CONFERENCE PROGRAM

ICCMB 2023

2023 6th International Conference on Computers in Management and Business

ICSCM 2023

2023 4th International Conference on Supply Chain Management

Hybrid (Macau, China & Virtual)　　　January 13-15, 2023

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2023 6th International Conference on Computers in Management and Business
(ICCMB2023)

2023 4th International Conference on Supply Chain Management
(ICSCM2023)

Co-sponsored by

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Conference Venue

E22-G013, Faculty of Business Administration,
University of Macau, China

中國澳門氹仔，大學大馬路，澳門大學，工商管理學院，E22-G013 室

https://goo.gl/maps/zXT7hfAHZkxwm6EA7

●**Map+Transportation**

●**Macau International Airport- Faculty of Business Administration**
https://goo.gl/maps/zdXZVF1h6J7sNbAg6

Onsite Presentation Instruction

Time Zone

GMT+8

Language

● Please make presentation and discuss in English.

Formal Presentation

Keynote Speech: 45 mins (including Q&A).

Author Presentation: about 13 minutes for presentation and 2 minutes for Q&A.

● Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.

● You can use USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her/his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.

● It is suggested that you email a copy of your presentation to your personal inbox as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.

● Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft PowerPoint and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.

● Videos: If your PowerPoint files contain video clips please make sure that they are well formatted and connected to the main files.

Dress Code

Please attend the conference in formal attire.

Safety Reminder: Secure Valuable Items at All Times.

We remind you to secure your personal belongings at all times.

* If you are using a laptop computer, do not leave it unattended at any time.

* Keep your purse, wallet and other valuables with you at all times.

The conference organizer will not be responsible for the loss or damage to any personal belongings.

Online Presentation Instruction

Time Zone

GMT+8

Platform

●We will be using Zoom for all our live stream sessions. So, if you haven't installed it, please download Zoom from: https://zoom.us/download
●Learn the Zoom skills at: https://support.zoom.us/hc/en-us/articles/206618765-Zoom-Video-Tutorials

Join the Test Session before the Formal Session
Date: January 13, 2023
Prior to the formal meeting, presenters shall join the test room to ensure everything is on the right track. Please check your test time on this program.

Formal Presentation
Keynote Speech: 45 mins (including Q&A).
Author Presentation: about 13 minutes for presentation and 2 minutes for Q&A.

Equipment Needed
● A computer with internet connection and camera
● Headphones

Environment Needed
● Quiet location
● Stable internet connection
● Proper lighting and background

Language
● Please make presentation and discuss in English.

Attention Please
The conference will be recorded. We will appreciate your proper behavior.
Presentation Recording and Broadcasting:
The photograph(s) or video or audio recording(s) will be taken by conference organizer. It will be used in for conference program purpose. The photograph(s) or video or audio recording(s) will be destroyed after the conference, it cannot be distributed to or shared with anyone, it shall not be used for commercial nor illegal purpose. Each presentation will be recorded, if you don't want it, please inform our staff ahead of time.
Do not record other presenters' presentation nor distribute it to or share with anyone unless the presenter gives written consent of agree. Failure to do so will be considered a serious academic violation subject to disciplinary/ lawful action.

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Keynote Speaker I

Prof. Fugee TSUNG

The Hong Kong University of Science and Technology (Guangzhou), Hong Kong SAR, China

(Fellow of IIE/ASQ/IAQ/HKIE)

Speech Title: *"Industrial Informatics Driving Digital Transformation"*

●**Speech Time: 9:25-10:10, January 14, 2023 (GMT+8)**

●**Conference Venue: E22-G013, University of Macau**

●**Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521**

Synopsis: This talk will present and discuss the challenges and opportunities that industrial informatics face in the era of digital transformation, and the roles we play to drive such transformation. In particular, there is a big opportunity for industrial intelligence and systems informatics, under the digital transformation paradigm, in order to further explore ways of creating value from data and big data. On research: I will update the recent progress in our Quality and Data Analytics Lab addressing unique quality control challenges arising from data-rich and data-centric environments in manufacturing and service industries. On education: I will share the recent development of HKUST 2.0: a cross-disciplinary paradigm and a unique Information Hub in the Greater Bay Area.

Biography: Prof. Tsung is a Chair Professor of the Department of Industrial Engineering and Decision Analytics (IEDA) of the Hong Kong University of Science and Technology (HKUST). He is a Fellow of the Institute of Industrial Engineers (IIE), Fellow of the American Society for Quality (ASQ), Academician of the International Academy for Quality (IAQ), Elected Member of the International Statistical Institute (ISI), and Fellow of the Hong Kong Institution of Engineers (HKIE). He received both his PhD and MSc degrees in Industrial and Operations Engineering from the University of Michigan, Ann Arbor, and his BSc degree in Mechanical Engineering from National Taiwan University. He worked for Ford Motor Company as a Quality Engineer and Rockwell International R&D as a Research Engineer, and did his post-doctoral research with Chrysler Corporation. During his tenure at HKUST, he has achieved a very impressive academic record and strong international reputation.

Prof. Tsung has a proven record for academic leadership. He is Editor-in-Chief of the Journal of Quality Technology (JQT). Prof. Tsung was also the Regional Vice President (Asia) of Institute of Industrial Engineers (IIE) since 2008, and the Chair of the Service Science Section, INFORMS, where he was the Founding Vice Chair in 2007. He was the Chair of the Quality, Statistics, and Reliability (QSR) Section, INFORMS, in 2004. He is also the founding Chair of the Council of Industrial Engineering Department Heads in Greater China (CIEDHC).

In addition, Prof. Tsung has a strong research record in the area of quality engineering and management. He has received the Best Paper Award for the IIE Transactions two times, in 2004 and 2009, respectively. He is also the recipient of the Outstanding IIE Publication Award in 2010 - this award recognizes an outstanding publication in any IIE-sponsored or co-sponsored medium. He has acted as principal and co-principal investigator on 18 funded research by the Research Grant Council (RGC).

Keynote Speaker II

Prof. Loon Ching TANG
National University of Singapore, Singapore
(Director of TDSI, NUS, Fellow of ISEAM)
Speech Title: *"Resilience: A System Performance Indicator under the New Normal"*
●**Speech Time: 10:30-11:15, January 14, 2023 (GMT+8)**
●**Conference Venue: E22-G013, University of Macau**
●**Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521**

Synopsis: It is increasingly evident that climate change has induced more natural disasters of greater magnitude that posed threats and major disruptions to critical infrastructures and systems. With the protracted covid-19 pandemic into its 3rd years, livelihoods are affected the world over and many have adapted to the new normal. It has become clear that we need to look beyond traditional risk management and develop a better understanding of system resilience. Here, we present a unifying framework for defining and measuring resilience. In particular, a well-known example on supply interruption is presented to illustrate a new family of recovery functions. It is then shown that the parameters of these functions can be used to form a set of resilience measures.

Biography: Dr Loon Ching TANG is currently professor of Department of Industrial Systems Engineering & Management at the National University of Singapore and Fellow of the Academy of Engineering, Singapore. He obtained his Ph.D degree from Cornell University in the field of Operations Research in 1992 and has published extensively in areas related to industrial engineering and operations research. He has been presented with a number of best paper awards including the IIE Transactions 2010 Best Application Paper Award and 2012 R.A. Evans/P.K. McElroy Award for the best paper at Annual RAMS. Prof Tang is the main author of the award-winning book: Six Sigma: Advanced Tools for Black Belts and Master Black Belts. Besides being active in the forefront of academic research, in the last 30 years, Prof Tang has served as a consultant for many organizations, such as the Ministry of Home Affair, Singapore Power Grid, Republic of Singapore Air Force, Seagate, HP, Phillips, etc, on a wide range of projects aiming at improving organizational and operations efficiency; especially through better management of engineering assets. He is currently a fellow of ISEAM, the Co-Editor-in-Chief of Quality & Reliability Engineering International, editorial review board member of Journal of Quality Technology and a member of the advisory board of the School of Engineering of Temasek Polytechnic.

Keynote Speaker III

Prof. Rob LAW

University of Macau, Macau SAR, China

(Chair Professor in Integrated Resort and Tourism Management; Deputy Director, Asia-Pacific Academy of Economics and Management)

Speech Title: *"Business Website Assessment"*

●**Speech Time: 11:15-12:00, January 14, 2023 (GMT+8)**

●**Conference Venue: E22-G013, University of Macau**

●**Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521**

Synopsis: Ever since the introduction of the Internet to business, website assessment has been receiving ongoing attention from academic researchers and industry practitioners. In the existing literature, prior studies have developed various website assessment methods. This presentation covers the chronological changes in website assessment models and presents the research trend. Different website assessment models and criteria are introduced. According to empirical findings, functionality and usability are the key indicators for assessing website quality. This presentation also provides practical implications for business managers in general, and hospitality/tourism managers in particular, to design and maintain their websites.

Biography: Prof. Rob Law is University of Macau Development Foundation (UMDF) Chair Professor of Smart Tourism. He is also Honorary Professor of several other reputable universities. Prior to joining the University of Macau in July 2021, Prof. Law has worked in industry organizations and academic institutes.

Prof. Law is an active researcher. He has received 90+ research related awards and accolades (e.g. recognized as the most prolific tourism/hospitality researcher in the world over two decades from 2000 to 2019 – International Journal of Contemporary Hospitality Management, 2021), as well as millions of USD external and internal research grants. Prof. Law has edited four books and published 1,000+ research papers (including several hundred articles in first-tier academic journals). His publications have received 50,000+ citations, with h-index/i 10-index = 104/460 (http://scholar.google.com.hk/, accessed on March 11, 2022). In addition, Prof. Law serves different roles for 200+ research journals, and is a chair/committee member of more than 180 international conferences.

Keynote Speaker IV

Dr. Kwong Meng Teo
Huawei Technologies, 2012 Research Labs, China
(Senior Scientist)
Speech Title: *"A Systems Approach to Operations Research in the Real-World"*
●**Speech Time: 13:30-14:15, January 14, 2023 (GMT+8)**
●**Conference Venue: E22-G013, University of Macau**
●**Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521**

Synopsis: Creating intelligent decision support solutions in the real-world Is a complex undertaking requiring a systems approach. Using examples from express delivery and supply chain planning, we illustrate how numerous analytical modules have to be integrated, logically and temporally, in order to support large-scale operational analysis. We explain how such integration, attributes of the many techniques, coupled with important considerations such as maintainability, extensibility, and explainability, determine the appropriate method selection, and construct of the overall technical solution. We conclude by highlighting common organizational challenges expected during implementation within large corporations, and propose a practical route to digital transformation.

Biography: Dr. Kwong Meng TEO received his PhD in Operations Research from MIT. In 25 years of experiences spanning corporate R&D, technical management, consulting and the academia, he takes a systems approach, coupled with operations research, algorithms and modeling, in realizing decision support solutions and digital transformation. Currently in Huawei, he supports business reengineering through software development in areas of network analysis, supply chain management, cloud operations and production planning. In SF Express and Savi Technologies previously, he developed analytical applications supporting express delivery network planning, air fleet planning, vehicle routing and RFID tracking. When he was an Assistant Professor in National University of Singapore, he was consultant and executive trainer to organizations such as Singapore's Prime Minister Office, Ministry of Home Affairs and Changi Airport Group. Finally, he has published in top-tier journals including Operations Research, Transportation Science, European Journal of Operational Research and Journal of Applied Physics.

Program Outline

Day 1 | January 13, 2023 | Friday| GMT+8	Venue
13:30-17:00 **Sign-in and Conference Kit Collection**	E22-G013
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Day 2 | January 14, 2023 | Saturday | GMT+8 Venue: E22-G013, University of Macau, Macau SAR, China		Zoom ID
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9:00-9:15	**Opening Remark - Prof. Wei GE, University of Macau, Macau SAR, China Welcome Address - Prof. Loon Ching TANG, National University of Singapore, Singapore**	825 5445 2521
9:15-9:25	**Group Photo**	
9:25-10:10	**Keynote Speech I - Prof. Fugee TSUNG** The Hong Kong University of Science and Technology (Guangzhou), Hong Kong SAR, China *Speech Title: Industrial Informatics Driving Digital Transformation*	
10:10-10:30	**Tea Break Venue: E22-G006**	
10:30-11:15	**Keynote Speech II - Prof. Loon Ching TANG** National University of Singapore, Singapore *Speech Title: Resilience: A System Performance Indicator under the New Normal*	
11:15-12:00	**Moderator: Prof. Grace Fu, University of Macau, Macau SAR, China Keynote Speech III - Prof. Rob LAW** University of Macau, Macau SAR, China *Speech Title: Business Website Assessment*	
12:00-13:30	**Lunch Break Venue: E22-G006**	
13:30-14:15	**Moderator: Prof. Zhaotong Lian, University of Macau, Macau SAR, China Keynote Speech IV - Dr. Kwong Meng Teo** Huawei Technologies, 2012 Research Labs, China *Speech Title: A Systems Approach to Operations Research in the Real-World*	
14:15-14:45	**Afternoon Break**	
14:45-16:15	**Onsite Session 1** Business Information Mining and Data Analysis	
18:00-20:00	**Dinner Banquet (Elysee at UM)**	

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Day 3 | January 15, 2023 | Sunday | GMT+8		Zoom ID
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10:00-12:00	**Online Session 3** Investment Risk Prediction and Decision Analysis	898 2789 6916
12:00-13:30	**Lunch Break**	
13:30-15:30	**Online Session 4** Supply Chain Analysis and Intelligent Commerce	825 5445 2521
13:30-15:30	**Online Session 5** Enterprise Digital Transformation and Data Management	898 2789 6916

Online Zoom Test | January 13, 2023 | Friday| GMT+8		Zoom ID
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15:00-15:30	**Keynote Speakers Test**	
13:30-15:00	**Test Session 3** BM23-405, BM23-452, BM23-432, BM23-409, BM23-417, BM23-434, BM23-204-A, BM23-433 **Test Session 5** BM23-441, BM23-463, BM23-467, BM23-412, BM23-470, BM23-445, BM23-446, BM23-208	898 2789 6916

Onsite Session 1- Business Information Mining and Data Analysis
Session Chair: Assoc Prof. Chunli Ji, Macao Polytechnic University, China
Presentation Time: 14:45-16:15, January 14, 2023 (GMT+8)
Conference Venue: E22-G013, University of Macau
Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521

Note:

* Each presentation includes 15 mins (13 mins for oral presentation, and 2 mins for Q&A).

* The schedule of each presentation is for reference only. Authors are required to attend the whole session, in case there may be some changes on conference day. Please join in the room 5-10 minutes earlier.

14:45-15:00 BM23-414-A (Online)	**Title:** A Cellwise-type Robust Principal Component Analysis **Authors: Yun Liu**, Lianjie Shu, Yan Su **From:** University of Macau, China *Abstract:* Principal component analysis (PCA) has been receiving attention for many years due to its efficiency in data reduction. The main appeal of PCA is that the covariance structure of a large number of variables can be explained by a small number of principal components (PCs). Such mapping from a large data space to a much smaller component space makes it very attractive for analysis of high dimensional data, which is used extensively in many fields like engineering, biology, social science, and other domains (Ke et al., 2021). However, real data is often accompanied by outlying observations, which makes it challenging to analyze the data and creates serious problems to deal with. Many PCA methods have been developed to address outliers. One kind of the most popular methods is replacing the classical sample covariance matrix with a robust covariance matrix (Davies, 1987; Rousseeuw, 1984; Croux and Haesbroeck, 2000). Projection pursuit (PP) techniques are also commonly used to search for robust PCs (Li and Chen, 1985; Croux and Ruiz-Gazen, 1996; Hubert et al., 2005). However, recently a different type of outliers, called cellwise outliers, have received much attention, meaning the outliers can occur anywhere in the data matrix. For this kind of outliers, a small proportion of outlying cells can contaminate over half the rows, which makes most methods break down. This effect is at its worst when the dimension is high. To bridge this gap in the literature, we propose a fast robust PCA method based on a cellwise way to robustly estimate the PCs, which can be viewed as a natural adaptation of the PCA method to the cellwise robust estimator of the highdimensional covariance matrix. In the proposed PCA method, we first use a pairwise approach to robustly estimate the covariance matrix for dealing with cellwise outliers on the high-dimensional data (Tarr et al., 2016; Loh and Tan, 2018). Then, we need to select the number of principal components k according to the spectral decomposition of the robust covariance matrix obtained from the previous step. Based on this, a k-dimensional subspace that explains the total variability of the data very well is provided. Simultaneously, we can compute the k nonzero eigenvalues in descending order from the spectral decomposition, and the corresponding eigenvectors are the k robust principal components. Compared to the existing PCA approaches, like ROBPCA (Hubert et al., 2005), the proposed method enjoys two pronounced advantages. First, the new approach can make use of information from other clean components in a contaminated observation vector. This is

	expected to improve the robustness and accuracy of the PCs. Second, the new approach is more computationally efficient, which is workable in the high-dimensional case even with p>n. In this way, we hope the proposed PCA method can provide a uniformly smaller angle and a higher proportion of variance explained than ROBPCA under a wide variety of scenarios, especially for heavy-tailed and skewed data, meaning it is very robust against contaminated observations. Therefore, the proposed method is expected to offer a wider range of applications for PCA.
15:00-15:15 BM23-422	**Title:** A Bayesian Approach to Diagnosing General Linear Profiles **Authors: Feng Xu** **From:** Guilin University of Technology, China *Abstract:* Apart from quick monitoring of abnormal changes in a multivariate process, it is also critical to accurately identify the cause of abnormal changes after a signal in multivariate statistical process control. Most diagnosis methods focus on the distribution of mass characteristics such as mean and/or variance. But the quality of a process may be better characterized by the relationship between the response variable and one or more explanatory variables in many applications, which is called profile problems in literatures. This paper develops a Bayesian approach to diagnosis parameter shifts in profile process. The proposed approach not only accurately identify shift parameters but also provide the probabilities of shift parameters. Compared with existing methods, the proposed approach outperforms them.
15:15-15:30 BM23-415-A	**Title:** Improving High-dimensional Portfolio Selections Through Robust Hedge Regression **Authors: Wenliang Ding**, Lianjie Shu, Xinhua Gu **From:** University of Macau, China *Abstract:* The estimation of the inverse covariance matrix of returns is of high important in portfolio selection. The Glasso method proposed by Goto & Xu (2015) achieves significant risk reduction by imposing the sparse structure on hedge trades. However, the sample covariance matrix used as input for their Glasso suffers from highly sensitivity when the data is contaminated or contains a non-negligible number of outliers. To deal with this problem, we replace this input by a Kendall-type robust estimator. The new Glasso estimator can be built by the same algorithm as the original Glasso estimator, with no need to pay additional effort of computation for robustification. This new Glasso method inherits the original Glasso's risk reduction advantage while deals well with data contamination. The resulting portfolio is expected to perform better than the Glasso in various assessment criteria, for example, better-conditioned covariance, lower turnover, and higher certainty-equivalent returns.
15:30-15:45 BM23-429-A	**Title:** Firm-specific Information in Customer Firms' Disclosures and Supplier Firms' Stock Price Crash Risk **Authors: Shiqiang Chen**, Can Chen, Jinghan Chen, Hao Zhang **From:** University of Macau, China *Abstract:* In this study, we use an NLP method to examine the textual information effects of corporate disclosures in a supply chain setting. More specifically, we investigate the impact of customer firm-specific textual information in management forecast reports (MFRs) on the future stock price crash risk of their supplier firms. Our analyses yield several important

observations. First, the amount of customer- specific textual information content in a customer firm's MFRs is negatively and significantly related to the investors' perceived future stock price crash risk of its supplier firm. In contrast, the amount of general textual information content (i.e., textual information already available elsewhere) in a customer firm's MFRs has no impact on the perceived future stock price crash risk. Second, the impact of voluntarily disclosed customer-specific textual information on reducing supplier firms' crash risk is driven by customer MFRs in which the textual tone (i.e., positive, or negative) is consistent with the nature of its numerical earnings forecast news (i.e., positive or negative). Outside stakeholders of a supplier firm appear to inter-modally verify the credibility of customer- specific textual information content. The impact of customer-specific textual information content on reducing supplier firms' crash risk is also driven by customer textual information of better quality. In other words, outside stakeholders of a supplier firm appear to also intra-modally verify the credibility of customer-specific textual information. Third, the impact of customer-specific textual information content on reducing supplier crash risk is driven by supplier firms with larger analyst following and similarly with more institutional investors.

Our findings suggest that: (1) forward-looking customer-specific textual information in voluntary disclosures is highly relevant to suppliers and other stakeholders along the supply chain; (2) the credibility of voluntarily disclosed textual information is examined in a multi-modal (i.e., textual and numerical) manner by outsider stakeholders.; (3) customer-specific textual information is, at least in part, transmitted by information intermediaries (such as analysts) and information processors (such as institutional investors) along the supply chain. Textual information constitutes a major part of information in any forward-looking voluntary disclosure. Given our evidence of its high relevance to both suppliers and other stakeholders, more extensive research of textual information along the supply chain from different perspectives, including impact, verification, transmission, is recommended.

15:45-16:00 BM23-451	**Title:** Big Data-Driven Business Model Innovation in the Integrated Resort Industry: A Case Study **Authors: Chunli Ji** **From:** Macao Polytechnic University, China *Abstract:* More and more companies have realized the potential value behind the big data resources. Taken the Caesars Entertainment as an example, this study articulates how the company successfully took big data as the basis to drive its business model innovation, which created new ways to deliver personalized enhancements to each guests' experience, and further gained competitive advantage in the integrated resort industry.
16:00-16:15 BM23-435-A	**Title:** The Effects of Online Expert Review and Peer Review on MOOCs Enrollment **Authors: Xiaomeng Li**, Chang Boon Lee, Chi Ming LEE **From:** University of Macau, China *Abstract:* MOOCs (Massive Open Online Courses) are committed to promoting the opening and sharing of high-quality education resources globally, and it has aroused much interest since its birth. The outbreak of COVID-19 in late 2019 has recently shone the spotlight on MOOCs. The stay-at-home orders have encouraged people to search for online resources to adapt

themselves to the new situation, which really brings opportunities to the development of MOOCs platforms.

With the development of Internet, online reviews have become an important resource for consumers to gain information before making their purchase decisions. Similar to e-commerce platforms, most of the MOOCs websites provide discussion forums for students to leave their point of views, and researchers have used online review data to analyze students' attrition, satisfaction and what learners care about MOOCs.

Online reviews can be divided into two types: expert review and peer review. The former is created by "experts" with professional knowledge, and the latter review comes from consumers who have purchased goods or experienced service. Previous studies have shown that both expert review and peer review influence consumers' decision and product sales. However, few studies have considered both expert reviews and peer reviews in the context of online learning, along with the interplay between them. Therefore, the focus of this study is to answer the following questions:

1) Do expert reviews influence students' MOOCs enrollment?

2) Do peer reviews influence students' MOOCs enrollment?

3) Can these two types of online reviews work together to influence students' MOOCs enrollment?

Web crawler technologies were used to extract data from a Chinese MOOC website: icourse163.org. For each course, the enrollment number of the current semester was collected as dependent variable. For peer review, two metrics were investigated: review volume and review valence. The number of reviews was used to measure review volume, and review valence was measured by the average star rating provided by students. For expert review, icourse163.org offers a label called "国家精品" on the dedicated page for courses reaching the standard set by Ministry of Education.

This research used STATA for linear regression to investigate how expert review and peer review are related to MOOCs enrollment. A mediation model was developed to explore the interplay of the two types of online reviews. The results indicated a positive effect of expert review on students' MOOCs enrollment. The results also showed that review volume is positively related to MOOCs enrollment, and review volume mediates the effect of expert review. Review valence was found to have no influence on MOOCs enrollment.

The results can be explained as follows:

1)	Expert reviews are considered as more trustworthy by consumers. In this study, the label offered by the Ministry of Education indicates the high course quality, therefore more students will choose courses with expert review.

2)	Large review volume might leave an image that a course is popular among students, which encourages enrollment.

3)	The mediating role of review volume could be that students care about the evaluations from professionals, and they are more willing to write reviews for courses with positive professional reviews, which leads to more enrollment.

4)	The nonsignificant results of review valence might be that the courses in icourse163.org are free of charge. The students can try different courses without cost, so they might tend to experience the course on their own, instead of relying on peer review ratings from other

	participants. The findings could help researchers to better understand how online reviews affect students' enrollment decision. They could also help practitioners to make use of reviews to better manage MOOCs platforms.
Best Presentation Award & Group Photo	

Online Session 2- Digital Multimedia Technology and Application
Session Chair: Asst. Prof. Peng Xie, California State University, East Bay, USA
Presentation Time: 10:00-12:00, January 15, 2023 (GMT+8)
Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521

Note:

* Each presentation includes 15 mins (13 mins for oral presentation, and 2 mins for Q&A).

* The schedule of each presentation is for reference only. Authors are required to attend the whole session, in case there may be some changes on conference day. Please join in the room 5-10 minutes earlier.

10:00-10:15 BM23-418	**Title:** The Influence of Birth Years on Tendency to Marry: The Moderating Role of Negative Media Information Exposure **Authors: Yun Gao**, Jie Zhao, Zhefei Mao **From:** University of Chinese Academy of Sciences, China *Abstract:* Previous research has primarily focused on the structure of marriage value and special groups' marriage value and its changing trends, but few have examined public intergenerational tendency to marry. This study constructs a model of moderated chain mediating effects based on social role theory and media communication theory. It explores the chain mediating role of gender roles and gender stereotypes in intimate relationships and the moderating role of negative media information exposure in the effect of birth year on tendency to marry. The results of the study show that：(a) the tendency to marry varies significantly between generations and shows a downward trend; (b)gender roles and gender stereotypes in intimate relationships play a chain mediating role between birth year and tendency to marry；(c) Negative media information exposure positively moderates the relationship between birth year and tendency to marry. Specifically, the greater the exposure to negative media messages, the stronger the negative relationship between birth year and tendency to marry; (d) Negative media information exposure does not moderate the relationship between birth year and gender roles in intimate relationships, nor does it moderate the chain mediating effect between birth years and the tendency to marry through gender roles and gender stereotypes in intimate relationships.
10:15-10:30 BM23-450	**Title:** Characterizing the Job-task-skill Pattern of Job Requirements with Job Advertisement Mining **Authors: Anyuan Zhong**, Ruiyu Qiu, Xiangxian Zhang, Shaojie Lv, Linxiao Song **From:** Shandong Jiaotong University, China *Abstract:* Understanding job requirements is essential for establishing and optimizing employability-oriented education programs. Most relevant research focus on clarifying the skill requirement of an occupational field. In this research, we argue that job tasks serve as a bridge between a job and the required skills, and we provide a method for investigating the job-task-skill pattern of job requirements using text mining on publicly available job advertisements. To provide this, we: 1) collect data on thousands of job advertisements through web crawling and scraping; 2) categorize the jobs through title analysis; 3) identify the topic of both tasks and skills through word co-occurrence network clustering; and 4) systematically analyze the characteristics and internal relationships between job roles, tasks, and the required skills. A test

	case was conducted in the context of China's big data sector, and the findings show that the proposed strategy is viable, practical, and instructive.
10:30-10:45 BM23-461	**Title:** Research on the Topic Content Prediction of Online Reviews: from the Perspective of Bi-directional Sentiment Classification **Authors:** Xiaogang Zhao, **Ge Li**, Hai Shen, Yiwei Dang, Jun Hou, Siwei Dong **From:** Xi'an International Studies University, China *Abstract:* To solve the problem of coarse-grained results in the research of topic content prediction, this paper proposes a prediction method for the topic content from the perspective of bi-directional sentiment classification. Firstly, the method uses SnowNLP to classify the sentiment of online reviews; secondly, LDA model is applied to extract the topics and entropy is used to sort topics; finally, Word2Vec is applied to achieve the prediction of the topic content. Example calculation shows that this method effectively solves the problem of coarse-grained prediction results of online reviews' topic content, and presents the prediction results from positive and negative sentiments. The average precision of positive topics is 86.67%, and the average precision of negative topics is 80.00%.
10:45-11:00 BM23-410	**Title:** Usability Evaluation of Communication Tools Used as Remote Support in Machine Service Industry: A Comparison between Microsoft Teams and Skype **Authors:** Roland Ross F. Flame, **Yogi Tri Prasetyo**, Reny Nadlifatin, Irene Dyah Ayuwati, Satria Fadil Persada, Thanatorn Chuenyindee **From:** Mapúa University, Philippines *Abstract:* Due to pandemic Covid-19, there is an increase and rough transition into remote work. Communication tools/platforms are softwares used by industries to facilitate different functionalities like remote technical support and communication. Especially for service industries, coordinators and engineers adapted on using these tools to support internal and external communications. For a certain machine service company, Skype and Microsoft Teams are the main communication tools used. The objective of this study is to determine the usability/user experience of these tools of engineers and coordinators on their daily activities. System Usability Scale were used to evaluate their user experience. As interpreted using the Curved Grading Scale, only the use of Microsoft Teams of Coordinators is graded as D, and the rest are graded as F. Based on the results on the user experience of coordinators and engineers using platforms Microsoft Teams and Skype, the low scores show that they are struggling with the usability of these tools due to drastic change and adaptability and limitation of activities that these tools can only perform.
11:00-11:15 BM23-430	**Title:** Direct Denial or Positive-Negative Rumor Rebuttal? The Effects of Two Types of Rumor Rebuttal and Their Psychological Mechanisms **Authors: Liuying Chen**, Jie Zhou, Zhefei Mao, Qiwei Li **From:** University of Chinese Academy of Sciences, China *Abstract:* This study used a single-factor online experiment to explore the effect of the presentation of rumor rebuttal information (direct rebuttal vs. positive-negative rebuttal) on rumor credibility, and the role of emotion and depth of information processing in this process. The findings revealed that direct rebuttal significantly reduced rumor credibility to subjects

	when compared to no rebuttal, while no significant effect was found in positive-negative rebuttal. In addition, positive emotions, negative emotions, and the depth of information processing triggered by rumors partially mediated the effect of direct rebuttal on rumor credibility. This suggests that the method of rebuttal can significantly influence people's perceptions of rumors, and that direct denial may be more effective than rebuttal through detailed explanations containing both positive and negative information, which is practically valuable for effective rebuttals in social governance.
11:15-11:30 BM23-420	**Title:** Who Is Telling the Truth? Deceptive Communication in Organizations and How to Prevent It. **Authors: Yan OU**, Lingyan Chen, Ni Yan, Yi Chen **From:** Graduate of Nanyang Technological University, Singapore *Abstract:* Deceptive communication is ubiquitous within organizations with low detection accuracy. Deceptive communication might be harmless but some of them could cause malevolent consequences. Thus, detecting and preventing deceptive communication is an essential part of organizations. This paper first gives a definition of deceptive communication, then conducts a conceptual framework based on previous studies in related areas which offered practical methods that help to detect and prevent deceptive communication within organizations. The dispute between Tencent Holdings and Lao Gan Ma Chili Sauce company is then analyzed according to the framework. The dispute was a fraud that cost Tencent Holdings millions of dollars as a consequence of deceptive communication. The findings from the literature review and case studies will be presented in the conclusion, as well as the limitations of this paper.
11:30-11:45 BM23-477	**Title:** The High Economic Value for Videos in a YouTube Channel by Communication using The Digital Social Media (Case Study: Successful Videos about A Particular Motorcycle Group in a YouTube Channel) **Authors: Murty Magda Pane**, Christian Siregar, Hari Sriyanto **From:** Bina Nusantara University, Indonesia *Abstract:* This research's objective is to describe the sustainable activities of a particular motorcycle club (TP) through delivering reciprocal humor and showing nice friendship in social media from business perspectives, especially business psychology perspective. The research used a qualitative method by observations in seven periods for seven tour opportunities. Their high amount of interactive communication has led them into the most popular motorcycle group (recognized by the high number of views, like expressions and positive comments int the YouTube channel and Instagram) that has also led it to a higher economic value. Their particular cohesiveness and engagement were transmitted and deployed in their internal communications in the videos that influence the netizens and the business world positively through their reciprocal humors and nice friendship.
11:45-12:00 BM23-425	**Title:** The Influence of Social Media on Chinese Students' Choice of Private Universities in China **Authors: Xiaolie Qi** **From:** South China Business College Guangdong University of Foreign Studies, China

Abstract: This study investigates the importance of the social media on Chinese Students' choice of private universities in China and develops strategies to use social media word-of-mouth. This study adopts a qualitative approach with a plan to conduct an in-depth interview with 25 Chinese private university students in mainland China. This research is also anticipated to add to the roles of offline word-of-mouth, the source credibility, and their relationships. The results indicate the following: 1) Chinese social media online word-of-mouth will directly influence Chinese students' intention to select private universities. 2) Offline word-of-mouth will indirectly influence Chinese students' intention to select private universities 3) Information source credibility plays a mediation role between offline word-of-mouth and intention to select private universities. The findings of this study will provide applied knowledge and managerial recommendations for private university who target Chinese mainland students, need to be more actively involved in social media marketing by including online and offline word-of-mouth interactively.

Best Presentation Award & Group Photo

Online Session 3- Investment Risk Prediction and Decision Analysis
Session Chair: Prof. Michiko Miyamoto, Nagasaki University, Japan
Presentation Time: 10:00-12:00, January 15, 2023 (GMT+8)
Meeting ID: 898 2789 6916 https://us02web.zoom.us/j/89827896916

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10:00-10:15 BM23-405	**Title:** Fluctuation Trend Prediction and Investment Allocation Optimization of Risk Assets **Authors: Yeyong Zhang**, Yusen Liu, Zihan Zeng **From:** Hefei University of Technology, China *Abstract:* Safe-haven assets are a safe and effective value storage and risk hedging tool in the period of market turbulence, while risk assets show multiple characteristics such as the coexistence of high risk and high return, great variability, strong volatility and so on. Taking gold and bitcoin, two typical safe-haven and risk assets, as examples, this paper constructs the ARIMA-XGBoost joint prediction model and predicts the future fluctuation trend of gold and bitcoin; At the same time, the prediction results are used to optimize the parameter allocation of the mean variance model, and the effective frontier of the portfolio is calculated under different constraints. The results show that the RMSE of ARIMA-Xgboost model is 5.3 and 83.6 respectively, and the MAPE is 0.35% and 0.80% respectively; The efficient allocation frontier of the portfolio is its Pareto optimal solution, and when the allocation proportion of a single asset is limited, the overall yield of the portfolio is significantly reduced, but it is better than the result of equal weight allocation; ARIMA-Xgboost model has high prediction accuracy, good stability and strong self-learning and self-adaptive ability, which can provide a certain reference for investors or salespeople to make investment decisions.
10:15-10:30 BM23-452	**Title:** Analysis Factors Influencing Gen Z On Investment Decisions of Cryptocurrency in Indonesia **Authors: Aprillia Kresensia Paseru**, Chelsea De Valencia, Setiani Putri Hendratno **From:** Bina Nusantara University, Indonesia *Abstract:* This research aims to discover the factors influencing Gen Z on investment decisions of cryptocurrency in Indonesia. Nowadays, cryptocurrency has become famous as most of Indonesian citizens interested to invest in cryptocurrency. Despite the fact that cryptocurrency fluctuates riskier than other instruments, many people still decide to invest in cryptocurrency, including Gen Z. The method used for this research is qualitative with semi-structured interviews conducted to collect data. Semi-structured interview provides more exploratory and inclusive answers from the respondents to support this research. This research contributes to giving more knowledge and insight particularly about the factors influencing the Gen Z on investment decision in cryptocurrency. The results of this research have shown many factors can influence people to decide investing in cryptocurrency, such as investing in cryptocurrency can generate more profit, 24-hour market, and its fame causing a sense of FOMO (Fear of

	Missing Out) which are related to the Theory of Behavioral Finance. There are some other factors such as community with other investors, influencers in social media, and people around. Those factors are related to the Herding Theory where people are likely to follow other investors' analysis rather than doing their own research and analysis. These findings propose that investors, especially Gen Z, should improve their self-control as well as investment analysis to decide their investments in cryptocurrency. Further research can explore other factors that may be influential by using quantitative method and by giving out questionnaires to reach out more respondents outside Jabodetabek or even outside Indonesia.
10:30-10:45 BM23-432	**Title:** Optimal Portfolio Model based on LSTM Neural Network and Markovitz **Authors: Yuzhe Chen**, Hongming Zhang **From:** Central South University, China *Abstract:* Asset price forecasting is essential for portfolio decision-making. This paper establishes an asset price prediction model based on LSTM neural network to achieve asset price prediction. First, the historical asset price dataset is used as the training set of the model, and this paper set two hidden layers with 50 and 80 neuron units, respectively. Second, the Adam optimizer is used for the second hidden layer to optimize the neural network and minimize the loss function. Finally, the output layer data of asset price prediction is obtained considering the environment and other factors to achieve accurate price prediction. Meanwhile, this paper constructs a Markowitz-Dynamic programming model based on Markowitz and dynamic programming theories. It uses the output data cost of the prediction model to establish optimal portfolio planning, optimize portfolio decisions, and maximize investment returns. The model shown in this paper has significant reference value for investors' portfolio decisions and is essential to help investors obtain higher investment returns to a greater extent.
10:45-11:00 BM23-409	**Title:** Research on the Dynamic Assessment of Comprehensive Risk Measurement and Investment Performance of Financial Assets **Authors: Yeyong Zhang**, Yusen Liu, Sama Zhu **From:** Hefei University of Technology, China *Abstract:* Financial assets have the basic characteristics of risk, profitability, liquidity and so on. How to effectively complete the dynamic monitoring of comprehensive risk and investment performance of financial assets is still an important content of asset investment and management business. This paper takes the characteristic engineering as the basic knowledge theory, takes five stocks in China's A-share market as the research object, uses mathematical statistics and other methods to calculate the economic characteristics and physical characteristics of the selected stocks, and constructs the Comprehensive risk index and Investment performance index through the CRITIC-FAHP subjective-objective weighting method, so as to complete the comprehensive calculation and dynamic evaluation of the risk value and investment performance of the selected financial assets. The calculation results show that the comprehensive index constructed in this paper has high accuracy and good stability, which can avoid the evaluation deviation of the single factor model to a certain extent, and scientifically, comprehensively and deeply reflect the complex characteristics and internal laws of financial assets; At the same time, it can also be combined with Markowitz's Mean-Variance

	model to optimize its parameter structure and configuration, so as to provide some reference for investors or salespeople to make investment decisions.
11:00-11:15 BM23-417	**Title:** The Impact of the COVID-19 Pandemic on the Stock Market Returns: Evidence from the Chinese Stock Market **Authors: Mwanaidi Mgalla**, Gui Hefa **From:** Jiangxi University of Finance and Economics, China *Abstract:* This study investigates the association between the Chinese stock market returns and the COVID-19 pandemic. The empirical results reveal that the COVID-19 pandemic negatively impacts stock market returns. We report our findings first by investigating the stock market returns from the firms in the stock connect program (traded by foreign investors) compared to the domestic stock market. Second, the evidence shows that the firms from high-tech companies have a low negative impact on the stock market returns during the COVID-19 pandemic relative to that of low-tech companies. However, the empirical results demonstrate that strengthened short stock market returns activity is associated with stock price volatility during the COVID-19 pandemic.
11:15-11:30 BM23-434	**Title:** Planned Behavior and Social Cognitive in Predicting E-Business Intention to Adopt Eco-design **Authors:** Ang Swat Lin Lindawati, **Bambang Leo Handoko**, Mazlina Mustapha **From:** Bina Nusantara University, Indonesia *Abstract:* The COVID-19 pandemic has hit the economy. Countries have taken off to emerge from these conditions. In Indonesia, the economic revival was driven by the development of the e-business sector. However, can these new emerging e-business survive to compete with existing big companies? E-business must have a competitive advantage, and one of them is through innovation based on eco-design. Our study examines the factors which influence e-business intention to adopt eco-design. These factors are based on the theoretical approach of planned behavior and social cognitive theory. Our research is a quantitative study using structural equation modeling partial least squares. We use a questionnaire to gather primary data. We choose e-business entrepreneurs as respondents and processing data using SMART PLS 3 software. We share questionnaires to 200 small medium e-business practitioner. Our results found that attitude and self-efficacy had a significant effect on e-business intention to adopt eco-design, while subjective norm and perceived behavior control each has no significant effect.
11:30-11:45 BM23-204-A	**Title:** Unintended Consequences of Decision-making: Kazakhstan's Involvement in China's OBOR **Authors:** Bakyt Tolegenov, Robert Chia, **Wee Meng Yeo** **From:** University of Glasgow, United Kingdom *Abstract:* To enhance supply chain connectivity and trade flows, unintended consequences accompanying infrastructural project decisions has spawned a loose cluster of contributions on the matter from a number of different theoretical perspectives. To address this gap, we examine a range of decisions and their corresponding unintended consequences using Kazakhstan's involvement in China's OBOR as the case study. There is not, as yet, an adequate conceptual

	framework that can be employed for interrogating how decisional situations in relation to facilitate trade flow may unfold and generate unintended consequences in practice. How do we account for the unexpected emergence of problems and unanticipated opportunities that may follow from strategic decisions made? How can we minimise negative unintended consequences from such strategic decisions? We apply a case study approach, building on insights from approximately 30 qualitative interviews with representations from state-owned financial institutions, ministries, and railway companies, complemented by press documents and academic articles. Strategic decisions to provide greater access to key transit routes in exchange for reviving say, Kazakhstan's manufacturing sector may produce both negative and positive unintended consequences. Our key contribution is explicating those trade-offs based on factors such as infrastructural projects complexity, operational boundary and cost-benefit economics.
11:45-12:00 BM23-433	**Title:** Cryptocurrency Market Volatility Forecasting **Authors: Yiming Wang** **From:** Zhongnan University of Economics and Law, China *Abstract:* Although cryptocurrencies are catching the fancy of investors for various benefits such as decentralization, low transaction costs, and inflation hedging, their extreme volatility is sometimes keeping many away. Consequently, modeling and forecasting cryptocurrency market volatility are essential to investors' investment decisions and risk management. However, most previous studies have been limited to Bitcoin volatility, disregarding cryptocurrency market performance as a whole. This study estimates realized volatility of cryptocurrency market with a variety of algorithms employing a portfolio-style technique. After comparison, LSTM networks surpass the conventional GARCH-type models; meanwhile, the hybrid GARCH neural network models perform the worst. This study provides an impetus for a significant number of academics interested in the extreme volatility of cryptocurrencies. Additionally, it illustrates that more sophisticated models may not always lead to better predictive performance.
Best Presentation Award & Group Photo	

Online Session 4- Supply Chain Analysis and Intelligent Commerce
Session Chair: Dr. Anak Agung Ngurah Perwira Redi, Sampoerna University, Indonesia
Presentation Time: 13:30-15:30, January 15, 2023 (GMT+8)
Meeting ID: 825 5445 2521 https://us02web.zoom.us/j/82554452521

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13:30-13:45 BM23-475	**Title:** Antecedents of the Online Shopping Behavior during the Covid-19 Pandemic **Authors:** Dhafin K Ma'mun, Rieska Aprillia, Riko, **Lianna Wijaya** **From:** Bina Nusantara University, Indonesia *Abstract:* Online shopping activities during the Covid-19 pandemic have increased and become a growing trend among Indonesian consumers. This study aims to determine the relationship between subjective norms, perceived usefulness, and online shopping behavior mediated by purchase intention. The research method was carried out by distributing online questionnaires through social media platforms to obtain feedback from the targeted group between the ages of 17-45 years old and who live in the Jabodetabek areas. The data was collected from a survey of 369 online shopping application users. The data were obtained and analyzed using SEM SmartPLS. The results of this study concluded that the subjective norms variable has a significant positive effect on consumer purchase intention. It appeared that subjective norms have no effect on online shopping behavior. Perceived usefulness and purchase intention have a significant and positive effect on online shopping behavior. For the indirect effect, purchase intention has a mediation effect on the relationship between perceived usefulness and subjective norms toward online shopping behavior Overall, perceived usefulness has the greatest effect on purchase intention. This study contributes to combining the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM) to predict online shopping behavior during the pandemic COVID-19.
13:45-14:00 BM23-203	**Title:** Challenge of Covid-19 Pandemic in the Supply Chain of Taiwan's Pleasure Yacht Industry **Authors: Eva ChiaHua Chiu**, Chi-Cheng Wu **From:** National Sun Yat-sen University, Taiwan, China *Abstract:* Taiwan ranks as the 6th largest producer of pleasure yachts worldwide and the first in Asia. More recently, there has been a growing demand for luxurious products due to increased income and spending. Taiwan's superyacht industries have taken advantage of these trends to meet increasing demand. However, the recent event of the Covid-19 pandemic devastated the industry. The supply chain of the industry was effectively disrupted. This research was conducted to understand the pandemic's effects and strategies sought to mitigate the same. Specifically, the research sought to review the challenges of the Covid-19 pandemic on the supply chain of Taiwan's pleasure yacht industry. Interestingly, demand increased significantly during this period. Taiwan has sought to foster its internal market and manufacturing capacity to reduce their vulnerability during the pandemic.

14:00-14:15 BM23-424	**Title:** GRU and LSTM Based Adaptive Prediction Model of Crude Oil Prices: Post-Covid-19 and Russian Ukraine War **Authors:** Cai Yingpeng, **Zhang Ningqian** **From:** China University of Geosciences, China *Abstract:* The crude oil prices, which were stable for consecutive years, have been on a roller coaster since COVID-19. Owing to supply chain crises caused by the pandemic, the war between Russia and Ukraine, and the mismatch between excessive monetary policies and environmental protection policies, oil prices fell into negative territory in early 2020 unprecedentedly and hit new highs in recent days. On account of its universal approximation ability for any nonlinear function, the neural network has received substantial attention in asset price prediction. As a data-driven model, there is no doubt that the neural network can digest the past to predict the future. However, it cannot effectively predict those distinctive patterns that did not appear before, which is the case right now. In order to address this problem, a grey box adaptive Recurrent Neural Network (RNN) model based on feedback control in the control engineering field is proposed in this paper to compensate for the prediction error of the neural network. According to the experimental data, the correlation coefficients of the ALSTM and AGRU proposed in this paper are 0.9895 and 0.9886, respectively, and the root mean square error (RMSE) of these two models is 3.2184 and 3.3546, respectively. Therefore the proposed models can improve prediction accuracy.
14:15-14:30 BM23-201	**Title:** The Forecasting Accuracy in the UK Food Logistics- Two System Drivers to Meet the 2050 Net-zero Goal **Authors: Yiru Lang** **From:** The University of Manchester, Manchester, The United Kingdom *Abstract:* Recently, the UK government passed legislation that introduces the 2050 net-zero goal, as well as the recent pandemic and net-zero emission targets that call for revolutions in the transportation logistics system. Forecasting dedicates to accurately predict in demand management, production planning, and transportation route optimization to contribute to a better transportation logistics system. Therefore, we must address the importance of forecasting in designing a proper transportation logistic system to achieve a net-zero future, and the food industry is worth discussing in this case. Two system drivers of forecasting accuracy are identified for the 2050 net-zero goal: the end-to-end collaborative logistic system, and the uncertainties addressed by the innovative forecasting tools, respectively document the importance of information flow and the necessity of an innovative subjective forecasting approach to meet the 2050 commitment.
14:30-14:45 BM23-466	**Title:** Data Preprocessing in Supply Chain Management Analytics - A Review of Methods, the Operations They Fulfill, and the Tasks They Accomplish. **Authors: Obinwanne Tobechi**, Udokwu Chibuzor, Zimmermann Robert, Brandtner Patrick **From:** Upper Austria University of Applied Sciences, Austria *Abstract:* Data preprocessing is thought of as one of the most important steps in data analytics. This is especially true for the field of Supply Chain Management (SCM), in which the handling of huge data sets is the norm. Data preprocessing consists of multiple tasks, operations, and methods. Thus, this research focusses on identifying the specific data preprocessing tasks in

SCM analytics, the operations used to solve them, and the methods used to meet the goals of the respective operations. To this end, a literature review, covering literature from 2011 to 2022, was conducted to analyze documented approaches to data preprocessing in SCM. The resulting overview presents the interrelationship between data preprocessing tasks, data preprocessing operations, and data preprocessing methods in SCM analytics. Results indicate that data transformation seems to be a commonly investigated task in SCM related data preprocessing, while data integration represents an area requiring further research. Furthermore, Principal Component Analysis (PCA), was found to be the most common method across the single tasks of data preprocessing, further highlighting the importance of transforming data by manipulating the features into a form such that when analytics algorithms are applied, they will give optimal results. This research hence presents researchers and practitioners a point of reference to identify the specific data preprocessing method used for specific data preprocessing operations in order to fulfill a specific data preprocessing task.

14:45-15:00 BM23-439	**Title:** Evolutionary Game Analysis of Fresh Food Supply Guarantee in China's Megacities Lockdown Against Covid-19 **Authors: Xueyi Li**, Yusen Zhou **From:** Goldsmiths, University of London, United Kingdom *Abstract:* With the emergence of highly infectious variants of the SARS-CoV-2 virus, Covid-19 inevitably started to spread in Chinese megacities, where the government used to take adequate measures to suppress the increase of Covid-19 cases since 2020. For instance, in the spring of 2022, Shanghai, a megacity with a population of 30 million, was locked down for two months to restrain the outbreak of Covid-19. In the megacities' long- term lockdown, fresh food supply tends to be crucial, especially when residents cannot store sufficient fresh vegetables without going out for more than a month. In this case, as an emerging business model, the fresh food e-commerce platforms become residents' primary source of fresh food supply during the lockdown. The operating strategy of the fresh food e-commerce platforms is of great significance for assisting the government in stabling residents' moods and realizing the dynamic zero policy, which would also be helpful to their penetration. However, the strict quarantine policy of the government reduces the number of delivery riders resulting in soaring prices, which will influence residents' decisions of whether to bear economic losses of high prices or physical damages due to lack of food. This paper analyzes the strategic choices between the government, fresh food e-commerce platforms, and residents (consumers) through the evolutionary game model, which provides solid suggestions for possible lockdowns in other Chinese megacities against Covid-19
15:00-15:15 BM23-436	**Title:** Status-Quo of IoT in Supply Chain Management - Applications, Potentials and Challenges in Austria **Authors:** Patrick Brandtner, Stefan Schober, **Robert Zimmermann**, Franz Staberhofer **From:** University of Applied Sciences Upper Austria, Austria *Abstract:* The complexity and uncertainty in Supply Chain Management (SCM) has grown radically over the last years. New technologies provide an avenue for improving SCM activities. In particular, the Internet-of-Things (IoT) is one of these technological advances, which has received quite some attention in SCM literature. However, especially for smaller countries such

as Austria, the actual status of IoT application in SCM is low and research is often limited to analyzing theoretical potentials. The current paper elaborates the status-quo of IoT in eight different industries in Austria by means of expert interviews. Results show, that IoT is only applied in a very limited way. Still, practitioners agree that it offers huge potential e.g., to increase SC transparency, improve planning in SCM or provide real-time information as basis for risk handling. The main benefits of IoT are seen in form of improved process quality, higher level of customer satisfaction due to tracking and tracing, provision of additional real time data, and the creation of digital SC twins. Each analyzed company plans to implement IoT in SCM in the future. The paper provides several starting points for practitioners aiming to implement IoT in SCM. Our results also provide several opportunities for future research, e.g., to compare our findings for Austria with findings from other countries with especial focus on SMEs.

15:00-15:30 BM23-401-E	**Title:** Empirical Study on productivity indicators and the impact of the dwell time factor on the capacity of Container Ports **Authors: Azzelarab Zaoudi**, Jihane Aayale, Yasmina Mabrouk **From:** SCAE Group Casablanca *Abstract:* The purpose of this paper is to propose a model to evaluate the dynamic capacity of the container port based on productivity indicators. From another hand, this paper seeks to explore the impact of dwell-time factor on the capacity of container port. The methods of calculation are referenced to Carl. Thoresen, Kap Kim et Gûnter, Rademaker, Ligteringen. The methods were tested, applied and validated by different international organization and projects such as UNCTAD and KALMAR. Ports and container terminals are a vital link in the intermodal transport system, container shipping runs on constant change. In nowadays, studies on productivity and capacity analysis are of a major concern. Experts, managers, academics, and all the port community require work on activity assessment in order to take better decisions especially those of investment and economic concern. Studies that identify factors that influence on economic decision making of container ports, those related to its capacity and investments are few. This research attempts to fill this gap by establishing a model that allows to better analyze the productivity of container ports and in particular to look at on how dwell-time can improve the dynamic capacity of the port. The results confirm the negative relationship between capacity and dwell time factor and the positive relationship between gross crane productivity and quay capacity. Productivity factors improve the capacity of the port/terminals. The dwell time factor is a crucial factor that hugely effect on the terminal productivity and its capacity. The interconnectedness of the factors is a key feature through this analysis. Various indicators have been estimated throughout this research.

Best Presentation Award & Group Photo

Online Session 5-Enterprise Digital Transformation and Data Management
Session Chair: Assoc Prof. Bambang Leo Handoko, Bina Nusantara University, Indonesia
Presentation Time: 13:30-15:30, January 15, 2023 (GMT+8)
Meeting ID: 898 2789 6916 https://us02web.zoom.us/j/89827896916

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13:30-13:45 BM23-441	**Title:** Analysis of Factors Affecting Accounting Information System Performance on Banking Company **Authors: Bambang Leo Handoko**, Gen Norman Thomas, Lely Indriati **From:** Bina Nusantara University, Indonesia *Abstract:* To support the institution's efficient operation, accounting information systems are crucial, thus it is also required to have an accounting information system that is backed by computerized information technology. This study will ascertain if user participation, individual technical proficiency, training and education programs, top management support, and formalization of system development have an impact on the functionality of the banking accounting information system. 104 people made up the sample for this study, which was gathered using a purposive sampling approach. Multiple linear regression analysis is the method utilized for analysis. The findings demonstrated that top management support, formalization of system development, user participation, personal technical abilities, training and education programs, and technical proficiency all improved the performance of accounting information systems.
13:45-14:00 BM23-463	**Title:** Research on Impediments to Digital Transformation of Small and Medium Sized Manufacturing Enterprises Based on DEMATEL-ISM **Authors: Qingmei Chen**, Peiru Dai **From:** Guangdong University of Science and Technology, China *Abstract:* In the context of increasingly extensive application of emerging technologies, digital transformation has become the trend of enterprise development. Under the pressure of continuous encouragement and guidance of government policies and successful transformation of large enterprises, the digital transformation of small and medium-sized manufacturing enterprises has become increasingly urgent. However, the digital transformation environment faced by small and medium-sized manufacturing enterprises is complex, especially after the outbreak of COVID-19, enterprises have encountered more difficulties and challenges. Through literature review, the paper divides the factors affecting the digital transformation of small and medium-sized manufacturing enterprises into four dimensions: environment, economy, technology and management, and subdivides them into 14 specific factors. In this paper, DEMATEL-ISM(Decision-making Trial and Evaluation Laboratory-Interpretative Structural Modeling Method) is used to analyze the influencing factors, identify the key factors, and use the form of hierarchical confrontation diagram to show the internal causal relationship of each

influencing factor. The research results show that digital policy, business model, the reliability and security of third-party digital services are the driving factors of small and medium-sized manufacturing enterprises' digital transformation, and have a very significant impact on other factors. Digital investment benefits, enterprises' ability to resist risks and enterprise development planning are important outcome factors of small and medium-sized manufacturing enterprises' digital transformation.

14:00-14:15 BM23-467	**Title:** The Success Factors on Tax Technology Transformation: Assessment of Personality Traits and Digital Maturity among Indonesian Tax Consultants **Authors: Amanda Benedicta Nursalim**, Jocelyn Novita, and Levana Dhia Prawati **From:** Bina Nusantara University, Indonesia *Abstract:* Technological transformation, especially in the digital realm, can bring enormous benefits and open up new opportunities. The purpose of this study is to examine the ability of Indonesian tax consultants in adopting tax technology transformation and how their personality traits influence it. This survey may serve as a matrix for tax consulting firms in selecting attributes to consider when hiring consultants. This study explores the relationships between Indonesian tax consultants' personality traits and tax technology transformation. Samples obtained from online questionnaires were 112 tax consultants. The data is analyzed using SEM PLS method. The results show that Extraversion, Agreeableness, Conscientiousness, and Openness give partly or wholly positive relation to Digital Maturity.
14:15-14:30 BM23-412	**Title:** Determining the Significance of Two Consecutive Fiscal Years of Non-Conformance Cost Data Set in Project Execution of Smart Grid **Authors:** Miller F. Narvas, **Yogi Prasetyo**, Reny Nadlifatin, Irene Dyah Ayuwati, Satria Fadil Persada **From:** Mapúa University, Philippines *Abstract:* Non-conformance cost is one of the key performance indicators in determining the success of executing a project. This study will substantiate the significance of two consecutive fiscal years of non-conformance cost data set in project execution of smart grid. A two-Sample T-Test was used to compare the means of two consecutive years' data sets. All the results of both fiscal years' data set were insignificant. Since it is insignificant, the best recommendation is to thoroughly review the lessons learned from the previous projects and implementation of preventive actions to mitigate or even prevent the occurrence/ reoccurrence of non-conformance and non-conformance costs. A continuous improvement in preventing failures will assure success and increase the profitability margin of the project.
14:30-14:45 BM23-470	**Title:** Impact of Data Mining, Big Data Analytics and Data Visualization on Audit Quality **Authors:** Bambang Leo Handoko, **Nicholas Reinaldy**, Septi Wifasari, Hugo Prasetyo, Triana Meinarsih **From:** Bina Nusantara University, Indonesia *Abstract:* The existence of various financial statement scandals has made users of financial statements doubt the quality of the audit and demand auditor to provide an audit with better audit quality. Currently, the level of difficulty to meet these demands is becoming higher as the client's business becomes more complex. Information and data provided by clients are also

increasingly diverse, including various kinds of electronic information and data. Thus, currently auditors must use a data-driven approach. Therefore, based on this phenomenon, we as researchers want to examine the effect of data processing technology on audit quality. We gathered primary data from external auditors through questionnaire to obtain empirical data that can verify our research model. As the results, we found that data mining and data visualization significantly affect big data analytics. While data mining, big data analytics, and data visualization do not significantly affect audit quality. These results are based on our sample which is external auditors in Indonesia. This research can be used as a reference for further study development. Future researchers can also conduct the same research in developed country.

14:45-15:00 BM23-445	**Title:** The Impact of Digital Transformation on the Debt Financing Costs of Firms **Authors:** Jun Wang, **Chenwei Zhu** **From:** Sichuan University, China *Abstract:* The digital economy, with digital technology as its core driving force, is subverting the traditional economic and social operating model. In the context of the deep integration of the digital economy and the real economy, digital transformation is the consensus of almost all firms. As the first driving force of the firm's operations, financing activities will inevitably be affected by the digital transformation of firms. Based on the perspective of financing, this study empirically tests the impact of digital transformation of firms on the cost of debt financing. When measuring variables, this study uses the technology of data mining and text analysis to measure the extent of digital transformation of firms. The research results show that the digital transformation of firms is significantly negatively related to the cost of debt financing. In addition, for firms with different equity nature, there are significant differences in the impact of digital transformation on the cost of debt financing.
15:00-15:15 BM23-446	**Title:** Relationship between Agile Maturity and Digital Transformation Success **Authors: Sara Hassan Ahmed Sallam**, Mohamed Mostafa Fouad, Fahd Hemeida **From:** Arab Academy for Science, Technology, and Maritime Transport Cairo, Egypt *Abstract:* Due to the imperatives of the digital world and the COVID pandemic outbreak, digital transformation has gained interest in both academia and practice, especially in the information technology industry. Most of organizations recognize that agility is the best way to succeed in their digital transformation journey. So, in order to know where they stand and advance to a higher degree of maturity, it is extremely important for enterprises to evaluate their agile maturity level. This paper investigates the relationship between agile maturity levels in terms of its eleven focus areas and the digital transformation success in Egypt's information technology software companies. This study can assist firms in determining the key areas for agile maturity that are most crucial to the success of their digital transformation. It carried out a descriptive analysis on different software companies operating in Egypt. 100 employees working on agile projects were given a survey, and the responses were examined using the SPSS software. The results proved a significant positive relationship between agile maturity and digital transformation success according to significant studied aspects. The discussion of these aspects within the paper, gives a guideline for organizations wishing to implement a

	successful digital transformation journey.
15:15-15:30 BM23-208	**Title:** Hospital 4.0 Maturity Assessment Model Development: Case of Moroccan Public Hospitals **Authors: Touria BENAZZOUZ**, Khalid Auhmani **From:** Systems and Applications Engineering Laboratory (LISA) National School of Applied Sciences, Maroc *Abstract:* This paper presents a Hospital 4.0 Maturity Assessment Model based on the Industry 4.0 concepts. The self-assessment model defines current and target states of digital transformation by considering multiple aspects of a hospital and a healthcare supply chain. The developed model was validated and evaluated on real-life cases. The resulting model consisted of 5 domains: Technology, Strategy 4.0, Human resources 4.0 & Culture 4.0, Supply chain 4.0 management, and Patient journeys management. Each domain is further divided into several sub-domains, totally 34 sub-domains are identified, that reflect different facets of a hospital 4.0 mature organization.

Best Presentation Award & Group Photo

University of Macau

Founded in 1981, the University of Macau (UM) is an international public comprehensive university in Macau, with a multicultural campus and a system of whole-person education underpinned by faculties and residential colleges in an international education setup. 80 per cent of its faculty members are from outside Macau. With English as the main medium of instruction, the university is committed to producing creative and socially responsible graduates with a global mindset and international competitiveness.

Teaching units at UM include Faculty of Arts and Humanities, Faculty of Business Administration, Faculty of Education, Faculty of Health Sciences, Faculty of Law, Faculty of Science and Technology, Faculty of Social Sciences, Honours College, Graduate School, and Centre for Continuing Education. Research institutes include Institute of Advanced Studies in Humanities and Social Sciences, Institute of Applied Physics and Materials Engineering, Institute of Chinese Medical Sciences, Institute of Collaborative Innovation, Institute of Microelectronics, Asia-Pacific Academy of Economics and Management, and Centre for Macau Studies.

UM is ranked in the 201-250 bracket in the Times Higher Education (THE) World University Rankings, with a global ranking of No 5 in International Outlook, No 26 in the THE Young University Rankings, No 33 in the THE Asia University Rankings, and No 1 in the Association of Portuguese Speaking Universities. In the Quacquarelli Symonds (QS) World University Rankings, it is ranked No 304. It is among the top 1 per cent in Essential Sciences Indicators (ESI) rankings in ten subjects, namely Engineering, Computer Science, Materials Science, Chemistry, Pharmacology & Toxicology, Psychiatry/Psychology, Clinical Medicine, Biology & Biochemistry, Social Sciences, General, and Agricultural Sciences.

Today's UM is on the threshold of a new era. It will continue to uphold the five virtues listed in the university motto, namely humanity, integrity, propriety, wisdom, and sincerity, to make further improvements and bring about innovation. As a university firmly rooted in Macau, UM strives to participate in the development of the GBA, integrate itself into national development, and reach out to the world. UM aims to become an internationally recognised university of excellence through quality student-centred education, internationally impactful research, and high-quality community services.

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