacles when data lost or storage damaged is happened. They have to spend a lot of time and costs for data recovery. In addition, it may cause the schedule delays and hurt the business goodwill. Accordingly, how to achieve a certain level of data backup and improve safety in the lower cost is an important issue for SMEs. In this paper, we will present a practical case in which we used low cost Network Attached Storage (NAS) and Redundant Array of Independent Disks (RAID) to help the small enterprise to build a private cloud storage server. It enhances the enterprise data more security, higher availability (HA), and the convenient sharing.

Keywords: private cloud storage server, NAS, RAID, HA, SME

Textbook Evaluation Method and System – The Example of Information Management Textbooks

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Abstract

In this study, we design an evaluation method and system for textbook. The proposed approach mainly the references of master's and doctor's theses and the periodical papers which cite textbooks. Moreover, some of the references are cited among the textbooks themselves. The designed citing index and citing report may help scholars understand the quality level of a textbook and how often it is cited. The textbook circulation records in the library and a questionnaire for professors are also used to propose the composite index of the textbook assessment. This could help scholars to clearly understand the quality of different textbooks. These methods also could offer more comparative analysis and verify result between them. Moreover, it can allow us to design more accurate methods for evaluating and ranking information systems. The proposed method and system can also provide introduction tools and computerized auxiliary measures for teachers, students, and library staffs when screening and buying textbooks.

Keywords: Textbook, assessment, bibliometrics

An Examination of the Effects of Thai Government's strategy on SMEs' Decision to Adopt Information and Communication Technology in Thailand

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Abstract

As Small and Medium Enterprises (SMEs) continue to play a bigger role in Thailand's economic growth. Increasing SMEs productivity and competitiveness with the use of Information and Communication Technology (ICT) has become an important strategy of Thai government. Department of Industrial Promotion (DIP) has launched such program with objective to boost ICT adoptions of SMEs by providing necessary ICT solutions – Enterprise Resources Planning (ERP) and Business Intelligence (BI), consulting and training services, and subsidy of initial investment. This paper aims to investigate the effect of these strategies on SMEs' decisions to adopt ICT and examine what influence those decisions. The study uses a mixed method with questionnaire to understand business nature of SMEs participated in the program and semi-structure interview to gain insights of factors that affect their decisions. A number of external and internal factors are listed from literature review and are discussed with decision-maker of SMEs. The results show that almost every SMEs are willing to adopt ICT after participating the program with expected benefits of improved productivity and cost reduction. The analysis also reveals that factor that positively affects SMEs' decision is consulting and training. This paper argues that training and consulting actually increase SMEs' confidence that ICT benefits will be realized which lead to the decision to adopt ICT. Providing ICT solutions that are simple and cost effective is another important influence. Findings of this paper can be used as a guideline to refine ICT strategies. In addition, future research can examine the relationship between SMEs' confidence in ICT benefits realization and ICT adoption decision.

Keywords: Information and communication technology, small and medium enterprises, ICT adoption

A New Mobile Payment Scheme with Anonymity Based on the Trusted Service Manager

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Abstract

In recent years, traditional commercial transactions have been replaced by mobile transactions. To increase the security of the mobile transactions, many mobile payment (m-payment) schemes have been proposed. However, we find that the previously proposed schemes have heavy computation and communication costs. In addition, the related schemes have a large number of keys to be maintained and managed by the user. This causes the key management problem and increases the transaction loads for mobile devices. To solve the above-mentioned problems, we propose a new m-payment scheme with anonymity based in the trusted service manager in this paper. The proposed scheme greatly reduces the computation and communication costs. Besides, it also solves the key management problems to reduce the transaction loads for the mobile devices. Compared with the related works, the proposed scheme is securer and more efficient for mobile commerce.

Keywords: Mobile payment, trusted service manager, anonymity, mobile commerce

The Optimal Order Quantity Allocation for Supplier Selection in a Multi-Stage Inventory Model

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Abstract

This paper proposes a multi-stage inventory model that allows different order quantities among the selected suppliers to obtain the optimal solutions. This paper aims at minimizing the total set up costs, holding costs, and purchasing costs, subject to the price, quality, and capacity. This model not only considers the allocation of different order quantities among the selected suppliers but also incorporates the multi-stage inventory problem. Furthermore, a numerical example is used to illustrate the usefulness of the proposed model. The results show that the improved model are more stable than the previous works.

Keywords: Multi-stage inventory model, supplier selection, order quantity allocation, supply chain management

Expansion of RT-Mart in China - Effects of Corporate Social Benefits

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Abstract

In 1998, RT-MART opened its first store in Shanghai. After more than a decade of development, it has become the largest foreign-capital logistics and wholesale corporation in China. The management at Ruentex Group, in accordance with the corporate philosophy of “nurturing society and benefitting the people,” places considerable emphasis on corporate social capital and is dedicated to promoting social enterprises. This is exemplified by the group’s ongoing donations to higher education in China, as well as its generous donations toward disaster relief after the 2008 Wenchuan Earthquake. Ruentex Group has seized various opportunities to establish a wide range of relations and social foundations.

From the perspective of social capital, the development of RT-MART in China can be divided into three phases:

1. In 1997, RT-MART initiated investment in China, opening two stores in Shanghai. However, the market was eventually divided among various international retail corporations including Walmart and Carrefour. Facing such competitive circumstances, RT-MART forged strong relations with political and business figures in China by investing in the education system. Since 2000, RT-MART has been opening smaller stores in second- and third-tier cities.
2. In December 2004, forging an agreement with the WTO, China completely opened up to foreign-capital investment in retailing. At this point, RT-MART entered large-scale expansion. The corporation attempted to identify nonmarket factors in the free market, fully utilizing its relations with Chinese political, economic, and social systems and its embeddedness in the culture, overcoming developer land monopolies and securing optimal locations for its stores.
3. After the 2008 Wenchuan Earthquake, RT-MART dedicated itself to social services and gained a heightened social identity and wide exposure for the corporate brand. As its social capital grew exponentially, its collaboration with the government and developers became even more successful, facilitating a new phase of expansion.

Keywords: Corporate social capital, startup, relation, retail expansion, corporate social service

Agenda

Feb. 10, 2017 (Friday)

Session I

08:30-10:10

Room: HATSUNE

Session Chair: CK Farn

National Central University, Taiwan

The Effect of Technology Innovation on Otaku's Social Identity

TZU YA HO	National Sun Yat-sen University
Pao-Hui Lin	National Sun Yat-sen University
Ching-Feng Feng	National Sun Yat-sen University
Hsien-Tang Tsai	National Sun Yat-sen University

Design of Transmission and Scheduling Mechanisms with Fairness and Throughput Improvement for D2D Relaying in LTE Networks

Jeng-Yueng Chen	Hsiuping University of Science and Technology
Yi-Ting Mai	National Taiwan University of Sport
Chun-Chuan Yang	National Chi Nan University
Fongray Frank Young	Feng Chia University

Research Collaboration Patterns in Taiwan

Kai-Lin Chi	STPI,NARL
Ming-Kwen Tsai	Tungnan University

Green Computing Awareness and Practices at Gulf College Oman

Irene C. Taguinod	Gulf College Oman
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Using Internet of Things (IoT) Technique to Improve the Management of Medical Equipment

Nai-Chuan Fang	Taichung Veterans General Hospital
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Identifying Core Technologies in Social Commerce Business Models from a Knowledge Flow Perspective

Yoonjung An	Seoul National University
Minho Seo	Seoul National University
Yongtae Park	Seoul National University

Agenda

Feb. 10, 2017 (Friday)

Session I

08:30-10:10

Room: HATSUNE

Session Chair: CK Farn

National Central University, Taiwan

Benefit Analysis of Enterprise Server Virtualization and Cloud Computing

Hsiu-Li Liao

Chung Yuan Christian University

Su-Houn Liu

Chung Yuan Christian University

Jiun-Jie Chiou

Chung Yuan Christian University

Ai-Ling Chen

Chung Yuan Christian University

The Effect of Technology Innovation on Otaku's Social Identity

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Abstract

Fans economy for subculture groups has become a major part in such an era of rapidly changing of technology internet. Subculture is generated by social change, which can reflect the current social structure and cultural content. Owing to Otaku have their own concepts and ideas, often been labeled special tag by general public. Fortunately, technology innovation can reverse this phenomenon. Therefore, the aim of this article is to explore the effect of technology innovation on Otaku's social identity.

The proposed model of subculture group comprises three constructs that are subculture social system, social identity, and technology innovation. Subculture social system has two sub-dimensions such as social norms and social support. Ten participants were interviewed to obtain a better understanding of the above model, and 207 effective questionnaires collected from general public are analyzed by using regression and analysis of covariance.

The finding of this study are summarized below: (1) Both social norms and social support present significantly positive effects on technology innovation, (2) Both social norms and social support present significantly positive effects on social identity, (3) Technology innovation presents significantly mediating effect between subculture social system and social identity.

Keywords: Technology innovation, subculture, subculture social system, Otaku

Design of Transmission and Scheduling Mechanisms with Fairness and Throughput Improvement for D2D Relaying in LTE Networks

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Abstract

The numbers of subscribed users increased quickly after the Long Term Evolution (LTE) service started which is developed by 3rd Generation Partnership Project (3GPP) as a next-generation mobile communications standard. If user equipment (UE) suffering badly signal quality with eNB can transmit its data to another UE which has better signal quality with eNB via Device-to-Device communications (D2D), then the relay UE further transmits the received data to eNB. Thus, the overall transmission efficiency can be improved. However, not all UEs are suitable to activate D2D transmission. Moreover, D2D pair selection mechanism will also affect the overall performance. This paper proposes an appropriate evaluation mechanism for D2D pair decision. In addition, the D2D relaying approach not only affect the scheduling mechanism due to transmission signal quality changed but also affect the traffic scheduling inside relay UE. Thus, this paper also designs a suitable scheduling mechanism for D2D relaying environment and fits the fairness requirement. Simulation results show that the proposed mechanisms not only reduce the transmission delay but also improve the throughput compared to conventional mechanism.

Keywords: LTE, D2D communications, scheduling, fairness

Research Collaboration Patterns in Taiwan

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Abstract

This study focuses on the problem whether and to what the extent the growth of international collaborations in science happens in Taiwan. This study examines the pattern of international collaboration across countries in research activities by statistics based on the address details provided for scientific publications. The study is limited to items published between 2006 and 2015 where at least one of the authors is affiliated with an institution in Taiwan. During the studied period, the proportion of articles resulting from international collaboration has increased. The international collaboration patterns in Taiwan in intelligent manufacturing, renewal energy, and biotech & medicine were further analyzed.

Keywords: Research collaboration, collaboration patterns, bibliometrics

Green Computing Awareness and Practices at Gulf College Oman

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Abstract

Green computing it is the practice of using computing resources efficiently. The study was conducted at Gulf College Muscat Oman to measure the level of awareness and practices of the respondents about Green Computing especially with regards to: knowledge and concepts; issues and problems about the environment; skills or practices to solve environmental problems; attitudes or values towards the environment; and participation in activities promoting Green Computing awareness. Descriptive method was used to elicit the data needed from the study. Based on the findings the respondents are very much aware about Climate Change and Zero Waste Management but it was recommended that the college must have a concrete implementation plan, training and seminars to improve their skills and practices about Green Computing. It will also help to improve their participation and change their attitudes towards Green Computing. Those changes will help the organization to save money and help to conserve the environment as well.

Keywords: Green computing, e-waste, server utilization, climate change, green ICT standards

Using Internet of Things (IoT) Technique to Improve the Management of Medical Equipment

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Abstract

As we've continued to explore Internet of Things (IoT) in its various applications, there has been no shortage of innovation. From medical quality to patient safety applications use in the healthcare industry, IoT has shown its worth across the board. Just as it's helped organizations in healthcare industry thrive, the power of IoT could also mean big things for the management of medical equipment. That is to say, connected equipment's sensors could pave the way for a fundamental change in the depth and quality of service medical equipment is able to provide.

In our study, we constructed the life cycle of gastroendoscope, is used to look inside the oesophagus (gullet), stomach and first part of the small intestine (duodenum). From the procurement of equipment, the use of management to investment efficiency tracking can be applied through IoT to improve the efficiency of management. For example, we can use IoT unique identification function to carry out the inventory management, retirement and other operations. In addition, it can also be used in the management of the medical equipment to track the location, use of records, cleaning records and maintenance management. Finally, we can extract the above information to analyze the investment to evaluate the efficiency of the medical equipment.

In summary, we use IoT technique in the different stages of the medical equipment life cycle, because it can provide a more accurate management model, so that users can more efficiently manage the use of equipment to improve it's investment efficiency. The internet of things will improve the management of medical equipment that can go a long way in not only increasing equipment efficiency, but medical quality as well.

Keywords: Internet of Things (IoT), medical equipment, gastroendoscope, investment efficiency

Identifying Core Technologies in Social Commerce Business Models from a Knowledge Flow Perspective

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Abstract

The growth of social networking has opened opportunities for the emergence of a more social and interactive form of e-commerce, called social commerce, which combines e-commerce and social activities. Social commerce can create additional values for both customers and sellers as sellers can convert customers into brand advocates and at the same time buyers can make better informed purchasing decisions through social features. Since social-commerce is based on a technology-enabled environment, technological capabilities and advancements are an important factor in the growth of business models of social commerce. Therefore, this paper aims to propose an exploratory framework for identifying core technologies in social commerce business models from a knowledge flow perspective. These core technologies facilitate knowledge interactions among technologies, which can lead to faster development of new business models of social commerce and more synthesized and streamlined design of business models. We use business method patents, which underpin technological aspect of e-commerce business models, for our data as they encapsulate valuable technological knowledge and flow of knowledge can be traced using patent citation as a proxy. Each technology is evaluated using multiple indexes based on citation information. The core technologies are then identified and their roles are classified based on the measures.

Keywords: Social commerce, business model, business method patent, knowledge flow, patent citation analysis

Benefit Analysis of Enterprise Server Virtualization and Cloud Computing

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Abstract

When an enterprise is faced with the IT system requirements of its branches in different countries, it must perform adjustments to its global information system architecture, perform rapid deployment when establishing information systems, and determine whether server virtualization fits its requirements for rapid system deployment. This study focuses mainly on analyzing the cost and effectiveness of enterprise server virtualization and getting into cloud computing. This study plans and builds the server environment used in Company A's RD operation compiler, and based on the required virtual server host machine, designs an infrastructure for virtual servers using field experiment. It can be verified that using a virtual machine to build the RD compiler server increases the operational efficiency. Using virtual machines to build a company's server infrastructure can reduce operational cost, save energy, and increase the IT investment benefits. Using virtual machines greatly reduces the system backup and restore time, and this is very important for a system that operates around the clock.

Keywords: Server virtualization, cloud computing, benefit analysis, maintenance costs

Agenda

Feb. 10, 2017 (Friday)

Session J

10:30-12:10

Room: HATSUNE

Session Chair: Gwowen Shieh

National Chiao Tung University, Taiwan

Generating Store Loyalty through Program Loyalty: Involvement and Switching Cost as the Moderators

Yen-Chuch Chang Tunghai University

Li-Wei Wu Tunghai University

The Helpfulness of Online Reviews: Images in Review Content and Reviewer Avatar Facial Expression

Ming-Yi Chen National Chung Hsing University

Kuo-Wei Chiou National Chung Hsing University

What Drives Purchase Intention for Paid Stickers: Perceived Value and Social Tie Perspectives

Chuan-Chuan Lin Soochow University

Chu-Yun Cheng Soochow University

Chin Lung Hsu National Taipei University of Business

Yi-Feng Miao Industry analyst in Topology Research Institute

On Taiwan Marathon Road Racing and Big Data Marketing Strategies

SuMei Lin China University of Technology

Li-Yang Hsieh China University of Technology

Shih Hsiung Cheng China University of Technology

Optimal Sample Sizes for the Welch Test of Mean Equivalence under Cost Consideration

Gwowen Shieh National Chiao Tung University

Show-Li Jan Chung Yuan Christian University

The Innovative Strategies for Religious Non-Profit Organization: Taking the Local Church in New Taipei City as Analysis

Chun-Ming Fan National Chengchi University

Generating Store Loyalty through Program Loyalty: Involvement and Switching Cost as the Moderators

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Abstract

Recently, convenience stores have rapidly expanded, and competition has intensified. Marketing tactics are particularly important. Both convenience and wholesale stores often have loyalty programs to attract customers. However, retailers are uncertain whether reward redemption from a loyalty program is attractive to customers. This activity can encourage customers to become loyal to the program. Ultimately, stores can also generate loyalty. This study will explore the relationship between multivendor loyalty programs, program loyalty, and store loyalty. Moreover, this study investigates the involvement and switching cost for store loyalty as moderating variables.

Therefore, the analysis in this study is performed through quantitative research. A total of 233 participants has registered in the loyalty program of 7-11. This study obtained 233 complete responses, which served as the basis of the empirical analysis. Results show that the cash value, redemption choices, aspirational value, and a variety of options have positive effects on program loyalty. Program loyalty has a positive effect on store loyalty. Otherwise, involvement moderates the relationship between program loyalty and store loyalty.

Keywords: Multivendor loyalty programs, program loyalty, store loyalty, involvement, switching cost

The Helpfulness of Online Reviews: Images in Review Content and Reviewer Avatar Facial Expression

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Abstract

Online reviews are increasingly available for a wide range of products and services. Researchers have demonstrated the benefits of the presence of customer reviews to an online retailer, but an uninvestigated issue is what makes online reviews helpful to a consumer in the process of making a purchase decision. Given the strategic potential of online reviews, this study draws on past research to develop a conceptual understanding of the components of helpfulness and to further empirically test the model using experimental design. The results indicate that when consumers exposed to happy-looking avatar, they are likely to express more helpfulness of an online review in response to food with a group of people than for food with single person. In contrast, when consumers exposed to angry-looking avatar, their responses toward online review helpfulness did not differ between food with a group of people condition and food with single person condition. Furthermore, causal attribution toward store performance mediates the interaction between images in review content and the facial expression on the reviewer's avatar on the helpfulness of online review. With an understanding of how reviewer's avatar and images in review content affects online review helpfulness, online retailers could establish the policy for promoting the helpfulness of reviews more effectively.

Keywords: Images in review content, reviewer avatar facial expression, online review helpfulness, causal attribution toward store performance

What Drives Purchase Intention for Paid Stickers: Perceived Value and Social Tie Perspectives

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Abstract

Despite their popularity among mobile social APP users, little research has focused on significant impact factors for user intention to purchase paid stickers. This study applies the Stimulus Organization Response (SOR) model to examine the influences of perceived value (i.e., product value and experiential value) and social ties (i.e., social influence and social presence) on user attitude towards, desire for and intention to purchase paid stickers. A structural equation modeling approach is applied to results from a survey of 517 LINE sticker users. Analysis results showed that intention to purchase is dominated by attitude and desire. Perceived values are found to have a greater impact than social tie on attitude towards purchasing stickers.

Keywords: Stimulus organization response, paid stickers, perceived value, social ties

On Taiwan Marathon Road Racing and Big Data Marketing Strategies

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Abstract

This study aims to explore the Taiwan marathon road racing and big data marketing strategies. In recent years, there has been a growing trend for all Taiwanese people to take part in running. In 2010, the Ministry of Education launched “Shaping Sport on Taiwan Island”, and the majority of Taiwanese have become involved in sporting activities. In 2015, a survey was initiated on sporting cities and the results showed that people participating in sport demonstrated a growing trend. Main sporting activities include walking, jogging, cycling, basketball and climbing, of which jogging accounted for 27.8%. This trend has encouraged numerous government organizations, non-profit organizations and activity practitioners to hold marathons. In 2015, over 660 marathons were held and there is a strong belief that this number will be exceeded in 2016, with marathon running entering a mature period. This study, based on current marathon road race data, carries out a trend analysis to ascertain the product life cycle of marathon road races. From this, it puts forward ideas on how to carry out marketing strategies for social group media in today’s era of digitization, such as the popular digital marketing tool Google analysis, enabling marathon running to enter a new phase.

Keywords: Marathon, road race, big data, digital marketing

Optimal Sample Sizes for the Welch Test of Mean Equivalence under Cost Consideration

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Abstract

Equivalence assessment is becoming an increasingly important topic in many application areas including psychology and social sciences research. For advance planning of equivalence studies, this article describes the sample size procedure for the Welch test of equivalence under cost consideration. Detailed numerical illustrations are presented to demonstrate the distinct features of the suggested technique. Computer program is also provided to facilitate the implementation of the described sample size calculations.

Keywords: Equivalence, heteroscedasticity, power, sample size

The Innovative Strategies for Religious Non-Profit Organization: Taking the Local Church in New Taipei City as Analysis

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Abstract

Non-profit organizations (NPOs) contribute to the society through their social work and create the social value. NPOs are different to the profit organizations which would not take the profit as main orientation. Such management will have different styles for operation beyond the profit organizations.

This paper researches how the need for building a sustainable organization, especially the innovative strategies to religious NPOs which have great impact on the strategy. These findings suggest that in response to an increased competitive situation, the innovative strategies would afford an organizational sustainability, development strategic, and operational levels of management. First, this paper focus on introduction of innovation, a clear view to see the innovation. The second, we may figure out the mean of NPOs and their functions, which will give us the full knowledge to NPOs. The third, this paper would search out “the applying and result to religious NPOs”, which depicts the application of the innovative strategies to religious NPOs. Religious NPOs as the local church in New Taipei city experienced the mode of combination from different juridical parties, the integration of sources and so on. The compound dealing of cooperation affords the great model of propagation, procreation, and development.

Keywords: Innovative strategies, non-profit organization, the local church in New Taipei city

Agenda

Feb. 10, 2017 (Friday)

Session K

13:30-15:10

Room: HATSUNE

Session Chair: Chechen Liao

National Chung Cheng University, Taiwan

Performance Impact of Carousel-based Unloading zone at Airport Baggage Handling System by Simulation Model

James T Lin	National Tsing-Hua University
Chun-Hui Chao	National Tsing-Hua University
Irene Liou	National Tsing-Hua University
Chun-Chih Chiu	National Tsing-Hua University

Exploring Online Impulse Buying

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Abstract

There is a growing trend that online impulse buying is emerging. However, relatively few studies have explored this phenomenon. This research proposes an integrated model of online impulse buying. The model tests four factors (i.e., adventure, control, time available and money available) that affect emotion state and online-store browsing. Emotion state, online-store browsing and impulse buying tendency will also affect the urge to impulse buying. A questionnaire will be developed and the causal relationships between variables in the model will be validated. The research model and the research hypotheses in the model will also be tested. The study will definitely serve as a basis for the future growth of online impulse buying and can guide those wishing to champion Internet marketing in their organization.

Keywords: Online impulse buying, emotion state, impulse buying tendency, urge to impulse buying

Internet Addiction of Smartphone Usage

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Abstract

After 15 years of Internet development, scholars have started to identify the negative impacts brought by the Internet. Overuse of Internet could develop Internet dependency and in turn cause Internet. Then we should paid attention to the phenomenon of Internet addiction. With the joint efforts of experts and scholars, Internet addiction has been officially listed as a symptom that affects public health, and the diagnosis, causes and treatment of the symptom have also been explored. On the other hand, in the area of smartphone Internet usage, most studies are still focusing on the motivation of using smartphone to access to the Internet and not much discussion has been focusing on smartphone Internet addiction. In view of the increasing adoption of smartphones, this paper is intended to find out whether smartphone Internet addiction exists in modern society or not.

Keywords: Internet addiction, smartphone usage, social support, perceived playfulness

The Roles of Technology Acceptance Model and Switching Cost in Cloud Services Adoption - Prezi as the Example

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Abstract

Cloud computing is gaining popularity in business and higher education settings, but the adoption behavior of cloud services have gone largely unexplored. Therefore, understanding the adoption decision of cloud services is more important than ever.

In this study, we developed a research model integrating factors related to both theoretical perspectives of technology acceptance model and switching costs, and tested the model in the context of presentation software cloud services. The empirical results showed that learning costs and lost performance costs significantly influenced user resistance to change, and user resistance to change together with perceived usefulness, perceive ease of use, and social influence significantly impacted their intention to use the cloud services.

Keywords: Technology acceptance model, switching cost, cloud services, user resistance, use intention

Solving the Multi-objective Orienteering Problem with Time Windows Using Simulated Annealing

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Abstract

The orienteering problem (OP) consists in finding a tour that maximizes the total score collected at vertices subject to constraints on travel time. This is a complex problem that has been widely analyzed in the tourist route planning in the city. In this paper, we study a multi-objective variant of the OP. This problem is considered when each point of interest in a city provides different benefits for different categories. Hence, a multi-objective decision situation arises. In recent years, some authors have analyzed multi-objective algorithms to solve MOOP. Those algorithms report a good quality solution in solving this problem. In this paper, we propose a multi-objective procedure based on simulated annealing (MOSA) to solve MOOP. MOSA introduces a new acceptance criteria procedure to cope with the multi-objective of the MOOP. The results obtained by MOSA has been compared with the results of the P-VNS proposed by Schilde et al. (2009). More specifically, for the most part, our procedure MOSA outperforms the P-VNS.

Keywords: Orienteering problem, tourist trip design planning, multi-objective, simulated annealing

Optimal Group Preventive Maintenance Policy for Two Leased Devices with Weibull Lifetime Distributions

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Abstract

This paper investigates the optimal group preventive maintenance (PM) policy for two leased devices with a Weibull lifetime distribution. For leased devices, the owner (lessor) of devices signs a lease contract with the user (lessee) of the devices. The content of a lease contract usually includes the lease period, PM schedule, tolerable time of repair, and penalty. Especially, the PM schedule usually plays an important role in the lease contract. Due to the inevitable deterioration of the device, it will fail more frequently as its age or usage increases. Therefore, an appropriate PM may be suitable for reducing the number of failures. In this paper, some maintenance policies for two lease devices are considered as follows. Within the lease period, any failure of devices is corrected by minimal repairs and incurs a fixed repair cost for the lessor. Furthermore, a periodical PM is performed for two lease devices and PM degrees of two lease devices are different. Each PM action incurs a PM cost and a downtime cost. When the PM cost or downtime cost is high, it might be worthwhile performing PM actions for two lease devices at the same time (called group PM policy; GPM) instead of performing PM actions for them separately (called individual PM policy; IPM). Under these maintenance schemes, the expected total disbursement cost models of two lease devices within lease period are constructed and further, the optimal number and degrees of PM are obtained which minimizes the expected total disbursement cost. Finally, the features of the GPM policy are illustrated and the GPM and IPM are compared through numerical examples.

Keywords: Minimal repair, group preventive maintenance, individual preventive maintenance, periodical preventive maintenance

Performance Impact of Carousel-based Unloading zone at Airport Baggage Handling System by Simulation Model

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Abstract

Baggage handling system (BHS) plays a significant role in the overall operation of airports. It is important that the BHS operates efficiently to ensure smooth baggage transfer and avoid congestion. Recently, the number of tourists increases year after year, leading to a BHS capacity issue at Taiwan Taoyuan International Airport (TPE). The insufficient capacity results in manual operation on baggage handling which may further increase possibility of mishandling and impact service quality. As a result, TPE upgraded and reconstructed the unloading zone from lateral chutes to carousels in 2015. The advantage of the upgrade is that with higher capacity for baggage accommodation, manual operations are reduced. In this study, we construct a simulation model for experiments, in place of costly real-life ones, to support operation decisions. This model can be used to analyze impacts of various control parameters on BHS's efficiency. Two scenarios, lateral chutes and carousels, are studied and analyzed using the Flexsim simulation model. Our experimental results indicate that the number of manual handling baggage can be reduced from 43% to 21% of total at the operations of BHS.

Keywords: Baggage handling system, BHS, simulation, airport

Agenda

Feb. 10, 2017 (Friday)

Session L

15:30-17:10

Room: HATSUNE

Session Chair: Ying-Chun Li

National Sun Yat-sen University, Taiwan

Exploring the Health Information Seeking Behavior through Internet

Ying-Chun Li National Sun Yat-sen University

Hsin-I Chou National Sun Yat-sen University

Gendered Household Labor Management and Division with Marital Satisfaction

Shan-Ying Chu Chung Yuan Christian University

Fang-Yi Lee Chung Yuan Christian University

Determinants Associated with Accommodation Selections among Taiwanese Citizens: A Quantile Regression Analysis

Yun-Huei Lee Tamkang University

Shu-Lien Chang Ming Chuan University

Yun-Huan Lee Ming Chuan University

A Novel Nonlinear Forecasting Model for CO2 Emissions, Energy Use, and Economic Growth in Russia

Hsiao-Tien Pao National Chiao Tung University

Chun-Chih Chen National Chiao Tung University

Hsin-Chia Fu National Chiao Tung University

Hsiao-Cheng Yu National Chiao Tung University

Design of Smart Thermostat for Indoor Environment

Cong-Hui Huang Far East University

Yu-Tang Su Far East University

Xin-Rong Qiu Far East University

Development and Application of Multi-functional Intelligent Robots

Cong-Hui Huang Far East University

Xin-Rong Qiu Far East University

Yu-Tang Su Far East University

Exploring the Health Information Seeking Behavior through Internet

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Abstract

More people searching health information through Internet. However, limited study explored related factors affecting such behavior in Taiwan. This study applied Health Belief Model to investigate health information seeking behavior by using National Health Interview Survey. Total 3,334 samples were in the final analyses. The rate of seeking health information through Internet was 56.2%. People usually searched for the preventive health knowledge, sought the information of disease treatment, or made appointment online. Demographic factors including age, gender, education and income significantly affect the seeking behavior. Logistic regressions indicated that factors of Health Belief Model such as “Perceived Susceptibility”, “Perceived Seriousness”, “Perceived Benefits of Taking Action” and “Perceived Barriers of Taking Action” also had influences on the seeking behavior. “Perceived Susceptibility” was also related to disease information, and “Perceived Seriousness” was correlated with preventive health information. Since more people seeking health information through Internet, the convenient access and quality of the health information on the internet should be enhanced.

Keywords: Health information seeking behavior, health belief model, internet

Gendered Household Labor Management and Division with Marital Satisfaction

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Abstract

Contrasting with extant literature, the detailed investigation of gendered household labor leaves an academic niche to be explored. This paper produces one relevant contribution which carries out the detailed investigation of gendered household labor management and division with marital satisfaction.

Gendered household labor groups household work by gender into male-typed household labor like repairing and female-typed household labor such as preparing meals, washing dishes, and cleaning house. Thompson's (1991) distributive justice framework provide theoretical background for gendered household labor. In addition, we utilize the data in 2011 collected by Survey Research Data Archive (SRDA) conducted by Center for Survey Research, Academia Sinica. Empirical methods used include simple regression analysis, two-stage least squared method and/or seemingly unrelated regression equations (SURE).

Keywords: Division of gendered household labor, management of gendered household labor, marital satisfaction, gender ideology

Determinants Associated with Accommodation Selections among Taiwanese Citizens: A Quantile Regression Analysis

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Abstract

Because of an increasing national income, and the current emphasis on quality of life, domestic travel has become a part of Taiwanese living. According to a report from the Taiwanese Tourism Bureau, most domestic tourist expenditures occur within hotels. With the number of hotels increasing, competition among them has led to an emphasis on hotel pricing. The purpose of this paper is to elaborate on the determinants of the hotel price. The current study incorporates the essential viewpoint of the trend of local tourism based on the hedonic price approach, regards the hotel occupancy rate of Taiwanese citizens as a dependent variable, and applies quantile regression to resolve the misleading findings produced from using ordinary least squares (OLS). The evidence presents that the findings from the OLS and quantile regression in this study are generally similar to each other but differ regarding conditional occupancy rates. The research results indicate that hotel managers should consider the possible effects of mainland Chinese citizens percentages, the geographical location of hotels, and $\ln(\text{price})$ on the hotel occupancy rates of Taiwanese citizens in Taiwan.

Keywords: Hotel occupancy rate, quantile regression model

A Novel Nonlinear Forecasting Model for CO₂ Emissions, Energy Use, and Economic Growth in Russia

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Abstract

Greenhouse-gas (GHG) greatly affects the Earth temperature. Russia, the world's fifth largest emitter, has large mitigation potential to play a major role in international climate policy. This paper compare the multi-step ahead out-of-sample forecasting ability of the improved nonlinear grey Bernoulli with power i model (NGBMi) with that of the Grey prediction model (GM) using Russia's annual total data on CO₂ emissions, energy consumption, and real GDP. We split data into training set (2008-2013) and testing set (2014-2015). Results show that NGBMi has remarkably improved for forecasting accuracy, and the proposed iteration method is an effective optimization algorithm suitable for the power i selection of NGBM. For each time series, NGBMi has a strong multi-step ahead forecasting performance with MAPE of less than 1%. Russian government can apply these results for their dynamic adjustment of energy and environmental policies to achieve the 2030 Agenda and the Sustainable Development Goals (SDGs).

Keywords: Sustainable development goals, nonlinear grey bernoulli model, carbon emissions, Russia

Design of Smart Thermostat for Indoor Environment

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Abstract

This project aims to improve the operation of an air-conditioning equipment. The air-conditioning equipment is generally placed in an environment of closed windows and doors, not allowing air flow between the indoor and outdoor, which causes the concentration of indoor carbon dioxide (CO₂) to often exceed the 1000 ppm threshold stipulated by the Environmental Protection Administration (EPA), Executive Yuan. This will subsequently lead to physical discomforts, mental problems, and so on for the persons in the room. In view of this, the project applied small sensors and an embedded chip to solve the problem of cross-brand control; the control combined with air-conditioning equipment achieves the advantages of being fast and energy saving. In the air-conditioning equipment, the temperature sensor was used in coordination with an Arduino chip to be combined with a heat exchanger; the use of the smart thermostat improves the air quality, creates a comfortable work environment, and saves energy.

Keywords: Smart thermostat, adriano, air quality

Development and Application of Multi-functional Intelligent Robots

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Abstract

Intelligent robots and automatic control technology is a highly interdisciplinary subject. An automatic control composed of the mechanical bodies, controllers, sensors, servo drives, and other systems is an electromechanical integrated production equipment that can be used to compile programs and complete various tasks. It integrates academic theories and application technologies such as precision machinery, electrical and electronics, information communications, and automation control. Being widely used in various fields and contributing to the improvement of the quality of life, the development and application of intelligent robots and automatic control technology is one of the most important indicators of national competitiveness. Many advanced countries such as Japan, the US, and European countries have listed intelligent robotics and automatic control as a high priority subject for large-scale research and research and development funding. This article discusses the building of a multi-functional intelligent robot. We developed an intelligent robot that can monitor the surrounding environment, grip objects by remote control, carry and move objects, complete many dangerous or complex jobs for people, and is suitable for any place. For the purpose of developing this robot, we used the knowledge and technologies learned in the university to plan the robot mechanism, wireless communication, control core, sensor, drive motor, and others; learned all kinds of control technologies; and integrated different parts to develop the system program.

Keywords: Intelligent robot, automatic control, electromechanical integration

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