## Table of Contents

- Sustainability, Business Opportunity, and Social Responsibility: An Asian Perspective  
  Conference Organizers  
  Conference Program  
  Profiles of Keynote Speakers  
  Details of Concurrent Sessions

1. Effects of Product Quality, Service Quality and Price Fairness on Customer Engagement and Customer Loyalty  
   Darwin Dhasan and Mayuree Aryupong

2. Does E-Marketing Mix Influence Brand Loyalty and Popularity of E-Commerce Websites?  
   Sriram K.V., Asish Oommen Mathew, Sumukh Hungund and Kathakali Phouzder

3. Effects of Consumer Behaviors and Technology Acceptance on Electronic Word-of-Mouth  
   Yossaya Vijitkornthong and Mayuree Aryupong

4. Moderating Effects of Hofstede’s Cultural Dimensions on Relationship between AEWOM and FEWOM in Thailand  
   Aya Fukushige, Mayuree Aryupong and Phacharapor Phijaranakul

5. Developing and Evaluating an Airport Service Quality Model: The Case of Airport Based in Thailand  
   Nuchanart Cholkongka
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Access to Services for Airline Wheelchair Passengers: A Case Study of Thai Air Asia</td>
<td>Thitiporn Milindra Christensen and Supachoke Suthichoti</td>
</tr>
<tr>
<td>7</td>
<td>Research for Human Information Acceptance Behaviour in Multiplayer Online Game</td>
<td>Liang Liu</td>
</tr>
<tr>
<td>8</td>
<td>Consumers’ Understanding on Cashless Payment: A Qualitative Study in Bangkok</td>
<td>Henzel Embalzado, Bing Zhu and Wanwisa Charoennan</td>
</tr>
<tr>
<td>10</td>
<td>A Comparative Study of Fraud Regulation in Malaysia and United States</td>
<td>Wan Zurina Nik Abdul Majid, Marziana Madah Marzuki, Romzie bin Rosman, Nik Kamaruzaman bin Haji Abdulatiff and Nur Kamaliah Abd Azis</td>
</tr>
<tr>
<td>11</td>
<td>Shaping an Independent Ethical Climate and an Innovative Organizational Culture: The Influence of Managers’ Risk-Taking and Integrative Characteristics</td>
<td>Anthony Kuo, Ying-Tzu Lin and Wanny Oentoro</td>
</tr>
<tr>
<td>13</td>
<td>Investor Heterogeneity and the Sustainable Investment Preferences: Evidence from Indonesia Stock Exchange</td>
<td>Dwitya Aribawa</td>
</tr>
<tr>
<td>14</td>
<td>Assessment of Students Working Part Time in Hospitality Sector in Mumbai Region Based on Work Design</td>
<td>James Joseph, Asish Oommen Mathew, Sriram K.V., and Amit Ravindra Shintre</td>
</tr>
</tbody>
</table>
15 The Effect of Management Level Internal Communication and Communicational Practices on Employee Job Outcomes
   Sudarat Kliangsa-Art and Wanny Oentoro

16 HR Analytics: Effective Enabler for Sustainable Competitive Advantage of MSMEs
   Yatindra Dwivedi and Krishna Nath Pandey

17 The Role of Top Management Support on the Relationship between Supply Chain Management Practices and Manufacturer’s Performance in Thailand
   Siriwadee Sawaengdee and Nichanan Sakolvieng

18 Business Integration, Supply Chain Innovation and Supply Chain Performance: A case of Thailand Consumer Sector
   Nathida Khongkant

19 Improvising SME Performance: Innovation as a Mediator
   Hatinah Abu Bakar, Khalid Abdul Wahid, Shahsuzan Zakaria and Mazlina Mamat

20 The Role of Intrapreneurship for Sustainable Innovation through Process Innovation and Product Innovation on Sustainability Knowledge of MNC’s in Thailand: A Conceptual Framework
   Phairat Boonsuwan and Piyawan Puttibarncharoensri

21 The Impact of Horenso Organizational Culture on Organizational Commitment and Organizational Performance
   Siriwut Rungruang and Nichanan Sakolvieng

22 Factors Driving Corporate Sustainability in Small Businesses: A Leadership Perspective
   Suparak Suriyankietkaew

23 The Effect of Transformational Leadership, Job Satisfaction, and Job Embeddedness towards Organizational Citizenship Behavior in Indonesia: A Case Study in Shane English School, Indonesia
   Wylen Djap, Innocentius Bernarto and Niko Sudibjo
The Impact of Entrepreneurial Framework Conditions towards Entrepreneurial Capacity and Opportunity: A Case Study of SMEs in Thailand
Suphakit Limlertratana, Sasirin Sayasonti, Suchart Tripopsakul and Panupong Pituksung

Difficulties in Selling Unsellable Goods: Current Challenges in the Japanese Game Meat Trade
Yukichika Kawata

Impact on Idol Group's Members' Preferences to Social Network Services Engagement and Spending Behaviors. Case Study: BNK48
Dhirachat Chayaporn

Insights from the Comparative Study of the Thailand Marketing Research Society (TMRS) Standardized Social Economic Status between 2009-2017
Jirayu Poomontre Kasemsant, P 살 Setthawong and Rachsuda Setthawong

The Mediating Effect of Consumer Identification on the Factors Influencing Purchase Intention and Actual Behaviors on Organic Food Consumption
Nitima Aungatichart and Mayuree Aryupong

On New Ventures' Board of Directors: Formation, Adjustment, and Influences on Internationalization
Anthony Kuo, Ming-Sung Kao and Nichanan Sakolvieng

Corporate Governance in Non-Banking Financial Companies in India: A Case of IF&LS
Anil Kumar and Santosh Kumar

The Effect of Family Business Succession Preparation and Implementation on Post Succession Performance: Evidence from Steel Industries in Thailand
Permsin Yongvongphaiboon

The Improving Quality Management Using Water-based Environmental Safe Ink for Printing Plastic Bag Industry in Thailand
Wasana Marksin, Metta Ongkasuwan and Akechai Judkrue
33 Exploring the Relationship between Entrepreneurial Development Strategy and Start-up Performance  
Chia-Liang Hung and Min-Hsuan Hsu

34 Discriminant Analysis for Financial Stability Factors of Agricultural Cooperatives and Non-Agricultural Cooperatives in 2017  
Krieng Kitbumrungrat

35 The Insight Relationship between Infrastructure Funds and Stock Market: The Case of Thailand  
Jiroj Buranasiri and Marisa Laokulrach

36 Factors Affecting the Assurance of Savings in Cooperative from the Perspective of Member: A Case Study of Assumption University Savings & Credit Cooperative Limited (AUSCC)  
Annop Peungchuer, Amara Tirasriwat, Asha Mathew and Naruemol Tridechapol

37 The Mediating Effect of Customer Knowledge Sharing on Organizational Performance  
Khalid Abdul Wahid, Ahmad Suffian Mohd Zahari, Shahsuzan Zakaraia and Hatinah Abu Bakar

38 Proposal of Business Ecosystem Strategy Construction Method  
Hiroshi Kubo, Xiaoxia Qu and Takashi Kakimoto

39 Study on Mandala Matrix Method to Achieve Business Goals—Business Analysis for Accomplishment and Strategic Drafting Technique  
Masatoshi Mori

40 LMX Differentiation and Relationship Conflict: The Moderating Role of Authentic Leadership  
Jiayin Ou and Wanny Oentoro

41 Income Inequality of Taiwan’s Households, 1985-2013  
Chien-Liang Chen and Chung Ming Kuan
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Financial Literacy and Financial Behavior of the Young</td>
<td>164</td>
</tr>
<tr>
<td>43</td>
<td>Social Capital and Knowledge Management Practices in Indian Information Technology Companies</td>
<td>165</td>
</tr>
<tr>
<td>44</td>
<td>The role of Practical Proficiency to Increase Teaching Effectiveness in the Educational Business</td>
<td>166</td>
</tr>
<tr>
<td>45</td>
<td>Influences of the Organizational Justice and Self-Efficacy on Employee Work Motivation and Organizational Commitment</td>
<td>167</td>
</tr>
<tr>
<td>46</td>
<td>Factors Influencing Knowledge Management in Thailand’s Law Industry</td>
<td>168</td>
</tr>
<tr>
<td>47</td>
<td>An Innovative Entrepreneur Using Digital Marketing Management to Promote: A Makerel Fish Tails Crispy Snack for Health and Wellness Snack Industry</td>
<td>169</td>
</tr>
<tr>
<td>48</td>
<td>The Feasibility of Decentralized Voting Systems Utilizing Blockchain Technologies and Comparison with Traditional Centralized Voting Systems</td>
<td>170</td>
</tr>
<tr>
<td>49</td>
<td>Choosing between On-premise and On-cloud Deployment Model: A New Challenge in ERP</td>
<td>171</td>
</tr>
<tr>
<td>50</td>
<td>Cost and Benefit Analysis of E-commerce in Different Firm Sizes: Case of Thailand 4.0</td>
<td>183</td>
</tr>
</tbody>
</table>
51 Change of Lecturer’s Roles to Encourage Sustainable Learning Outcomes of Aviation-Business Students in the Private University
Sanhakot Vithayaporn

52 Survival from Disruptive Economy in Higher Education Institute: A Case of Aviation Personnel Development Institute
Krit Witthawassamrankul

53 Organic Farming and Naturally Grown Products; Need of Training Intervention for its Growth and Healthy Society
Ram Kumar Gazaresen and Krishna Nath Pandey

54 Co-Operation-An Empirical Study in Power Sector
Puneet Tyagi and Krishna Nath Pandey

55 The Study of Employee Engagement of Manufacturing Sector in Thailand
Tanakorn Chalermjirapas, Hla Theingi and Mayuree Aryupong

56 Value-At-Risk of Stock and Cryptocurrency Portfolio Diversification
Wanissa Nawapong, Peerakarn Chansorn, Thitivadee Chaiyawat and Isariya Sattakulpiboon

57 Return and Volatility Spillovers between Cyclical Sector Indices and Market Indices in the Stock Exchange of Thailand during 2014-2017
Nonthadej Predawut

58 The Macroeconomic Determinants of Malaysian Stock Market Return
Shahsuzan Zakaria, Mohamad Sayuti Md Saleh, Khalid Abdul Wahid and Hatinah Abu Bakar

59 Viewpoint and Methods of Data Analysis for Accounting Fraud Discovery – Analysis of Cases of Accounting Fraud of Overseas Subsidiaries of Japanese Listed Companies
Takashi Ishijima
Accounting as A Choice of Academic Programme: A Comparative Study between Malaysian and Indonesian First-year Under-graduate Accounting Students
Maheran Zakaria, Muhammad Saiful Anuar Yusoff and Ida Rosnidah

A proposal for a Curriculum Update of Graduate Business Schools in ASEAN Towards a more Meaningful and Beneficial Teaching and Learning Outcome in Support of the Sustainable Development Goals of the United Nations
Aaron Loh and Glen Chaterlier

Enhancing Social Responsibility in Chinese Higher Education Institutions
Chongyan Zhang

Salute to the Black Sheep: The Legitimacy of Workplace Bullying from the Perspective of Organizational Cohesive Affinity and Organizational Competitiveness
Hsiang-Ying Cheng and Kai-Ping Huang

Exploring a Model for Strategic Buyer-Supplier Relationship: FMCGs Industry in Thailand
Suppasit Sornsri
Sustainability, Business Opportunity, and Social Responsibility: An Asian Perspective

Sustainability has been called a “mega trend” of the current time creating added emphasis on the joint responsibility of governments, businesses and individuals for reaching the UN sustainability goals, but also on new opportunities for business. Middle income or emerging economies, because of their high growth in both production and consumption, are playing an increasing role globally, both in terms of business opportunities and in the quest for sustainable development. We also witness a lot of creativity among researchers in Asia and elsewhere as regards creating a better understanding of and facilitating sustainable development and business opportunities in an emerging economy context.

In order to further facilitate this positive development, the Assumption University 1st International Conference in Business & Economics provides a platform for academics and business practitioners in various disciplines to share their ideas and expertise on “Sustainability, Business Opportunity, and Social Responsibility: An Asian Perspective,” particularly with regards to

1. **Practices and Institutions.** Contributions may focus on effective practices and institutions to advance sustainable and fruitful development in the business sector and society.
2. **Incentives and Promotion.** Contributions may offer insights into promoting sustainable development in and by the business sector and evaluate progress in the short or long term.
3. **Indicators and Targets.** Contributions may address challenges in assessing and reaching sustainable development goals and targets, and developing appropriate indicators. Submissions may consider, for example, frameworks and tools for and/or implementation of data collection and analysis.
4. **An Asian Perspective.** Contributions may address the ways in which geography and culture influences sustainable development and responsible business opportunities, for example, discussing the difference in the development, challenges and opportunities facing Southeast Asian countries and western countries.

More than sixty academics from over a dozen countries presented their research at the conference. A wide range of research ideas and results was shared and discussed, encompassing topics, such as service quality, digital marketing, fraud, finance, human resources, supply chain, leadership and entrepreneurship, marketing, corporate governance and new ventures, organizational development, access to key sustainable resources, knowledge management, information technology, education, and environment and development. There were both theoretical and empirical studies, as well as research based on either qualitative or quantitative approach.

The conference is no doubt a success. The large number of research articles and the active participation from the conference attendees exhibit a strong sense that sustainability is an active research area in business. The conference is just a first step towards promoting knowledge sharing in this area. It is beyond question that how emerging economies and their businesses can achieve a balance between development and sustainability is worth both more attention in future work and more idea sharing in forums for discussion like this conference.

Papar Kananurak, Shih-tse Lo, Nichanan Sakolvieng and Suppasit Sornsri
Editors
CONFERENCE ORGANIZERS

AU Steering Committee
- Rev. Bro. Dr. Bancha Saenghiran - Advisor
- Asst. Prof. Dr. Uree Cheasakul - Chair
- Mr. Vichai Satthachatotinum - Member
- Mr. Glen Vivian Chatelier - Member
- Mr. Kumteung Laongkum - Member
- Mr. Vrong Chivanthananon - Member
- Dr. Absorn Meesing - Member
- Asst. Prof. Dr. Dhanooos Suthiphisal - Member

Conference Co-Chairs
- Prof. Dr. John Thøgersen (Aarhus University) - Advisor
- Asst. Prof. Dr. Uree Cheasakul - Advisor

Sub-committee on Public Relations
- Mr. Glen Vivian Chatelier - Advisor
- Mr. Vrong Chivanthananon - Advisor
- Asst. Prof. Dr. Vasa Buraphadeja - Chair
- Dr. Punnaluck Satanasavapak - Promotional Materials
- Asst. Prof. Dr. Jirayu Poomontre Kasemsant - Sponsorship
- Asst. Prof. Dr. Sakuna Anuvareepong - Sponsorship and Liaison
- Asst. Prof. Dr. Nopphon Tangjitprom - Invitation Liaison
- Prof. Dr. Sonthya Vanichwatana - Liaison

Sub-committee on Local Arrangement
- Asst. Prof. Dr. Uree Cheasakul - Advisor
- Asst. Prof. Dr. Wanida Ngienthi - Advisor
- Mr. Kumteung Laongkum - Advisor
- Asst. Prof. Dr. Dhanooos Suthiphisal - Chair
- Dr. Wiyada Nittayagasetwat - Coordinator
- Dr. Charoen Russametummachot - Venues
- Asst. Prof. Dr. Pisan Setthaowong - IT and Equipment
- Mr. Dhirachat Chayaporn - IT and Equipment
- Asst. Prof. Dr. Amara Tirarsriwat - Finance
- Ms. Orawee Thongkham - Registration and Transportation
- Ms. Lalida Arphawatthanasakul - Food and Beverage Service
- Ms. Parichat Hwangdee - Hospitality and Accommodation
- Dr. Maneerat Kor-Udom - Hospitality
- Dr. Ing-wei Huang - Hospitality
- Dr. Bing Zhu - Hospitality
- Dr. Rattiporn Luanrattana - Venues and Secretarial Service
- Mr. Anuphab Siripat - Student Assistance
- Dr. Chanikarn Tosopark - Master of Ceremony
- Mr. Glen Vivian Chatelier - Master of Ceremony

Program Committee: (responsible for paper reviews and organizing sessions)
- Dr. Absorn Meesing - Advisor
- Dr. Shih-Tse Lo - Chair
- Dr. Nichanan Sakolvieng - Member
- Dr. Papar Kananurak - Member
- Dr. Suppasit Sornsri - Member

Paper Selection Committee
- Prof. Dr. André Habisch (Catholic University Eichstätt-Ingolstadt) - Chair
- Prof. Dr. Anthony Kuo (Fu Jen Catholic University) - Member
- Asst. Prof. Dr. Kai-Ping Huang (Fu Jen Catholic University) - Member
- Dr. Shih-Fang Lo (Chung-Hua Institution for Economic Research) - Member
## CONFERENCE PROGRAM

### PROGRAM OVERVIEW

#### DAY 1: Wednesday, March 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00 – 17:30</td>
<td>Conference Registration</td>
<td>Cathedral of Learning, 1st Floor Hallway</td>
</tr>
<tr>
<td></td>
<td>Optional 45-minute campus tour</td>
<td></td>
</tr>
<tr>
<td>17:30 – 18:30</td>
<td>Welcome Reception</td>
<td></td>
</tr>
</tbody>
</table>

#### DAY 2: Thursday, March 14 (Academic, in English Language)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 09:00</td>
<td>Conference Registration and Exhibitor Showcase</td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>09:00 – 09:20</td>
<td>Opening Ceremony</td>
<td>John XXIII Conference Center, Auditorium</td>
</tr>
<tr>
<td>09:20 – 10:05</td>
<td>Keynote Address I</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sustainability Marketing for Emerging Economics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prof. Dr. John Thøgersen (Aarhus University)</td>
<td></td>
</tr>
<tr>
<td>10:05 – 10:25</td>
<td>Coffee Break and Exhibitor Showcase</td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>10:25 – 11:50</td>
<td>Concurrent Session 1</td>
<td>John XXIII Conference Center, 2nd Floor</td>
</tr>
<tr>
<td></td>
<td>• 1A: Service Quality (Room J203) – see p. 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1B: Digital Marketing (Room J204) – see p. 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1C: Fraud (Room J207) – see p. 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1D: Finance I (Room J208) – see p. 6</td>
<td></td>
</tr>
<tr>
<td>11:50 – 12:50</td>
<td>Lunch</td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>12:50 – 13:35</td>
<td>Keynote Address II</td>
<td>John XXIII Conference Center, Auditorium</td>
</tr>
<tr>
<td></td>
<td>Vocational Education: Lesson from Germany’s Dual System</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prof. Dr. André Habisch (Catholic University of Eichstätt-Ingolstadt)</td>
<td></td>
</tr>
<tr>
<td>13:35 – 15:00</td>
<td>Concurrent Session 2</td>
<td>John XXIII Conference Center, 2nd Floor</td>
</tr>
<tr>
<td></td>
<td>• 2A: Human Resources (Room J203) – see p. 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2B: Supply Chain (Room J204) – see p. 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2C: Leadership and Entrepreneurship (Room J207) – see p. 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2D: Marketing (Room J208) – see p. 8</td>
<td></td>
</tr>
<tr>
<td>15:00 – 15:20</td>
<td>Coffee Break and Poster Showcase</td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>15:20 – 16:45</td>
<td>Concurrent Session 3</td>
<td>John XXIII Conference Center, 2nd Floor</td>
</tr>
<tr>
<td></td>
<td>• 3A: Corporate Governance and New Ventures (Room J203) – see p. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3B: Finance II (Room J204) – see p. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3C: Organizational Development (Room J207) – see p. 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3D: Access to Key Sustainable Resources (Room J208) – see p. 10</td>
<td></td>
</tr>
<tr>
<td>16:45 – 18:00</td>
<td>Poster Showcase and Free Break</td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>18:00 – 20:00</td>
<td>Dinner Banquet and Award Ceremony</td>
<td>AU Museum</td>
</tr>
</tbody>
</table>

xiii
### DAY 3: Friday, March 15 (Academic, in English Language)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 09:10</td>
<td><strong>Poster and Exhibitor Showcase</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>09:10 – 10:35</td>
<td><strong>Concurrent Session 4</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4A: Knowledge Management (Room J203) – see p. 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4B: Information Technology (Room J204) – see p. 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4C: Education (Room J207) – see p. 12</td>
<td>John XXIII Conference Center, 2nd Floor</td>
</tr>
<tr>
<td></td>
<td>• 4D: Environment and Development (Room J208) – see p. 12</td>
<td></td>
</tr>
<tr>
<td>10:35 – 10:45</td>
<td><strong>Coffee Break and Exhibitor Showcase</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>10:45 – 11:45</td>
<td><strong>Forum I</strong></td>
<td>John XXIII Conference Center, 2nd Floor, Room J209-J210</td>
</tr>
<tr>
<td></td>
<td>Digital Business Trends for 2020 and Beyond</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Asst. Prof. Dr. Pisal Setthawong (MSME Business School)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dr. Sutta Sornmayura (MSME Business School)</td>
<td></td>
</tr>
<tr>
<td>11:45 – 11:55</td>
<td><strong>Closing Remarks</strong></td>
<td>John XXIII Conference Center, 2nd Floor</td>
</tr>
<tr>
<td>11:55 – 13:00</td>
<td><strong>Lunch</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
</tbody>
</table>

### DAY 3: Friday, March 15 (Industry, in Thai Language)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 08:50</td>
<td><strong>Conference Registration and Exhibitor Showcase</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td></td>
<td>Registration for those attending Day 3 only</td>
<td></td>
</tr>
<tr>
<td>08:50 – 09:50</td>
<td><strong>Keynote Address III</strong></td>
<td>John XXIII Conference Center, Auditorium</td>
</tr>
<tr>
<td></td>
<td>Building Innovation Strategy for the Nation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dr. Krissana Bulan (International Innovative Business Development Project, MSME Business School)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prof. Dr. Kriengsak Charoenwongsak (Institute of Future Studies for Development)</td>
<td></td>
</tr>
<tr>
<td>09:50 – 10:00</td>
<td><strong>Coffee Break and Exhibitor Showcase</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
<tr>
<td>10:00 – 11:00</td>
<td><strong>Forum II</strong></td>
<td>John XIII Conference Center, Auditorium</td>
</tr>
<tr>
<td></td>
<td>Business Innovation Mega-trends in the Digital Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mr. Tiwa York (Kaidee)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ms. Ornpaka Vudhikosit (Google Thailand)</td>
<td></td>
</tr>
<tr>
<td>11:00 – 12:00</td>
<td><strong>Forum III</strong></td>
<td>John XXIII Conference Center, Auditorium</td>
</tr>
<tr>
<td></td>
<td>Digital Marketing and Digital Capital Market in an Innovation Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mr. Tanyapong Thamvaranukupt (Ascend Money Co. Ltd., True Corporation Group)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mr. Thanawat Lertwattanarak (J. Venture Co. Ltd. – JVC)</td>
<td></td>
</tr>
<tr>
<td>12:00 – 13:00</td>
<td><strong>Lunch</strong></td>
<td>John XXIII Conference Center, 1st Floor</td>
</tr>
</tbody>
</table>
DAY 3: Friday, March 15 (Extra Training Session: Business Opportunities in the Digital Age, in Thai Language)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00 – 13:10</td>
<td><strong>Opening Remarks</strong></td>
<td>Cathedral of Learning, Viset Sri Samut</td>
</tr>
<tr>
<td></td>
<td>• Dr. Sakul Kiatjeeravirat, International Innovative Business Development Project (MSME Business School)</td>
<td></td>
</tr>
<tr>
<td>13:10 – 14:30</td>
<td><strong>Workshop I</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insightful Understanding of Global Consumers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ms. Dangjaithawin Anantachai (Intage, Thailand)</td>
<td></td>
</tr>
<tr>
<td>14:30 – 14:45</td>
<td><strong>Coffee Break</strong></td>
<td></td>
</tr>
<tr>
<td>14:45 – 16:00</td>
<td><strong>Workshop II</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market Penetration in China through Fintech Strategy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mr. Jason Lee (Ksher, Thailand)</td>
<td></td>
</tr>
<tr>
<td>16:00 – 16:30</td>
<td><strong>Certificate Ceremony</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Asst. Prof. Dr. Uree Cheasakul (MSME Business School)</td>
<td></td>
</tr>
</tbody>
</table>
Profiles of Keynote Speakers

Prof. Dr. John Thøgersen (Aarhus University)

Prof. Thøgersen is a professor of economic psychology and the coordinator of the Marketing and Sustainability Research Group at the Department of Management, Aarhus Business School, Aarhus University, Denmark. He is the editor of the Journal of Consumer Policy and is also the initiator and former chairman of the steering committee of the Global Virtual Community on Sustainability and Consumption. He has recently won several awards including being the Appointed Fellow of the International Association of Applied Psychology (IAAP) "in recognition of his outstanding contributions to applied psychology" in 2018, and the 2015 Danish Marketing Research Award.

Prof. Dr. André Habisch (Catholic University of Eichstätt-Ingolstadt)

Prof. Habisch is an economist and Catholic theologian. He teaches business ethics and corporate social responsibility at Ingolstadt School of Management (WFI) of Catholic University of Eichstätt-Ingolstadt (KUE-I). He has served as a scientific member of the study commission “Growth, Wellbeing and Quality of Life” of the German Parliament and is a scientific consultant of the Catholic Entrepreneurial Union. His numerous publications include the paper collection “CSR across Europe” (Springer 2005) as well as articles on Responsible Supply Chain Management, Corporate Citizenship, Corporate Volunteering, Sustainability Accounting etc.

Dr. Krissana Bulan (International Innovative Business Development Project)

Dr. Bulan is a renowned business consultant. He has worked closely with various private and public organizations in Thailand and Laos.

Prof. Dr. Kriengsak Chareonwongsak (Institute of Future Studies for Development)

Prof. Chareonwongsak is a Thai scholar and politician. He was a member of Thailand’s House of Representatives during 2004 to 2006. He has published work on both scholarly and popular topics as well as served as a member of the board of directors of various companies.
Details of Concurrent Sessions

March 14, 2019, 10:25 – 11:50
Session 1A: Service Quality, Room J203
Chair: Darwin Dhasan (MSME Business School)

Paper 1: O130 Effects of Product Quality, Service Quality and Price Fairness on Customer Engagement and Customer Loyalty
- Presenter: Darwin Dhasan (MSME Business School)
- Discussant: Sriram K.V. (Manipal Academy of Higher Education)

Paper 2: O190 Developing and Evaluating an Airport Service Quality Model: The Case of Airport Based in Thailand
- Presenter: Nuchanart Cholkongka (MSME Business School)
- Discussant: Thitiporn Milindra Christensen (Kasem Bundit University)

Paper 3: O142 Access to Services for Airline Wheelchair Passengers: A Case Study of Thai Air Asia
- Presenter: Thitiporn Milindra Christensen (Kasem Bundit University)
- Discussant: Nuchanart Cholkongka (MSME Business School)

Paper 4: O202 Does E-marketing Mix Influence Brand Loyalty and Popularity of E-commerce Websites?
- Presenter: Sriram K.V. (Manipal Academy of Higher Education)
- Discussant: Darwin Dhasan (MSME Business School)

March 14, 2019, 10:25 – 11:50
Session 1B: Digital Marketing, Room J204
Chair: Henzel Embalzado (MSME Business School)

Paper 1: O179 Research for Human Information Acceptance Behaviour in Multiplayer Online Game
- Presenter: Liang Liu (MSME Business School)
- Discussant: Yossaya Vijitkorntong (MSME Business School)

Paper 2: O153 Consumers’ Understanding on Cashless Payment: A Quantitative Study in Bangkok
- Presenter: Henzel Embalzado (MSME Business School)
- Discussant: Aya Fukushige (MSME Business School)

Paper 3: O138 Effects of Consumer Behaviors and Technology Acceptance on Electronic Word-of-Mouth
- Presenter: Yossaya Vijitkorntong (MSME Business School)
- Discussant: Liang Liu (MSME Business School)

Paper 4: O154 Moderating Effects of Hofstede’s Cultural Dimensions on Relationship between AEWOM and FEWOM in Thailand
- Presenter: Aya Fukushige (MSME Business School)
- Discussant: Henzel Embalzado (MSME Business School)
March 14, 2019, 10:25 – 11:50  
**Session 1C: Fraud**, Room J207

Chair: Wanny Oentoro (MSME Business School)

**Paper 1:**  O152 Fraud Risk Management Model: Theoretical Guideline on Preventing Fraud  
- Presenter: Marziana Madah Marzuki (Universiti Teknologi MARA)  
- Discussant: Wanny Oentoro (MSME Business School)

**Paper 2:**  O165 Viewpoints and Methods of Data Analysis for Accounting Fraud Discovery - Analysis of Cases of Accounting Fraud at overseas Subsidiaries of Japanese Listed Companies  
- Presenter: Takashi Ishijima (HOSEI Business School of Innovation Management, HOSEI University)  
- Discussant: Marziana Madah Marzuki (Universiti Teknologi MARA)

**Paper 3:**  O168 A Comparative Study of Fraud Regulation in Malaysia and United States  
- Presenter: Wan Zurina Nik Abdul Majid (Universiti Teknologi MARA)  
- Discussant: Takashi Ishijima (HOSEI Business School of Innovation Management, HOSEI University)

**Paper 4:**  O141 Shaping an Independent Ethical Climate and an Innovative Organizational Culture: The Influence of Managers’ Risk-Taking and Integrative Characteristics  
- Presenter: Wanny Oentoro (MSME Business School)  
- Discussant: Wan Zurina Nik Abdul Majid (Universiti Teknologi MARA)

March 14, 2019, 10:25 – 11:50  
**Session 1D: Finance I**, Room J208

Chair: Poonyawat Sreesing (MSME Business School)

**Paper 1:**  O137 Mandatory Environmental Information Disclosure, Firm Characteristic and Dividend Payment: An Evidence from China Mainland Heavy Polluting Industries  
- Presenter: Ziyi Wang (MSME Business School)  
- Discussant: Nonthadej Predawut (AU Graduate School of Business)

**Paper 2:**  O118 Return and Volatility Spillovers between Cyclical Sector Indices and Market Indices in Thailand  
- Presenter: Thitivadee Chaityawat (Chulalongkorn Business School)  
- Discussant: Poonyawat Sreesing (MSME Business School)

**Paper 3:**  O146 Value-at-Risk of Stock and Cryptocurrency Portfolio Diversification  
- Presenter: Thitivadee Chaityawat (Chulalongkorn Business School)  
- Discussant: Poonyawat Sreesing (MSME Business School)

**Paper 4:**  O125 The Segregation of Investors and Sustainable Investment Preferences: Evidence from Indonesia Stock Exchange  
- Presenter: Dwitya Aribawa (MSME Business School)  
- Discussant: Ziyi Wang (MSME Business School)
March 14, 2019, 13:35 – 15:00

Session 2A: Human Resources, Room J203

Chair: James Joseph (Manipal Academy of Higher Education)

Paper 1: O201 Work Context, Knowledge Characteristics and Academic Performance of Part-time Students
- Presenter: James Joseph (Manipal Academy of Higher Education)
- Discussant: Siriwut Rungruang (MSME Business School)

Paper 2: O198 The Impact of HoRenSo Organizational Culture on Organizational Commitment and Organizational Performance
- Presenter: Siriwut Rungruang (MSME Business School)
- Discussant: Sudarat Kliangs-Art (MSME Business School)

Paper 3: O113 The Effect of Management Level Internal Communication and Communication Practice on Employee Job Outcomes
- Presenter: Sudarat Kliangs-Art (MSME Business School)
- Discussant: Yatindra Dwivedi (Power Grid Corporation of India)

Paper 4: O170 HR Analytics: Effective Enabler for Sustainable Competitive Advantage
- Presenter: Yatindra Dwivedi (Power Grid Corporation of India)
- Discussant: James Joseph (Manipal Academy of Higher Education)

Coffee break and poster showcase at 15:00 – 15:20

March 14, 2019, 13:35 – 15:00

Session 2B: Supply Chain, Room J204

Chair: Suppasit Sornsri (MSME Business School)

Paper 1: O171 Exploring a Model for Strategic Buyer-Supplier Relationship: FMCG in Thailand
- Presenter: Suppasit Sornsri (MSME Business School)
- Discussant: Siriwadee Sawaengdee (MSME Business School)

Paper 2: O200 The Role of Top Management Support on The Relationship between Supply Chain Management Practices and Manufacturer’s Performance in Thailand
- Presenter: Siriwadee Sawaengdee (MSME Business School)
- Discussant: Suppasit Sornsri (MSME Business School)

Paper 3: O128 Business Integration, Supply Chain Innovation and Supply Chain Performance
- Presenter: Nathida Khongkhant (MSME Business School)
- Discussant: Hatinah Abu Bakar (Universiti Teknologi MARA)

Paper 4: O139 Improvising SME Performance: Innovation as a Mediator
- Presenter: Hatinah Abu Bakar (Universiti Teknologi MARA)
- Discussant: Nathida Khongkhant (MSME Business School)

Coffee break and poster showcase at 15:00 – 15:20
March 14, 2019, 13:35 – 15:00

Session 2C: Leadership and Entrepreneurship, Room J207

Chair: Suparak Suriyankietkaew (Mahidol University)

Paper 1: O178 Factors Driving Corporate Sustainability in Small Businesses: A Leadership Perspective
- Presenter: Suparak Suriyankietkaew (Mahidol University)
- Discussant: Wylen Djap (Universitas Pelita Harapan)

Paper 2: O157 The Effect of Transformational Leadership, Job Satisfaction, and Job Embeddedness towards Organizational Citizenship Behavior in Indonesia: A case study in Shane English School, Indonesia
- Presenter: Wylen Djap (Universitas Pelita Harapan)
- Discussant: Suphakit Limlertratana (Bangkok University)

Paper 3: O102 The Impact of Entrepreneurial Framework Conditions towards Entrepreneurial Capacity and Opportunity: A Case Study of SMEs in Thailand
- Presenter: Suphakit Limlertratana (Bangkok University)
- Discussant: Phairat Boonsuwan (MSME Business School)

- Presenter: Phairat Boonsuwan (MSME Business School)
- Discussant: Suparak Suriyankietkaew (Mahidol University)

Coffee break and poster showcase at 15:00 – 15:20

March 14, 2019, 13:35 – 15:00

Session 2D: Marketing, Room J208

Chair: Kai- ping Huang (Fu Jen Catholic University)

- Presenter: Yukichika Kawata (Kindai University)
- Discussant: Jirayu Poomontra Kasemsant (MSME Business School)

Paper 2: O111 Impact on idol group’s members’ preferences to Social Network Services engagement and spending behaviors. Case study: BNK48
- Presenter: Dhirachat Chayaporn (MSME Business School)
- Discussant: Yukichika Kawata (Kindai University)

- Presenter: Jirayu Poomontra Kasemsant (MSME Business School)
- Discussant: Nitima Aungatichart (MSME Business School)

Paper 4: O123 The Mediating Effect of Consumer Identification on the Factors Influencing Purchase Intention and Actual Behaviors on Organic Food Consumption
- Presenter: Nitima Aungatichart (MSME Business School)
- Discussant: Dhirachat Chayaporn (MSME Business School)

Coffee break and poster showcase at 15:00 – 15:20
March 14, 2019, 15:20 – 16:45

Session 3A: Corporate Governance and New Ventures, Room J203

Chair: Anthony Kuo (Fu Jen Catholic University)

Paper 1: O163 On New Ventures’ Board of Directors: Formation, Adjustment, and Influences on Internationalization
- Presenter: Nichanan Sakolvieng (MSME Business School)
- Discussant: Chia-Liang Hung (National Chi Nan University)

Paper 2: O145 Corporate Governance in Non-Banking Financial Companies: A Case of IF&LS
- Presenters: Anil Kumar and Santosh Kumar (University of Delhi)
- Discussant: Permsin Yongvongphaiboon (MSME Business School)

- Presenter: Permsin Yongvongphaiboon (MSME Business School)
- Discussant: Anil Kumar (University of Delhi)

Paper 4: O207 Exploring the Relationship between Entrepreneurial Development Strategy and Start-up Performance
- Presenter: Chia-Liang Hung (National Chi Nan University)
- Discussant: Nichanan Sakolvieng (MSME Business School)

March 14, 2019, 15:20 – 16:45

Session 3B: Finance II, Room J204

Chair: Jiroj Buranasiri (Thammasat University)

- Presenter: Krieng Kitbumrungrat (Dhonburi Rajabat University)
- Discussant: Jiroj Buranasiri (Thammasat University)

Paper 2: O164 The Insight Relationship between Infrastructure Funds and Stock Market: The Case of Thailand
- Presenter: Jiroj Buranasiri (Thammasat University)
- Discussant: Shahsuzan Zakaria (Universiti Teknologi MARA)

Paper 3: O140 The Macroeconomic Determinants of Malaysian Stock Market Return
- Presenter: Shahsuzan Zakaria (Universiti Teknologi MARA)
- Discussant: Annop Peungchuer (MSME Business School)

Paper 4: O208 Factors Affecting the Assurance of Savings in Cooperative from the Perspective of Member: A Case Study of Assumption University Savings & Credit Cooperative Limited (AUSCC)
- Presenter: Annop Peungchuer (MSME Business School)
- Discussant: Krieng Kitbumrungrat (Dhonburi Rajabat University)
March 14, 2019, 15:20 – 16:45
Session 3C: Organization Management, Room J207
Chair: Masatoshi Mori (Chiba Institute of Technology)

Paper 1: O133 The Mediating Effect of Innovative Customer Knowledge Sharing on Organizational Performance
- Presenter: Khalid Abdul Wahid (Universiti Teknologi MARA)
- Discussant: Masatoshi Mori (Chiba Institute of Technology)

Paper 2: O194 Proposal of Business Ecosystem Strategy Construction Method
- Presenter: Hiroshi Kubo (Chiba Institute of Technology)
- Discussant: Khalid Abdul Wahid (Universiti Teknologi MARA)

Paper 3: O169 Salute to the Black Sheep: The Legitimacy of Workplace Bullying from the Perspective of Organizational Cohesive Affinity and Organizational Competitiveness
- Presenter: Hsiang-Ying Cheng (Fu Jen Catholic University)
- Discussant: Tanakorn Chalermjirapas (MSME Business School)

Paper 4: O121 Study on Mandala Matrix Method to Achieve Business Goals—Business Analysis for Accomplishment and Strategic Drafting Technique
- Presenter: Masatoshi Mori (Chiba Institute of Technology)
- Discussant: Kai-ping Huang (Fu Jen Catholic University)

March 14, 2019, 15:20 – 16:45
Session 3D: Access to Key Sustainable Resources, Room J208
Chair: Chien-Liang Chen (National Chi Nan University)

Paper 1: O110 LMX Differentiation and Relationship Conflict: The Moderating Role of Authentic Leadership
- Presenter: Jiayin Ou (MSME Business School)
- Discussant: Ing-wei Huang (MSME Business School)

Paper 2: O209 Income Inequality of Taiwan’s Households, 1985-2013
- Presenter: Chien-Liang Chen (National Chi Nan University)
- Discussant: Dhanoos Sutthiphisal (MSME Business School)

Paper 3: O155 Financial Literacy and Financial Behavior of the Young
- Presenter: Rattana Waranyasathid (MSME Business School)
- Discussant: Chien-Liang Chen (National Chi Nan University)

Paper 4: O203 Social Capital and Knowledge Management Practices in Indian Information Technology Companies
- Presenter: Asish Oommen Mathew (Manipal Academy of Higher Education)
- Discussant: Jiayin Ou (MSME Business School)
March 15, 2019, 09:10 – 10:35
Session 4A: Knowledge Management, Room J203
Chair: Chanita Jiratchot (MSME Business School)

Paper 1: O160 The Role of Practical Proficiency to Increase Teaching Effectiveness in the Educational Business
- Presenter: Dewi Diana Lukitasari (Universitas Pelita Harapan)
- Discussant: Chanita Jiratchot (MSME Business School)

Paper 2: O196 Influences of the Organizational Justice and Self-Efficacy on Employee Work Motivation and Organizational Commitment
- Presenters: Chanita Jiratchot (MSME Business School)
- Discussant: Junlawut Knokham (MSME Business School)

Paper 3: O199 Factors Influencing Knowledge Management in Thailand’s Law Industry
- Presenter: Junlawut Knokham (MSME Business School)
- Discussant: Aaron Loh (AU Graduate School of Business)

Paper 4: O197 A proposal for a Curriculum Update of Graduate Business Schools in ASEAN Towards a More Meaningful and Beneficial Teaching and Learning Outcome in Support of the Sustainable Development Goals of the United Nations
- Presenter: Aaron Loh (AU Graduate School of Business)
- Discussant: Dewi Diana Lukitasari (Universitas Pelita Harapan)

Coffee break and exhibiter showcase at 10:35 – 10:45

March 15, 2019, 09:10 – 10:35
Session 4B: Information Technology, Room J204
Chair: Pisal Setthawong (MSME Business School)

Paper 1: O120 An Innovative Entrepreneur Using Digital Marketing Management to Promote: A Makerel Fish Tails Crispy Snack for Health and Wellness Industry
- Presenter: Maneerat Kor-Udom (MSME Business School)
- Discussant: Songsak Vanichviroon (MSME Business School)

Paper 2: O180 The Feasibility of Decentralized Election Systems Utilizing Blockchain Technologies and Comparison with Traditional Centralized Election Systems
- Presenter: Pisal Setthawong (MSME Business School)
- Discussant: Maneerat Kor-Udom (MSME Business School)

Paper 3: O162 Criteria for Decision Making on ERP Deployment Models
- Presenter: Sumate Permwonguswa (MSME Business School)
- Discussant: Pisal Setthawong (MSME Business School)

Paper 4: O188 Cost and Benefit of E-commerce in Different Firm Sizes: Case of Thailand 4.0
- Presenter: Songsak Vanichviroon (MSME Business School)
- Discussant: Sumate Permwonguswa (MSME Business School)

Coffee break and exhibiter showcase at 10:35 – 10:45
March 15, 2019, 09:10 – 10:35
**Session 4C: Education, Room J207**

Chair: Sanhakot Vithayaporn (Sripatum University)

**Paper 1:** O195 The Changing Role of Teachers of Business School in a Private Higher Educational Institution  
- Presenter: Sanhakot Vithayaporn (Sripatum University)  
- Discussant: Krit Witthawassamrankul (Kasem Bundit University)

**Paper 2:** O148 Survival from Disruptive Economy in Higher Education Institute: A Case of Aviation Personnel Development Institute  
- Presenter: Krit Witthawassamrankul (Kasem Bundit University)  
- Discussant: Maheran Zakaria (Universiti Teknologi MARA)

**Paper 3:** O134 Accounting as a Choice of Academic Program: A Comparative Study between Malaysian and Indonesian First-year Under-graduate Accounting Students  
- Presenter: Maheran Zakaria (Universiti Teknologi MARA)  
- Discussant: Chongyan Zhang (AU Graduate School of Human Sciences)

**Paper 4:** O193 Enhancing Social Responsibility of Chinese Higher Education Institutions  
- Presenter: Chongyan Zhang (AU Graduate School of Human Sciences)  
- Discussant: Sanhakot Vithayaporn (Sripatum University)

Coffee break and exhibiter showcase at 10:35 – 10:45

March 15, 2019, 09:10 – 10:35
**Session 4D: Environment and Development, Room J208**

Chair: Wasana Marksin (MSME Business School)

**Paper 1:** O147 Organic Farming and Naturally Grown Products; Need of Training Intervention for its Growth and Healthy Society  
- Presenter: Ram Kumar Gazaresen (Power Grid Corporation of India)  
- Discussant: Tanakorn Chalermjirapas (MSME Business School)

**Paper 2:** O149 Sustainable Development in Emerging Economies through International Co-operation: An Empirical Study in Power Sector  
- Presenter: Puneet Tyagi (Power Grid Corporation of India)  
- Discussant: Wasana Marksin (MSME Business School)

**Paper 3:** O107 Improving Quality Management Using Water-based Environmental Safe Ink for Printing Plastic Bag Industry in Thailand  
- Presenter: Wasana Marksin (MSME Business School)  
- Discussant: Ram Kumar Gazaresen (Power Grid Corporation of India)

**Paper 4:** O135 The Study of Employee Engagement of Manufacturing Sector in Thailand  
- Presenter: Tanakorn Chalermjirapas (MSME Business School)  
- Discussant: Puneet Tyagi (Power Grid Corporation of India)

Coffee break and exhibiter showcase at 10:35 – 10:45
Effects of Product Quality, Service Quality and Price Fairness on Customer Engagement and Customer Loyalty

Darwin Dhasan  
Assumption University  
darwindha@msme.au.edu

Mayuree Aryupong  
Assumption University  
mayureeryp@msme.au.edu

Abstract

By using structural equation modeling this study finds the key relationship between product quality, service quality and price fairness on customer engagement in a holistic model. Further the study evaluates direct and mediating effect on customer loyalty in the automobile industry with the sample data of 224 existing car owners based in Bangkok. The study results illustrate service quality significantly determine customer engagement. Whereas, product quality and price fairness does not significantly determine customer engagement. The findings support the predictors direct effects significantly affecting customer loyalty. In addition, the study shows customer engagement has partial mediation effect on service quality and customer loyalty. This research contributes to the service-dominant (S-D) logic literature and affective-cognitive response literatures which empirically supports in the Thai automobile industry context. The study suggests to test the significant relationship links in other business contexts.

Keywords: customer loyalty, customer engagement, price fairness
Does E-Marketing Mix Influence Brank Loyalty and Popularity of E-Commerce Websites?

Sriram K.V
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
kvsriram@yahoo.com

Asish Oommen Mathew
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
asishmathew@gmail.com

Sumukh Hungund
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
sumukh.hungund@gmail.com

Kathakali Phouzder,
Department of Electronics and Communication
Manipal Institute of Technology
Manipal Academy of Higher Education
kathakali96@gmail.com

Abstract

E-commerce portals are increasing exponentially in terms of both business and data. Many organizations rely on their online websites to attract new customers while retaining their existing ones. E-commerce websites provide consumers with flexibility of time, price and space during their purchases. Traditional marketing mix comprising of Product, Price, Place and Promotion (4Ps) are important factors in a purchase journey. In the online environment the concept of marketing mix remains the same except that their characteristics and functions are dynamic to suit the online market place. The E-Marketing mix namely E-Product, Price Intelligence (Price sensitivity), Delivery Risk (Place) and Promotional Intelligence are influencers of consumer-buying decisions in online markets. This research is an attempt to find out the effect of E-Marketing mix on Loyalty and Popularity in E-Commerce sites. Data was collected using a structured questionnaire and was analyzed using Structural Equation
Modeling-Partial Least Squares method. The results showed that Brand popularity was significantly influenced by the characteristics of the product and intelligent promotional techniques. Brand popularity had an influence on loyalty of the brand in an electronic marketing space.

*Keywords:* e-marketing mix, price Intelligence, e-product, e-promotion, delivery risk, brand loyalty, brand popularity, structural equation modelling, e-commerce.
The electronic word of mouth (eWOM) becomes a fundamental focus for many companies and marketers. This current research aims to use the consumer behavior theory and technology acceptance theory to identify the factors influencing electronic word of mouth in the context of Line mobile application. By using consumer behavior theory, this study identifies user preference, user similarity (Homophily), user interaction and user concern for others as a set of influencing factors. By using technology acceptance theory, this study also identifies another set of influencing factors which are Line ease of use and Line usefulness. This study is an empirical research, using online survey, namely Google survey to collect data. The usable data is 196 respondents who are using Line mobile application. The location to collect the data is Thailand. The results show that there is significant relationship between user similarity, user interaction, and user concern for other with electronic word of mouth. However, there is no relationship between user preference, Line ease of use, Line usefulness and electronic word-of-mouth. For implication, the results of this study can benefit the Line’s company and marketers to select the right factors which are user similarity, user interaction and user concern for others to generate the electronic word of mouth to promote their products and services.
Moderating Effects of Hofstede’s Cultural Dimensions on Relationship between AEWOM and FEWOM in Thailand

Aya Fukushige  
Assumption University  
afukushige@msme.au.edu

Mayuree Aryupong  
Assumption University  
mayureeryp@msme.au.edu

Phacharaporn Phijaranakul  
Assumption University  
u5919521@au.edu

Abstract

This research aims to examine the moderating effects of Hofstede’s cultural dimensions on the relationship between acceptance and subsequent forwarding of electronic word of mouth (EWOM) in Thailand. EWOM is currently considered as one of the most influential communication channels for businesses, marketers, and various kinds of consumers, whereas cultural values can also be a factor to influence consumers’ decision-making behaviors. Hypotheses were developed by adopting Hofstede’s cultural dimensions; yet with the newly developed scale, Individual Cultural Values Scale (CVSCALE), in order to observe the cultural diversity among Thai nationals at the individual level, and to investigate the moderating effects of Hofstede’s five cultural dimensions on the relationship between Acceptance Electronic Word of Mouth (AEWOM) and Forwarding Electronic Word of Mouth (FEWOM). A structured online questionnaire was used to collect the data from 204 respondents who are Thai and currently use any social networking service (SNS). The results indicate that people who had accepted EWOM tend to forward EWOM further, and among Hofstede’s five cultural dimensions, Power Distance, Collectivism, and Masculinity significantly moderated the relationship between AEWOM and FEWOM.

Keywords: acceptance electronic word of mouth, forwarding electronic word of mouth, hofstede’s cultural dimensions, individual cultural values scale
Developing and Evaluating an Airport Service Quality Model: The Case of Airport Based in Thailand

Nuchanart Cholkongka
Assumption University
nuchanartchol@gmail.com

Abstract

The purpose of this research was to develop a service quality model, with Suvarnabhumi Airport, located in Bangkok, Thailand, used as a case study for model development. The research used a mixed-methods research design to develop and test the proposed model. Dimensions that were identified from the literature and confirmed through expert interviews included check-in, security, immigration/customs, staff interaction, signs and information, accessibility, environment, food, retail, and other facilities. SEM analysis of the passenger survey (n = 500) identified the significant elements of each of the dimensions identified, including additional factors that were identified in the interviews.

Keywords: service quality, airport service, ground services
Access to Services for Airline Wheelchair Passengers: A Case Study of Thai Air Asia

Thitiporn Milindra Christensen
Kasem Bundit University
Thitiporn.chr@kbu.ac.th

Supachoke Suthichoti, D.B.A
Kasem Bundit University
Supa8yai@truemail.co.th

Abstract

The objective of this research was to investigate the channels of service accessed by wheelchair passengers, flight and service information, service experiences, passengers’ satisfaction level as well as suggestions received from wheelchair passengers of Thai Air Asia. A qualitative study was employed and the data collection was done by documentary analysis including a study of other related researches about quality of life, human rights, and concepts of providing services to the disabled passengers. The data were also collected and analyzed through a structured interview. The participants of this research were divided into 3 groups: airline staff, wheelchair passengers, and the disabled. The findings indicated that the airline did not provide enough information regarding service and contact channels for passengers. First-time disabled passengers did not have enough understanding of the service provided. Due to the restrictions at some airports, the limitation of facilities and the lack of staff, problems occurred and passengers felt dissatisfied, anxious and discriminated.

The recommendations to this research were that the airlines and personnel involved should have understanding more on the travel restrictions and give more concern with planning for the increase of disabled passengers. Friendly design should be utilized so that the passengers do not require much assistance while the airline can also reduce the cost of facilities and staff to assist the disabled. Moreover, more knowledge in assisting the disabled passengers should be provided to the staff. At the same time, the airlines should add more publicity regarding basic travel knowledge for the assengers to prepare for their journey.

Keywords: universal design/ friendly design, access to service, wheelchair, the disabled, Thai Air Asia
1. Introduction

At the present, traveling by plane is considered a fast and time-saving journey. Low – cost airlines become more popular for most passengers especially for domestic travel whose passengers can be classified in many categories. For example, passengers with disabilities are one of them who require special arrangement during their travel. They require extra service from the airlines such as wheelchair arrangement. This research paper aimed to study the service provided and how to facilitate the necessary information to those disabled passengers who wish to travel with low – cost airlines. This is to determine how well they can access to this special service.

The researcher studied this service offered by Thai – Air Asia, one of the most famous low – cost airlines, whose network covering many regions in Thailand. It is obvious that the service provided by Thai Air Asia meets universal requirement with the approval of continuously increasing high record number of passengers. In addition, Thai Air Asia is the first low – cost airline of which policy cooperates with social responsibility and try to set standard to provide special proper arrangement for those passengers who may need special assistance. Thai – Air Asia also bands together with both Friendly Design Foundation and United Nation Development to launch the Air Asia Friendly Design Project. The objective of this project aims to improve facilities and set standard for all their staff members to be aware of the right of all passengers especially for those who may need special assistance such as passengers with disabilities, elderly passengers, handicapped passengers, minors and pregnant passengers to obtain the same quality of service when they travel. This can be proven when Thai – Air Asia announced to be the organization of the year that support friendly design project and also received the friendly design certificate on 1/12/2017. In the regard of this concern, Thai government also gives high attention to this situation since the number of passengers with disabilities travelling by air increase more and more and they may encounter such problems. In order to respond to this situation, The Ministry of Transport has announced the issue regarding the passenger’s bill of rights by using Thai airlines on domestic routes in 2010” which has an ambition to protect their right to deserve special attention from the airline they decide to travel. The issue of this concerns deals with cases such as the refusal of travelling with an airline due to either cancelling or delaying the flight. As there are always many reports indicating the dispute between the passengers and airlines because they refuse to accept the passengers who request for a wheelchair during their travel. This problem is occurred because the airline is not well equipped or unable to facilitate them. Moreover, their personnel staffs do not fully understand the airline safety standards and also safety measurement in an aerodrome. All of these reasons bring the interest to the researcher to further study of how Thai Air Asia handle this situation.

Objectives of this research, the researcher studied the access channels, the information, the satisfactory level and the variety of service provided for disabled passengers using wheelchair
service of Thai Air Asia. This paper presents an understanding of the air travel experiences of people with disabilities in Thailand using wheelchair service of Thai Air Asia. Participants are passengers, the representative from many associations related to disabled passengers, disabled specialists and the representative from Thai Air Asia who participate in this program for 3 months from August 2018 to October 2018.

1.2. The significance of the research

The research aims to get the information of how to access wheelchair request service of the airline that could lead to constructive suggestion.

- To obtain the information received from disabled passengers who used this service from the airline and gather the necessary comments to improve the service in the future.
- To know the satisfactory level from the disabled passengers who used this service from the airline that could provide an opportunity to improve service.
- To understand the service procedure offered to disable passengers who use this service and make awareness of the existing service provided for disable passengers.

1.3. Definitions

The accessibility of the service means the communicative channel between passengers and operating airline which includes the basic information accessible to all passengers or public sector.

Wheelchair Service Passengers mean the special service requested from the operating airline by the passengers. This service is to offer comfort for passengers when they are in the airport vicinity and in the aircraft. It is to ensure the safety during their journey. Wheelchair may normally be provided for the passengers having difficulties in getting to/from the aircraft example: elderly passengers, disabled passengers (permanent or temporary disability) and sitting sick passengers. IATA (International Air Transport Association)

The wheelchair – requested service can be categorized by its type below;

1. WCHR (Wheelchair Ramp) Passenger can ascend/descend aircraft steps and make own way to/from cabin seat but requires wheelchair for distance to/from the aircraft.

Figure 1 Wheelchair Ramp, Shutterstock, 2018
2. **WCHS (Wheelchair Steps)** Passenger cannot ascend/descend steps but is able to make own way to/from cabin seat, requires wheelchair for distance to/from aircraft, must be carried up/down steps.

   Figure 2 Wheelchair Steps, Colourbox, 2018

![Wheelchair Steps Image]

3. **WCHC (Wheelchair Comp)** Passengers are completely immobile, requires wheelchair to/from aircraft and must be carried up/down steps and to/from cabin seat.

   Figure 3 Wheelchair Comp, Whizz-kidz, 2018

![Wheelchair Comp Image]

4. **Wheelchair On-Board (WCOB)** is intended for carrying passenger who requires the use of wheelchair to/from cabin seat or during toilet visit while on board.

   Figure 4 Wheelchair On-Board, Whizz-kidz, 2018

![Wheelchair On-Board Image]
Ambulift or Hi lift is a car of the airline used to elevate the wheelchair and passenger together to the aircraft door when the aircraft is parked outside of the passenger terminal building. It is used to transfer passengers.

Figure 5 Ambu-lift or Hi lift ,Peter Tan, 2017

Disabled Passengers, PRM (A person with reduced mobility): Any persons whose mobility is reduced due to physical disability (locomotory or sensory) intellectual impairment, age, illness or any other cause of disability.

Figure 6 Disabled Passengers, University of Texas at Austin, 2016

Universal Design, Friendly Design is the design and composition of an environment so that it can be accessed, understood and used all people regardless of their, size, age, disability or ability.
2. Concepts, Theories and Related Researches

According to Thai AirAsia case study, the researcher used theories, concepts and related researches to determine the potential problems in accessing services of passengers using wheelchair services and giving an advice to promote ideas about human rights as well as the quality of life. Therefore, the criteria to find the possible solution for this research is based on approaches related with elderly service arrangement, special service provided, relevant problems and suggestion gathering from relevant researches.

Human rights are rights to all human beings, regardless of sex, race, ethnicity, nationality, religion, language or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Basic Principles of Human Rights

1. Natural Rights and Human Dignity
2. Universality & Inalienability
3. Indivisibility
4. Equality and Non-Discrimination

The concept of providing facilities to serve only to passengers with disabilities and elderly. The Government Disability Passenger Service Policy indicates the problem of passengers with disabilities and elderly passengers who travel by plane is because of their physical problems. The government seeks to support and encourage people with disabilities to have equality when it comes to the right of their general public to access state services, which are the rights defined in The Constitution of the Kingdom of Thailand, Year 2007. Moreover, the government issued the Act on Promotion and Development of the Quality of Life of the Disabled 2007 to determine the standard or criteria of equipment used to facilitate those passengers in the building, other facilities such as accessibility of any vehicles, transportation services or other public services for people with disabilities. They must be able to enjoy these benefits. In this reason, all service providers have to comply with this Ministerial Regulation and support "Arayasaphat" (Universal Design) which is the design for all people or design what is
accessible for all groups in the society. It is the design concerning about the environment, places and things for the elderly workers with disabilities and disadvantaged people who have limit access to those facilities. The principles of Universal design include

1. Fairness, Equitable Use
2. Flexibility in Use
3. Simple and Intuitive
4. Perceptible Information
5. Safety, Tolerance for Error
6. Energy Conservation, Low Physical Effort
7. Space, Size and Space for Approach and Use

Figure 8 The principles of Universal design, NC State University Center, 2018

FLYING WITH IMPAIRMENTS: IMPROVING AIRLINE PRACTICES BY UNDERSTANDING: THE EXPERIENCES OF PEOPLE WITH DISABILITIES by Dr. Simon Darcy (2016). This research presents an understanding of the air travel experiences of passengers with disabilities for improving safety and health considerations of low-cost airlines in Australia. The research design used phenomenological qualitative to understand the experiences of passengers with disabilities in their own words. The resultant experience for many was one of heightened anxiety, helplessness and, in too many cases, humiliation.

TAKING OVER THE WORLD IN A WHEELCHAIR: The Difficulties and Challenges when Travelling by Air Transportation by Saaka Saari (2015). This research was to get knowledge about the challenges and difficulties passengers in a wheelchair may face while they are travelling by air transportation. The matter was viewed from the point of view of equality as a wheelchair passenger actually has the same possibilities for air transportation as the others passengers. The problem is the use of lavatory, as it very often is impossible during a flight. A
majority of the disabled-passengers felt they do not have equal rights and possibilities for air travel if compared to able-bodied passengers (ABP).

3. Research Methods

This research is a Qualitative Research. The data collection methods mainly derived from documents, in-depth interviews and focus group discussions. Participants in this research is a group of people who have a direct experience with the issue. It is considered a feature-based data and facts that appear or from the actual environment. Therefore, the method to collect data is from observation, interview, recording, descriptive analysis and finally gather all data to conclude the result of how to provide a constructive suggestion to this special service by narrating from the important information from the key informants. Participants in this research are selected by criterion – based selection which are the persons who are disabled with various characteristics and have an experience in using Thai AirAsia's wheelchair service and specialists on wheelchair accessibility. This research mainly concerns about the access to special services and the satisfaction of arranging travel facilities for passengers with disabilities using Thai AirAsia's wheelchair and can be divided the interview questions as follows:

1. Interview passengers using Thai AirAsia's wheelchair service. Every key informant will be asked about access to services and travel experiences.
2. Interview with experts about disability whom will be asked about access to services and travel experiences and suggestions that require airlines to improve to suit passengers using wheel-chairs.
3. Interview with Thai AirAsia airline agents whom will be asked about airline policy in providing dis-abled passengers in various forms of services, including problems and guidelines for airline solutions.

Before the interview, researcher will inform key informants that all the information in the interview will be recorded and requesting permission to use the names and general information of key informants to use as a reference in this research document. This research used an open-ended question to allow key informants to share experiences about accessing information for special service requests and travel experience using wheelchairs from airlines including inquiring about the satisfaction of using special services including suggestions of key informants about the service of Thai AirAsia.

Kitzinger (2008) mentioned about the selection of Focus Group people with similarities that it is easy to gather experiences together, such as similarities in the profession, belonging to the same group or association. The researcher therefore divided the group discussion by interviewing the airline group. Thai AirAsia airline’s employees divided into

- Phuket station manager, 1 person
- Duty Executive FD HKT, 2 persons
Questions for interviewing Thai AirAsia airline representatives is a question about the policy of the service line for disabled passengers, providing information to passengers before traveling. The questions concern about the equipment that the airline offers to the disabled including the airline's instructions for disabled passengers using the airline's wheelchair service, which can be concluded that the airline has a clear policy on providing assistance to passengers with disabilities traveling with airlines and there are many ways to access these services. Passengers can also request services in advance according to the way the airline determines or requests services at the airport. However, each airline's Wheelchair Battery has limitations in terms of size, so there is a requirement for the number of passengers using wheelchairs and equipment based on the safety rules of the aviation rules regarding Dangerous Goods Regulations (DGR). According to IATA, 2018, passengers traveling with Lithium Batteries are given the right to inform an airline in advance about the need of using equipment or ambulift in bringing passengers down from the plane or inquiring about the availability. The officer will inform passengers in advance about the solution that there will be staff who have been trained to transfer passenger, help with their bags and help them in case the wheelchairs is downstairs.

Gordon and Langmaind (2000) explained that the advantages of in-depth interviews are able to collect information both broadly and deeply. The questions that can be changed and be flexible if they want passenger to understand better or be able to create positive logical interaction with passengers.

4. Results of the study

Researcher has divided key informants for in-depth interviews into 2 groups:

1) Expert on wheelchair use, Khun Kritsanalai, the president of the Aryasathat Foundation for All people, Thai news presenters for Channel 3 and Nation TV which is disabled by a car accident and has been using wheelchair since 1997. From his experience of traveling with both domestic and international, Khun Kritsana has an opinion on accessing services and
information that there should be media suggesting special airline service requests and should train employees to be standardized by determining basic questions that are primarily used in querying symptoms or assisting passengers. Their employees should have the same criteria and try to adopt Universal Design to use during their travel. For example, there could be facilities such as designing a ticket counter that reduces height, making a seamless link ramp and adjust the bathroom on the plane appropriately.

Figure 10: JAL Priority Guest Support, 2015. Level Luggage Check, 2018, Space Flex Lavatory A320, 2015

2) Three experienced passengers who use wheelchair service from Thai AirAsia which have different age were asked about the need to request a wheelchair service and experience traveling with a wheelchair with Thai AirAsia. They provided suggestion to airlines to improve their service to suit passengers. They express their opinion that they feel that wheelchair passengers felt that they are not treated equally with other passengers. It is shameful that they could not help themselves during the journey and there is insufficiency of equipment. Airlines should have a public relations statement explaining useful information and procedures for requesting passenger services through various media.

5. Conclusion

Research "Access to services of passengers using wheelchair services: case study of Thai AirAsia Airlines” The researcher aims to study the channels of access to services, service model, information needed to travel and satisfaction of passengers with disabilities using Thai AirAsia’s wheel-chair service. From the point of view of each party, the researcher introduced concepts and theories about quality of life by not being discriminated against and civilized architecture which is the concept of equipment design, environment, facilities to allow passengers traveling by wheelchair to receive qual services equal same as normal passengers (an able-bodied passenger)

From the point of view of airlines and related staff, Thai AirAsia is an airline that sees and gives priority to all types of passengers, including regular passengers and passengers who need help, by adhering to the safety principles that are the heart of aviation, which passengers can request for a wheelchair service from the beginning of the ticket reservation from the website and trained related staff about the care and transport of passengers who need help and suggestions for passengers, should be prepare for basic self-help during travel and the use of
equipment needed. Passengers found that there is a problem with access to the wheelchair service because the airline lacks of public relations information, service channels and procedures in the process of travel and at destination, the availability of equipment and personnel.

Recommendations to airlines, airlines should be aware that the number of passengers using wheelchairs that it will increase in the future therefore, they should add more travel facilities and equipment to meet all passengers’ requirement. They should have public relations for the general public to know how to obtain basic information when traveling. Passengers using wheelchairs also want to receive equal services to others, and are not being discriminated or having discrimination and should have a right to ask for a better quality of life. These can be done by adapting the ideal of using the civilized architecture and providing necessary equipment and promoting the information to the publicy. From the conclusion, the researcher has suggested as follows:

- For airlines, information relating to the rights, practices and details for passengers with disabilities must be informed. The researcher proposed that airlines should increase public relations to passengers and the general public through various media so that passengers receive complete information.
- Civilized architecture to be considered to apply to use the travelling environment by making use of various public devices so everyone can access and it also promotes the quality of people with disabilities to live freely and equally with others.
- Should increase welfare and facilities to be ready for the elderly society, such as increasing areas or districts only for the elderly and the disabled. Training should be provided for the general public to prepare for an increased age, seeking knowledge about self-care and others by disseminating knowledge and welfare through public media or communities. From the results of the study, it was found that passengers were concerned about traveling due to physical limitations. In order to reduce this anxiety, the airline should find a management approach based on understanding and treating passengers with disabilities with equality. Give independence and respect for dignity. The guidelines are not contrary to the safety rules which are universal rules. As mentioned in the United Nations Convention on the Rights of People with Disabilities (CRPD) that airlines must participate in these principles to prevent human rights violations International (United Nations, 2006)

For further research. The researcher proposed that further studies on the accessibility of wheelchair access services for other types of mass transit services are provided whether public transport with regular routes such as buses, trains or non-transportation such as taxis, vans, buses that provide services along various routes, to provide guidance on how to facilitate the disabled, offer assistive devices for people with disabilities to live easily, safe and independent and proposed to study more about the civilized architecture that can facilitate the disability. How can it be applied to airlines and airports in order to be consistent with human rights rather than ignoring them.
6. References

Simon Darcy, Dr.(2016). Flying with impairments: Improving airline practices by understanding the experiences of people with disabilities. Research, Faculty of Business/School of Leisure, Sport and Tourism University of Technology, Sydney


https://journals.sagepub.com/doi/10.1177/1044207302013010201

Traffic Report Airport of Thailand Public Company Limited.

Research for Human Information Acceptance Behaviour in Multiplayer Online Game

Liang Liu
Department of Management-Leadership and Entrepreneurship
Assumption University
Au2007@hotmail.com or liu@msme.au.edu

Abstract

With the traditional social function of multiplayer online game has been broken, now, online game become a new type of media provides an interaction communication channel in virtual information environment can produce very high values in commerce. Particularly in recent years, multiplayer online game, as a relatively independent research topic, emerged from the field of calculator network and the research realm of the correspondences. It becomes an overarching concern for the academic community, online game operators and online game developer. Then, the author analyzes the game player’s information behavior in game process through the viewpoint of information acceptance behavior. Also, this paper is designed to explore information structure and information flow, and its effect on the game player’s cognition development. Furthermore, the Goffman’s drama theory and genetic epistemology are used to define the essence of online game and relationship between the player and information system. And, base on the information process theory and technology acceptance model, the proposed information acceptance behavior model is organized, which presents a macro variable relationship for online game player’s information acceptance behavior. Moreover, by using AMOS and path analysis, the final research model is determined presents information interaction and social situation are core elements.

Keywords: information acceptance, information grounds, information interaction, information process, cognition, goffman’s drama theory, genetic epistemology, social situation
1. Introduction

This study mainly concentrates on the process for multiplayer online game through information acceptance perception, and explore on how the game’s information ground and information process control have influenced on those online gamers’ cognitive skills. Furthermore, the researcher rename online game’s definition as a kind of literature creation process which can reflect relationship between people and information system base on Goffman’s drama theory and genetic epistemology. Comparing with traditional academic literature schools, this paper regard information environment in online game as information ground which is formed by many new media symbols. The game behavior is a narrative process which is influenced by many related factors. To be a simple, the course of the game can be considered as a kind of process for online reading and narrative through the game client. At the same time, this process may also get influence by related social context factors. And, the whole process will create more influence on social development. So, information acceptance and creation will not stuck at the level of language and writing in current virtual information world.

2. Related Literature Review

The rapid development of information technology has caused information environment become more complex, which presents as increasing information is in an explosive speed. In this situation, now, the new generation presents following characteristics [32];

1. New generation prefer digital forms of communication
2. Visual information requirement is over text
3. The electronic products has emerged to replace printing product

Those characteristics inform the increasing speed of electronic information supply is explosive in support of new information technology, which causes traditional information demand role is changed. Now, information user starts to use information not only provide satisfaction for himself, but as a way to present his perception. As the result of this kind of behavior changes, the highly networked information communication channel is established. Furthermore, this new networkization information environment evidenced that information requirement and motivation is changed.

The Essence of Game

From the perspective of traditional philosophy, the game’s essence is a trend of thinking liberation which present as the embodiment of aesthetic pursuit. The game, as a kind of existing mode of art work, motive the people to look for new experience base on their existing art experience, according the statements of hermeneutics[16]. Comparing with the philosophy system, sociology defined the game as an instrument of social control because the rules in the game express a social situation, which will be useful to form strong attachment and social awareness [15]. With the time goes on, however, the game is becoming a genuine subculture, which crosses wider set of human activities, because it is considered as a channel for cultural transmission and communication in current new social information environment. Because of the development of information and media technology, the traditional game program overcomes the limitation of time-space dimension. Online game, as the “third place” [26], make virtual community and online social networking become possible [5]. As the part in the public space, the players get opportunity to do information interaction which could make miserable learning process become more enjoyable and educational [21]. Now, most of
relevant researches just focus on the rules of game and the interpersonal relationship in the game process, which often neglect how the game players accept substantial environmental information and virtual environmental information. Even how to eliminate the limitation of “virtual” and “substantial” is hard job, Goffman’s dramatic theory still provide a new perception for related research.

Goffman’s Dramatic Theory

The way in which Goffman’s explains how people present themselves in society is with the metaphor of a theatrical performance [12]. Simply put, Goffman’s theory includes impression management and factor analysis for the dramatic [12]. According to his perception, the society is a big theatrical stage in which everyone is playing a key role. People-to-people interaction and information exchange behavior is the plot in the script. Coincidentally, Brenda Laurel also likened the virtual information environment that is composed by relevant IT hardware as a theatrical stage, which provides a channel for human-computer interaction that is a hopeful intellectual foundation in “Computers as Theatre” [4]. Comparing with Goffman’s theory, Brenda Laurel also pointed the change of technology does not directly affect the immersive experience of the information user because they are willing to put their attention on “Narrative Immersion” [4] which probably can provide more sense of belonging and comfort.

In the comprehensive parties on the basis related discussion of online game, it can be named as a massive multiuser interaction platform which depends on the network imaginary space relies on a network of computing devices. And, online game script always is designed in an unusual background. The “Avatar” with multiple attributes of human existence in the game is provided to the game player. Then, the game player will do “act” base on his own imagination and life experience after he choose the avatar in the game. So, it would be reasonable the game content is characterized by all-round contents, flexibility of time and space, diversity and uncertainty because people’s imagination and life experience always show an uncertainty. Besides, the script of online game is not an immutable because the game player always reinvents himself by the game rules (or the expectations from others in the same game guild). This could be happed because human behavior always is restrained by socio-cultural environment and the expectations from other individuals. Furthermore, it realizes the meaning for impression management [23].

Game Process and Literary Creation

Because the literature can make remote impact on the reader’s cognition, then, the successful literature depends on the author’s endeavor and reader’s comprehension. When the literature text in the paper is used to present the objective of human experiences, it always provides some indirect aspiration and help for the readers. If the literature can be considered as information resources, the reader’s reading experience can be realized as information communication and spreading. Readers’ aesthetic interpretation differs due to their own experiences, knowledge level and mood, which are called “Poetry has no absolute interpretation” [35]. So, the developing direction of online game content is difficult to determine if the online game process is considered as a kind of literature creation. Furthermore, it’s hard to identify the relationship between “reader” and “author” in the game comparing with traditional literary creation. Most of time, the player in the online game can be both of author and reader because of the essential characteristic of online game program design. When the program developers often construct a new virtual space under a special background, which has a complicate relationship with real life, it can make a kind of cognition stimulation to the players. And, the information gaps in
the game program are designed for the player to use his cognitive strategy to fill those breakpoints. And all of those things will break the original game framework that makes the player in the game process become an author. Besides, those stimulations will motivate the player to look for new information because his sensory knowledge and perception want to get satisfaction [12].

**Genetic Epistemology and Player’s Behavior Process**

To be simple, genetic epistemology (or knowledge development theory) is a study on how the knowledge is formed, such as cognition; intelligence; thinking and mental structure [3]. In this system, Piaget deemed cognition is a kind of functional structure is constructed by human, which can’t be regarded as replication and natural talent, has following characteristics [30]:

1. Cognition means people use an existing knowledge to handle with the new matter or situation.
2. If the existing knowledge does not work, the cognition will be changed in order to deal with the new matter or situation.
3. The cognition will drive the learning process to restore knowledge balance when the new challenge is controlling.

As far as the intrinsic essence of online game is concerned, it makes the player’s cognition process can’t stay isolated. Multi-interactivity in online game determines the player’s cognition development process will be affected by many related factors [3], such as reading experience and personal life experience. So, the cognition process is a constant development and transformation procedure. Specifically, when the player adapt to a new information environment in the game, he will integrate his individual experience and new knowledge environment. In the inception phase, the game player, as a lone ranger, will do decisions base on his real life experience. With the development on the game progresses, the player’s behavior in the game will be influenced by “guild quests”, “team objective”, and “virtual social environment”. As a joint result of those factors, finally, the game player will organize a new cognition schema in the game.

According to the presentation in the early discussion, the player’s behavior process in online game can be divided into following two sections;

I. The frame of online game technology and content understanding is aligned by human-computer interaction.
II. The interaction from the players in the game can be treated as the process of realizing society.

Refer to genetic epistemology; the game player’s behavior is a continuous exploratory process for social learning and knowledge. For example, the player will show a willing to manage and learn continuously changeable information in game context construction if he wants to get more pleasure and successful in the game scene [22]. Besides, if the game process is identified as an interactive narrative process [19], the whole process will go through symbolic interaction, information exchange, and narrative literature.
As shown in Figure 2-1, all the multi-media symbols in online game are conveyed through the game window to the player, which means the video and audio's symbol in the game represents the online information environment situation and the deepest meaning of online game content. After the game player accepts the meaning for all the multi-media symbols, he will do information interaction in the communication platform, which is created by the online game program. In this moment, the game player isn’t only information receiver, but also information producer. As the result, the game player manipulates the information to make the plot in the game become complicated. Through analyzing the factors in those related various aspects; this kind of behavior represent the game client with the technology support is the foundation of the game which could provide better play experience to the game players, plus it can give players more game content. As the subject of online game program, the game content includes the rules of the game, which define the player’s operation behavior, and narrative content, which use multimedia symbols in the game attract the player’s attention. Furthermore, as a joint confluence of online game content and the player’s response of online game information, the game player will organize a new cognition process for the virtual information environment in the game.

Besides, this kind of new cognition process also relies on his personal cognition and social information environment. According to Didier’s research on social curiosity and information spreading on networks [11], the relationship for social information environment, online game information environment, and cognitive process for game player can be presented as in Figure 2-2. Specifically, the information environment in the game directly stimulates the player’s different perceptual senses. And, in the interaction of multimedia symbol stimulation and social information environment, the original cognition model for the game player will be changed.
into the new one, which can adapt this new information environment in online game. As a behavior manifestation and method, this kind of cooperation may affect the player’s emotion in many situation, mood and esthetic value. Probably, the player will bring the ideology in online game into his real life because he can’t haunt the impact of virtual information environment. Besides, multiplayer interaction in online game also will cause emotional attachment for the player, which make him get confuse on virtual information environment and realistic social information environment.

**Information Dual Coding Theory**

Technically, online game program is a kind of media outlet with massive media messages, which provide massive visual impact and non-stop stream of consciousness. And, all of these rely on the language and picture in the game. Certainly, this form also creates one argument is whether people actually have is a unitary, multimodal imagery system, which handles auditory, olfactory, memories, etc. as well as visual ones in an integrated way. In 1971, Alan Paivio promoted dual coding theory presented there are two cognition processes are verbal comprehension and visual (or image) processing in a person could be used to present on information processing ability [25].

![Figure 2-3: Dual Coding Theory](image)

As shown in Figure 2-3, verbal and image stimuli (or language information and image information) are processed, stored, and organized by the sensory system which will cause further produce in the created separately information processed channel. Both language system and non verbal imagery system are interacted on each other can be used when recalling information [25]. And, this kind of interaction will increases the possibility for remembering the concept compared to the stimulus was only in one way.

For the coding process in online game, firstly, the sensory system for the player will be stimulated by the language and image information in the game. On the influence of non-visual aspects of people’s imagery experience [29], those information stimulations will be classified, stored and processed for subsequent use. Based upon the interaction of language system and non verbal imagery system, the corresponding information stimuli will be recorded as language representation and virtual behavior for recalling. Finally, it becomes a view of perception and imagery in the game that has come down to empiricism. In a nutshell, information dual coding theory creates a new meaning for language and picture in the game program which can build a theory and research in psychology, emphasizes on people’s cognitive course and conception.
And, those related research models could help us to design perfect computer program with human’s learning procedure.

Information Grounds Theory

Ms. Pettigrew defined information grounds as “synergistic environments temporarily created when people come together for a singular purpose but from whose behavior emerges a social atmosphere that fosters the spontaneous and serendipitous sharing of information [20]”. She confirmed the situation is composed by the physical environment, the clinic’s activities, the nurse’s situation, and the patient’s condition, which affect each other when they are sharing same function and purpose. In other words, when those decisive factors with different function and purpose do interaction, the information grounds structure will be changed. In the case of online game program, the player’s information environment is composed of living environment and virtual environment is composed of the game interface and computer hardware. When the player surpasses the limitation of time-space to participate the game through the advantage of internet, it means he is accepted by a large community in the game sharing the same purpose and objective. Especially, the game player is allowed to use different “game interface” to fill related information gaps base on different visual and auditory stimulation in the game always create new direction for game content, which means the information grounds in online game is not immutable. Referring to the information grounds theory, the following sections explain the online game information presentation format.

Replacement Behavior in Information Environment

From the viewpoints of psychology and information dual coding theory, the physical environment in which the people are placed often directly affect people’s behavior because any change in physical environment will be transformed to related information stimuli will be screened by our sensory organs. On another dimension, this kind of relationship reveals the related information stimuli can be used to replace any physical environmental change in the environmental cognition level. Strictly speaking, the physical environment in online game should be the players’ behavior context, and exist only in online as virtual appearance. Most of time, the change in physical environment is less important when the game player is completely focus on the circumstance of the game. So, it would be reasonable to believe the physical environment in virtual space can be replaced by related information stimuli that often manifest as human-information interaction. Referring to social learning theory, it is a new phenomenal behavior can be formed by observing and imitating others’ behaviors [1], then, the following two factors could directly influence the game player’s personal experience.
Information Arrangement (or Scripted Sequence)

In information grounds theory, the arrangement for spatial facilities could directly affect information flow and information service’s quality [20]. In online game, information arrangement (or the sequence for script) is a pre-designed series of events that will occur when it is triggered by the game player actions that will be executed in the online game process, commonly used in the game process development to bring in new challenges to the player in a seemingly surprising manner while he is still playing. The performance show is the hierarchy of information, GUI, environmental processes, skill set and many other elements in the game.

Information Structure (or Information Architecture)

Information structure (or information architecture) in online game means information is used to create a system, structure, and orderly principles to make the game program work [20]. Also, it is a practice of information organizing, content management or functionality of an online game program so that it can present the best experience to the game player, with information (or services) being usability and findable [28]. And, it will create a knowledge-base linking different systems depend on the extracting required data of engineering designs in the game program.

Spatiotemporal Problem in Communication Process

The spatiotemporal model is of interest in environmental monitoring with online data information in mobile telephone service. It learns and identifies the special events in network traffic is an important measure factor for the network service providers to improve their performance. However, it could be a challenging in communication process due to several issues, such as large scale data set, multiple periodic temporal traffic patterns, and irregularly distributed spatial neighbor information, when there is a large special event in online game program attracts many game players to relative small areas [28]. And, this situation embodies specifically in poor information flow in online game information communication channel.

Information Flow

Traditionally, information flow refers to any referential information tracking process which is controlled by related information producers. And, the information could be new message, just followed into the human-computer interaction process, or given already active in the game player’s consciousness in his memory system [7]. In the virtual space created by online game program, information flow shows up as the interaction relationship among information module, information content, information arrangement, and game players. Once this kind of relationship can break the limitation of spatiotemporal problem in online game communication process, it will provide high degree of online game program satisfaction. Then, the reliability of information flow presents significant value for information processing.

Aesthetic Information Processing

Generally, aesthetic information processing is a psychology study for cognition development that accepts information perspective is accounted for a mental process in terms of maturational changes as the basic components of people’s mind [31].
**Information Process Approach**

Base on the above studies, information processing approach addresses emphasis on how the information entering through the people’s cognition coordinate our consciousness to do information encoded, stored, retrieved and utilized by our brain. Similar as Wyer & Srull’s social information processing model, in this approach, information will be changed its form and content, stored, retrieved when it is needed, and used to manage information flow through the system [13].

![Information Processing Approach](image)

Figure 2-5: Information Processing Approach

Referring to dual coding theory, online game information is processed and stored in information processing approach has following 3 stages;

1. The sensory register picks up all the stimuli reaching the player’s receptors from the virtual information environment in online game. Although the capacity of sensory memory is huge, the sensory information only lasts for milliseconds in the sensory register.
2. The information in online game can be retained in two distinct ways; constant repetition of information in the game will be kept in short-term memory indefinitely; or association of information the game player want to remember with pre-existing experience in the game.
3. If the information in online game represents the opportunity for initial operation process, or the activity taking place between successive units of information, it will be held by long-term memory. In this process, long time information is less likely to be remembered than short ones. And, the level of familiarity, the communication function and channel are used in online game has significant value for long-term storage.

**Information Behavior and Information Acceptance**

Information behavior explains how the information users need, seek, produce and use information in different situations [24]. Yet there are others who believe that information behavior is the unified human information behavior relies on information resources and information channels are used [31]. Thus, information behavior can be defined as human to human communication interaction with others; as well as the passive information acceptance as in, such as watching video commercials without any intention to act on the information given, which can be a branch of information behavior’s definition. Even the information acceptance research is complex; the final purpose is to find relationship between information
object and information acceptance subject (or information cognitive agents) because it could help people systematically understand the cognitive process for information understanding, information process, information select and information recognition [36].

Generic epistemology provides a new viewpoint for information acceptance behavior, it would be reasonable to accept the subjective circumstance of information is people’s behavior relies on his personal cognition. And, When people is facing “situation”, “Gap”, or “using”, people prefer to use information seeking and information perception to reorganize information content and structure, which can be used to fill the gaps and solve the problem [10]. Besides, the rules and group task express a social situation can influence the player’s cognition at a macro level. And above all, as the information carriers, information technology will reflect the nature of the message subject, and fulfilled information users’ requirement, will directly affect information user’s cognition practice. Specific details go as follows;

**Information Organization Model**

Now, people are enthusiastic about seeking new information technology because of their strong aspiration for information. Referring to technology acceptance model [9], the cognition behavior for most of information users is pursuing usefulness of information and the easy usage of information which approves the good information management environment can directly affect the information acceptor’s perception and understanding, beyond conveying information creator’s intentions. Moreover, the information organization model can affect information processing process as a narrative mode on macro level. Before the encode information is transmitted to memory through sensory system, information acceptor will do information select base on focused viewing behavior and coherence reading [37]. At the same time, this selecting process will be affected by the principle of “minimum effort” because the information users always present their intentions on perceived ease of use [37]. When the reasonable information organization model creates a continuous information communication channel, coherence reading will help information user to perceive the consecutive factors. If the continuation of information flow is breached, the information resources in short term memory will be pulled out for filling information gap. As well as, focused viewing behavior can help information user directly access information core value for activating information user’s intellectual activity, which presents as the improvement of achievement in online game relies on level of familiarity with the special information that is considered as measurement level for perceived usefulness [9]. Furthermore, when the similar information and data in different information organization structure and presentation way are carried, the final effects also are different. And, the reason is the information organization structure will influence information simulative intensity [13]. At the same time, when information spreading is happening, information acceptance will affected by many outside disruptive factors. So, the efficient information organization will reduce information interruption; will directly influence the information accepters’ accepting effect.

**Cognitive Structure**

According to the previous discussion, the information acceptance process can be considered as a kind of cognitive process for people to finish their perception on the world. That is to say, information is accepted by information user, and connected with original knowledge structure and personal experiences to form a new information system, which will be adapted by the new information environment. Once this kind of new individual experience is formative would
further affect the following new information acceptance process. And, it represents as consistently use for information acceptance process system [34].

**Information Expectation**

According to the point of view of the information behavior, the information user always present their psychological expectations on the information contents that will be received base on their past reading experience and their perspective. Actually, this kind of psychological expectation is information seeking and cognition process. When the expectation is dashed, people will present a thirst for new information. In this situation, information structure and information flow, as the resources of information, directly fit the requirement, which will be examined by information perception works as a sensory system in cognition process.

**Social Situation (or Living Environment)**

Based on the research of predecessors, information behavior is not an independent process. Usually, it could be affected by information users’ living environment and their situational factors. Generally, information behavior can be considered as a process can make information to be maximizing itself in the conscious statement (or unconscious statement). That is to say our information behavior directly can be affect by the situation and group (or individual) value in the environment. So, information acceptance process can be regarded as a kind of information interactive behavior in relevant specific cultural situations. Then, information behavior will be affected by social environment, which can decide the process for information exchange and information processing. Meanwhile, this process can help information users to build information interaction connections in the social environment. Besides, there are some related authoritative books also present information user’s living environment can directly affect their information behavior because the information always be perceived before they are accepted, such as information grounds theory. To be simple, it can be understood as the information interpretation process always require information user to extract relevant information in his long term memory, which represent the information user’s value system that probably is affected by their living situation.

### 3. Theoretical Model and Research Design

The proposed theoretical model shown in figure 3-1 was come from related existing theories and previous studies discussed in section2. There are nice variables including three exogenous independent variables (Information Structure, Information Flow, and Social Situation), and six endogenous variable (Information Perception, Perceived Usefulness, Perceived Ease of Use, Information Seeking, Information Interaction, and Consistently Use) with Consistently Use as the dependent variable.
As shown in Figure 3-1, there are 12 research hypotheses relied on the cause and effect relationships in the proposed theoretical framework are notated on the figure 3-1. As following in Table 3-1, it presents the operational definition and label used for each of the nine variables in the theoretical model with the references are used as sources for the definition.

Table 3-1: Definitions and Labels for Model Variables

<table>
<thead>
<tr>
<th>Model Variable</th>
<th>Operational Definition</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information structure (IST)</td>
<td>It means information is used to create a system, structure, and orderly principles to make the game program work.</td>
<td>Wueman (1997)</td>
</tr>
<tr>
<td>Information flow (IF)</td>
<td>It shows up as the interaction relationship among information module, information content, information arrangement, and game players.</td>
<td>Chafe-Wallace (1976)</td>
</tr>
<tr>
<td>Information perception (IP)</td>
<td>It is a sensory system for reorganizing information content and structure in online game in order to fill the gaps and solve the problem.</td>
<td>Dervin B. (1998)</td>
</tr>
<tr>
<td>Perceived Usefulness (PU)</td>
<td>It shows whether online game achievement will be improved with the action of intended information.</td>
<td>Davis P.D. (1989)</td>
</tr>
<tr>
<td>Perceived Ease of Use (PEU)</td>
<td>It represents the level of familiarity with the online game operation system with the action of special information relies on minimum effort.</td>
<td>莫雷，冷英，王瑞明 (2009)</td>
</tr>
<tr>
<td>Information seeking (IS)</td>
<td>It is the process for interplay of thoughts, feelings and actions for online game operation [6].</td>
<td>Kuhlthau, C.C.; Tama, S.L. (2001)</td>
</tr>
<tr>
<td>Information Interaction (II)</td>
<td>The extent to which the game players receive information and produce information in online game.</td>
<td>Berly A. Gebert, ed. (1977)</td>
</tr>
<tr>
<td>Social Situation (SS)</td>
<td>It presents the rules and group task process in online game.</td>
<td>George H.M., (1934)</td>
</tr>
<tr>
<td>Consistently Use (CU)</td>
<td>It represents how long the game player has played the online game.</td>
<td>甘利人,许应楠 (2009)</td>
</tr>
</tbody>
</table>

The variables measure the perceptions of the game players based on their experience in game playing and they are measured at a single point in time by using a self-administered
questionnaire, which is to indicate measuring scales and labels used for related indicators and variables in data analysis process. The main target population for this study was individual online game players who were undertaking formal education at the level of high school, bachelor or higher education level because this group corresponded to those who were considered in previous studies to be strongly influenced by online games [17]. No restrictions were placed on the technologies used to access the games or the place or time when the game was played. According to the purposive sampling method, the minimum sample size of 300-350 individuals and will satisfy the criteria for the statistical validity of the structural equation modeling (SEM) and other statistical techniques used in the study [18]. Finally, the administration process took one and half month and produced 377 valid responses.

4. Data Analysis

The Characteristics of Respondents

From data analysis, there were 61.3% of respondents were male; 60.5% of responder’s age structure is from 18 to 24; and 67.1% of the responders were at colleges/ university. And, the massively multiplayer online role playing game accounted for a large percentage (33.7%) of the game categories. There are 71.9% of male responders would like to play massively multiplayer online first person shooter game; and 52.4% of female responders shown their attention on massively multiplayer online simulation operation game. Also, the data presented there were 48.3% of responders would like to spend 1-3 hours for each day in their online game.

Preliminary Analyses

In order to exam the construct validity of the measures of related latent variables in this theoretical model, the method for principal component factor analysis was used. This required indicators to load onto only the component (latent variable) that they were proposed to measure with a loading factor of at least 0.4 in magnitude and with an eigenvalue of at least 1 associated with the component [27]. As the result of the factor analyses in Appendix Table A1, the sequence list of latent variables is social situation, perceived usefulness, perceived ease of use, information flow, information seeking, information structure, information interaction and information perception. And, Kaiser-Meyer-Olkin measure of sampling adequacy0.868, Chi-square 6259.831, degrees of freedom 276, significance 0.000 that approve this model is effective and suitable for factor analysis.

Table 4-1: Cronbach alpha coefficients

<table>
<thead>
<tr>
<th>Latent Variable</th>
<th>Cronbach Alpha</th>
<th>Interpretation</th>
<th>Latent Variable</th>
<th>Cronbach Alpha</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Situation</td>
<td>0.914</td>
<td>Excellent</td>
<td>Information Seeking</td>
<td>0.879</td>
<td>Good</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>0.914</td>
<td>Excellent</td>
<td>Information Structure</td>
<td>0.880</td>
<td>Good</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>0.916</td>
<td>Excellent</td>
<td>Information Interaction</td>
<td>0.857</td>
<td>Good</td>
</tr>
<tr>
<td>Information Flow</td>
<td>0.886</td>
<td>Good</td>
<td>Information Perception</td>
<td>0.860</td>
<td>Good</td>
</tr>
</tbody>
</table>

Note: Interpretations are as specified by George and Mallery [14].
As the following, the internal consistency reliability of the measurement for the each of the latent variables was examined by using Cronbach alpha coefficients value which is shown in Table 4-1 shows satisfied reliability of the instrument.

**Correlation Analysis**

As a statistical evaluation method, the purpose for correlation analysis is to study the strength of a relationship between two, numerically measure, and continuous variables. In this study, Pearson correlation analysis was used to exam the status of the research hypotheses. After analysis, the data result shows the coefficient (0.060) between information seeking and consistently use was negative in significant level under a certain confidence level, which means the hypothesis 12 has to be deleted. Same as hypothesis 10, the data result shows the coefficient (0.041) between social situation and consistently use was negative in significant level under a certain confidence level.

Indeed, there are no hypotheses concerning the indirect effects. For example, there are three additional indirectly correlation relationship (Information Seeking – Information Interaction, Social Situation – Information Perception, and Social Situation – Perceived Usefulness) if we consider the theoretical and logical support. So, this paper will use structural equation modeling (SEM) analysis these indirect effects will be analyzed, reported, and used to identify any significant mediation effects in the following sections.

**Figure 4-1: Theoretical Model’s SEM Analysis**

In Figure 4-1: (a) the unstandardized direct effect is shown first followed by *, **, or *** if the effect is statistically significant at a level of 0.05, 0.01, or 0.001, respectively; (b) in parentheses the standardized direct effect is shown with S, M, or L to indicate that the magnitude of the effect is small, medium, or large, respectively [8]. These notations are used throughout subsequent analyses of effects. Table 5-2 shows the values of the range of fit statistics for the theoretical model in Figure 4-1 as recommended by Kline [18].
Table 4-2: Theoretical Model Fit Statistics Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>N</th>
<th>( \chi^2/df )</th>
<th>RMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>IFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical Model</td>
<td>377</td>
<td>562.96</td>
<td>0.103</td>
<td>0.898</td>
<td>0.874</td>
<td>0.913</td>
<td>0.952</td>
<td>0.951</td>
<td>0.055</td>
</tr>
</tbody>
</table>

From Table 4-2 the fit statistics analysis results are barely satisfactory, especially the values of RMR, GFI, AGFI and RMSEA. Consequently, it was desirable to seek a model with improved values for the fit statistics analysis and direct effects that were at least medium in magnitude and statistically significant. In the analysis of correlations presented section, there are three additional plausible direct causal effects were suggested. Those effects were added to the theoretical model for further analysis by using AMOS.

As shown in Figure 4-2, the data presents there was a medium standardized direct effect between information seeking and information interaction, social situation and information perception, and social situation and perceived usefulness.

![Figure 4-2: Final Research Model](image)

Following Kilne’s analysis, this analysis the final model was selected as the one with the smallest value for \( \chi^2/df \) normed Chi-square. And, this final model had a satisfactory set of values for the fit statistics, reasonable proportions of the variance associated with the endogenous variables were explained by the model, and all direct effects in the final model were medium in magnitude and statistically significant at a level of 0.01 or less.
Table 4-3: Final Theoretical Model for Fit Statistics Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>N</th>
<th>NC (χ²/df)</th>
<th>RMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>IFI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final</td>
<td>377</td>
<td>519.67</td>
<td>0.086</td>
<td>0.906</td>
<td>0.882</td>
<td>0.919</td>
<td>0.958</td>
<td>0.958</td>
<td>0.052</td>
</tr>
<tr>
<td>Theoretical</td>
<td>8/260=1.9987</td>
<td>1.1967</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the summary, all effects in the final model are shown in following Table 4-4, and variables on indirect paths are labeled.

Table 4-4: Summary for Path Analysis

<table>
<thead>
<tr>
<th>No.</th>
<th>Path</th>
<th>Direct Effects</th>
<th>Indirect Effects</th>
<th>Total Value</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>IST → IP</td>
<td>0.312</td>
<td>0.312</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>IF → IP</td>
<td>0.237</td>
<td>0.237</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>SS → IP</td>
<td>0.271</td>
<td>0.271</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>SS → PEU</td>
<td>0.215</td>
<td>0.094</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>SS → PU</td>
<td>0.175</td>
<td>0.100</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>IP → PU</td>
<td>0.370</td>
<td>0.370</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>IP → PEU</td>
<td>0.345</td>
<td>0.345</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>PU → IS</td>
<td>0.301</td>
<td>0.301</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>PU → II</td>
<td>0.134</td>
<td>0.050</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>PEU → IS</td>
<td>0.238</td>
<td>0.238</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>PEU → II</td>
<td>0.223</td>
<td>0.039</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>IS → II</td>
<td>0.165</td>
<td>0.165</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>II → CU</td>
<td>0.170</td>
<td>0.170</td>
<td>Support</td>
<td></td>
</tr>
</tbody>
</table>

5. New Findings and Further Studies

In this research, the respondents showed a very strong intention on information acceptance, information interaction, and the information cognition process was affected by their social situation. In the game, they were not only do information seeking, but also information interaction. And, information seeking process was becoming a supporting process for information interaction in the game process. There were significant differences between males and females concerned with game category, time spending, and educational background. Note
that location was not important issue because of the popularization of internet and development of computer technology. This study found that online games are played predominantly at home. Besides, age structure was used to be an important measurable factor in many similar studies. But, there was no strong flashpoint in this paper probably support to explain why the online game’ essence is a kind of subculture which can spread through the whole social structure.

Information acceptance behavior is named as consistently use measured by the amount of time an individual game player spends each time they play an online game is influenced by related game interaction (Information Interaction), which isn’t only present as guild game task, but also information interaction behavior among the game players. Comparing with traditional functional behavior, information seeking isn’t longer about problem solving. It becomes a supportment for information interaction because the game players are no longer satisfied with information receiver, but information producer. As the reasons for those information behaviors, perceived usefulness refers to information objective and perceived ease of use refers to information core value directly affected by individual’s information perception and individual’s social situation. Online game information structure and information flow directly stimulate individual’s sensory system which presents as information perception will do information exam and selection.

Base on our discussion, this paper also inform us the contents of individual’s social situation is playing a crucial role in our information behavior process which can directly influence people’s information cognition process. Because of this, it would be reasonable for the game product designer to focus on how to create resonate on social and culture environment levels for the players. And, perceived usefulness and perceived ease of use are dependence variables in technology acceptance model. But, in online game information process, the data presents they are independence variables because of the purpose of information consumption are different, which will motivate the related program designer to consider whether they should make the program become useful or ease to use. Now, the game players are not only enjoying their personal experiences form online game, but interaction with each others in the online game. So, we can see more and more online games are providing online communication platform to the players. Also, they are making the information seeking process in online game become easier than before. Finally, the program designers need to think how to arrange information structure and information flow to be diversification benefits information cognition process can induce the player’s information acceptance behavior.

There are limitations on the findings of this study. And, if it is possible this study is strongly recommended to be repeated in order to confirm whether there are some unidentified external reliability of the variables particularly in information interaction and consistently use. Especially, consistently use only explain information acceptance behavior base on timing spend level will be a limitation for this research. Working on further discussion, we could understand the expression of information acceptance behavior could be varies. Also, further studies should address the construct validity of the variable social situation, information seeking in order to examine whether other variables should be included in this research model. Finally, because of its important influence on other constructs in this study and in other studies concerned with the adoption of measurement of online information flow experience requires further investigation.
6. References:


ANGELA OSWALT. MSW. Early Childhood Cognitive Development: Information Processing


Brenda Laurel, Computer as Theatre, 1991


Ering Goffman. The Presentation of Self in Everyday Life.


Georger Herbert Mead, Mind, Self, and Society,ed. C.W.Morris (University of Chicago, 1934)


Prensky M. Digital game-based learning [J]. Computers in Entertainment (CIE), 2003, 1 (1); 21-21


Savolainen R. Everyday life information seeking: Approaching information seeking in the context of “way of life” [J]. Library &Information Science Research, 1995, 17(3)


Tom S. AU: Rong Duan; Heeyoung Kim; Guang Qin Ma. Spatiotemporal Event Detection in Mobility Network, 2010.


蒋永福 刘敏茹 认知图式与信息接受 [J]. 图书馆建设, 199 (3)

莫雷 冷英 王瑞敏 文本阅读信息加工研究 [M]. 广州: 广东高等教育出版社, 2009

Appendix Table A1

<table>
<thead>
<tr>
<th>Component</th>
<th>Component (Latent)</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Situation</td>
<td>8.200</td>
<td>34.533</td>
<td>8.200</td>
<td>34.533</td>
</tr>
<tr>
<td>Perceived Usefulness</td>
<td>2.155</td>
<td>8.981</td>
<td>2.155</td>
<td>8.981</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>2.039</td>
<td>8.494</td>
<td>2.039</td>
<td>8.494</td>
</tr>
<tr>
<td>Information Flow</td>
<td>1.809</td>
<td>7.538</td>
<td>1.809</td>
<td>7.538</td>
</tr>
<tr>
<td>Information Seeking</td>
<td>1.653</td>
<td>6.839</td>
<td>1.653</td>
<td>6.839</td>
</tr>
<tr>
<td>Information Structure</td>
<td>1.480</td>
<td>6.169</td>
<td>1.480</td>
<td>6.169</td>
</tr>
<tr>
<td>Information Perception</td>
<td>1.117</td>
<td>4.654</td>
<td>1.117</td>
<td>4.654</td>
</tr>
</tbody>
</table>

Note: (a) Kaiser-Meyer-Olkin measure of sampling adequacy 0.888; (b) Bartlett’s Test of Sphericity (approximate Chi-square 6259.831, degrees of freedom 77, significance 0.000); (c) Extraction Method: Principal Component Analysis; (d) The measure is with a loading factor of at least 0.4 in magnitude and with an eigenvalue of at least 1 associated with the component.
Consumers’ Understanding on Cashless Payment: A Qualitative Study in Bangkok

Henzel Embalzado
Department of Marketing
Assumption University

Bing Zhu
Department of Marketing
Assumption University

Wanwisa Charoennan
Department of Marketing
Assumption University

1. Introduction

With the development of technology and economics, the world has witnessed the shift from using paper money to plastic money (e.g. credit cards and debit cards) in making payments (Szmigin and Bourne, 1999). But innovations in recent years have profoundly changed this system (Dimitriadis et al., 2018) by bringing plastic money to be m-payment and e-money (World Bank, 2012, Arvidsson, 2014). Evidently, cashless era has now entered the portals of the society, and cashless payment is dramatically shaping the way people live, consume and do business.

Cashless payment is a payment system in which transactions are performed through electronic devices (Tee and Ong, 2016, Akinola, 2012). Cashless payment come in many different types and it carries many different names. This makes the concept of cashless payment confusing as there are no definite connotations as to what cashless payment means to a certain society. Sweden was the first country to ever use the cashless payment scheme (Bank of Ayudhya, 2017) and today, majority of their financial transactions are performed with the use of mobile applications, credit and debit cards, (Bank of Ayudhya, 2017; Wheatley, 2017) and even microchips (Ma, 2018). In Africa, M-Pesa, the mobile-minute based payment system, has been widely used in Kenya (Sinha et al., 2018), which has facilitated money circulation, financial transaction, and business sales (Tiwari and Deepti, 2013). In Asia, India has already introduced the cashless concept through its “Digital India” project, which aims to bring India towards digitization by eventually phasing out bank notes in their financial transactions (Kulkarni and Taj, 2017, Wheatley, 2017). This year, Myanmar is also launching its Yangon Payment System Card, which is a payment scheme that allows commuters to pay for public transportation with the use of electronic devices (Bank of Ayudhya, 2017, SCB Economic Intelligence Center, 2016).

In Thailand, cashless payment is still yet to come to its full fruition. This is especially true as the Thai government stated that consumers in Thailand may only have limited understanding and access to cashless payment scheme so far implemented (SCB Economic Intelligence Center, 2016). The “PromptPay” or “AnyID” are forms of cashless payment that were recently introduced by the Bank of Thailand (Bank of Ayudhya, 2017, SCB Economic Intelligence...
Center, 2016) to aid consumers to conduct payment transactions by using their citizen identification cards or mobile phone numbers. However, in order to fully implement this scheme, all sectors in Thai society including the public and private sectors, merchants, and consumers should have a common understanding as to how cashless payment is used and performed, and what benefits does it bring to all parties (Pimarnsawast, 2018).

The use of cashless payment poses several benefits in the society. At the macro level, cashless payment has a significant impact to the world economy. The use of electronic card payment added dollars to the Gross Domestic Product (GDP) of 56 countries and raised consumption by 0.7 percent (Tee and Ong, 2016, Zandi et al., 2016). Countries that expansively used electronic cards experienced the biggest contribution for growth, and the same percentage in GDP has been seen between emerging markets and developed countries with the increased use of electronic payments (Zandi et al., 2016). Moreover, electronic payments could have a significant effect on future economic growth and spending habits of consumers (Zandi et al., 2016). At meso level, banking industries could benefit from cashless payment as it will significantly reduce the cost of banking services as well as the security and safety risks due to corruption and robbery (Shendge et al., 2017). It also facilitates convenient payment of salaries and wages (Krueger and Seitz, 2014) leading companies to have a more efficient payment scheme. At the micro level, cashless payment prevents fraud brought about by cash payments and improves speed of transactions among the users (Dave and Thanawala, 2016, Akinola, 2012). However, cashless payment is not without its potential problems. The risks mainly come from systems failure, account hacking and other technical problems that may occur with the use of internet technology (Tee and Ong, 2016). In Thailand, security remains to be the major issue why majority of consumers in Thailand prefer to carry cash than paying for goods through online mechanisms (Thailand Quarterly Economic Report, 2017).

Thus, despite the efforts of fully implementing the cashless concept in Thailand, the process has been so far slow or if not, futile. A clearer definition as to the scope, use and consumers’ understanding to the cashless payment concept should then be clarified. This current study hence, aims to explore what cashless payment means for consumers in Thailand, what cashless payment method they are using, if any, and what motivates or hinders them to use this scheme.

2. Literature review

Certain economies have already been using cashless payment for years (e.g. Wheatley, 2017, Chen, 2006). According to Pantano and Di Pietro (2012), the primary considerations in the adoption of cashless payment method are convenience, speed of transaction, and its ease of use. However, as the notion of cashless payment evolved through the years, its mechanisms and representations have become varied such that some societies consider cashless payment as mobile accounts, net accounts, net wallets, smart cards, plastic money, magnetic stripes and paper vouchers (Dave and Thanawala, 2016) while other economies carry it by the names of debit and credit cards, automated teller machines (ATM), automated cash register (ACR), smart phones, store-valued cards or electronic cash (Akinola, 2012). Worthington (1995) considered ATM, debit, credit, paper credits, cheques and automated payments as forms of cashless payment. In Thailand, cashless payment is confined within what the government call as “PromptPay” or “Any ID,” a payment scheme that facilitates mobile fund transfer either through a user’s mobile phone number or his national ID (Bank of Ayudhya, 2017, SCB Economic Intelligence Center, 2016). But cashless payment as mentioned above include wide array of methods. Apparently, some of these methods have already been used in Thailand for several years, but the idea that these are forms of cashless payment have not entered the full
consciousness of Thai consumers (Bank of Ayudhya, 2017, SCB Economic Intelligence Center, 2016).

2.1 Self-Awareness Theory

Self-awareness theory contends that people are more likely to adopt when they feel that their current behaviors and actions fall short of the society’s standards (Duval and Wicklund, 1972). This implies that people accordingly change their behaviors if certain cues in the environment make them realize that their current state is not in anyway close to what the social convention dictates. Silvia and Duval (2001) reviewed and revised this theory to propose that when people experience feelings of discrepancy, they will find ways to understand its cause, and how to reduce it. If they figured that the discrepancy could be reduced, they attribute the failure to themselves, and immediately take actions to change their behaviors. However, if the discrepant feeling could not be reduced, people attribute the failure towards external factors such as the stringent standards, incomprehensible technologies or lack of proper communication from involved parties. In the case of cashless payment, consumers’ awareness of the system is crucial in making them adopt to the new technology. Once consumers become aware that they lagged behind the society in terms of the cashless payment system, they then will evaluate themselves to see whether the problem could be (Duval and Wicklund, 1972) mended. If they figured that the problem could be addressed by changing certain aspects of their actions and behaviors, they will then look for ways to eventually adopt the system. However, if by their evaluation, the problem could not be reduced, they will then blame the society’s stringent standards, lack of proper communication or the technology, in itself to be causing the trouble. This condition consequently leads to the avoidance of self-awareness, which eventually affects the consumers’ intention to adopt to innovation (Silvia and Duval, 2001). In the original self-awareness theory as supported by the new one, the system has to be something that people do not have high level of difficulty achieving. In other words, people generally prefer to adopt to changes, which are easy to understand and simple to follow (Aronson et al., 2016). Thus, in the case of fully implementing the cashless society in Thailand, there is the need to reevaluate Thai consumers’ understanding of the concept and investigate the factors that motivate or hinder them to use the cashless payment method. There might be a lingering confusion as what cashless method is, thus there is a need for a clearer representation of what cashless payment means to Thai society. Moreover, exploring the awareness of consumers in Thailand is imperative as it is demonstrated that favorable attitudes regard positive adoption to innovation (Soodan and Pandey, 2014, Solomon, 2017). Government agencies and other important players in Thailand should find appropriate mechanisms on how to convince, encourage and educate consumers about the benefits and advantages of this new payment system. As Wheatley (2017) put it, “successful digitization of retail payments depends on economies of scale and network effects (p. 33).” It means that full implementation of cashless society only works when both marketers and consumers agree on what the system is all about, and how it will make the lives of consumers better (Pimarnsawast, 2018).

Studies on technology adoption were explained mainly by technology acceptance model and innovation diffusion theory (Chen and Tan, 2004), social presence theory (Gefen and Straub, 2004) and theory of planned behavior (Crespo and del Bosque, 2008) but not by self-awareness theory, the main theory that this present study is anchored. The study of Abubakar and Ahmad (2013) only investigated the moderating effects of technology awareness on the relationship between technology acceptance and behavior intention to use but not utilizing the conventions of the self-awareness theory. Duval et al. (2001) mentioned that self-awareness theory was extensively explored in areas related to cognitive consistency, self-discrepancies and some
forms of emotional states but not on such dimensions as behavioral adaptation and intention to use. This current study hence, will contribute to the literature of self-awareness theory by providing new knowledge as to how consumers’ adoption to technological changes could be facilitated by self-awareness, and their eventual use of the system could take place only if they consider that cashless payment becomes the society’s standard.

2.2 Influential Factors

A review on the factors that affect the awareness of cashless payment and its eventual adoption brings this present study to discover that there are several important factors that matter in consumers’ clearer understanding of the scheme. The most salient of which are the mechanisms (Akinola, 2012, Dave and Thanawala, 2016, Kulkarni and Taj, 2017), attitudes towards the innovation (Soodan and Pandey, 2014, Humbani and Wiese, 2017, Bejangjaru and Vongurai, 2018) and the consumers’ expectations of its risks and benefits (Bech et al., 2018, Singh and Rana, 2018, Teoh et al., 2013).

Mechanism: Cashless payment means different things in different societies. As previously mentioned, different authors suggested different definitions and representations of the cashless payment methods. Dave and Thanawala (2016) mentioned eight different types that include cards and mobile wallets whereas Akinola (2012) listed down eight different types but mentioned the term cards and electronic cash but not mobile wallet. Worthington (1995) called cashless payment as paper credits, cards and automated payments not mobile payments. In India, Indian consumers generally refer cashless payment as credit and debit cards (Kulkarni and Taj, 2017) but in China, cards were largely bypassed to make way to mobile payments (Wheatley, 2017). Alipay, the pioneering mobile payment method in China is widely understood as a third-party cashless payment system (Mu and Lee, 2017, Yuan et al., 2016) where Chinese consumers make payment with the use of their mobile devices. In Sweden, microchips system has already entered the market by allowing individuals to be inserted with microchips in their body to help them perform their daily activities (Ma, 2018) including payment transactions. The blockchain technology, the digital transaction method which uses bitcoins and other cryptocurrencies, has now entered the cashless market, giving a new definition to cashless financial transactions (Wheatley, 2017). But Wheatley (2017) again explained that the success of the cashless trail is attributed to the fact that consumers and merchants have a common understanding as to what cashless payment is. In Thailand, Pimarnsawast (2018) recommended that merchants and customers should work closely together in promoting the use of Quick Response (QR) code as it is only through this collaboration that consumers will eventually adopt to the system. It is the purpose of this present study hence, to explore which forms of cashless payment that consumers in Thailand are currently using, and if they understand that these are forms of cashless payment scheme.

Attitude: Attitude affects the magnitude to which consumer adopt to innovation (Soodan and Pandey, 2014). Trust, reliability, convenience and compatibility turn out to be the crucial features that affect the attitude of the consumers to consider using the cashless payment scheme (Humbani and Wiese, 2017, Lee and Lin, 2005). In South Africa, convenience and compatibility drive consumers to adopt to cashless payment (Humbani and Wiese, 2017) while in Taiwan, trustworthiness, reliability and responsiveness prompt consumers to purchase online using credit cards (Wang and Kankham, 2018). Cao et al. (2018) also support that consumers are likely to perform their payment transaction via mobile platform instead of traditional platforms due to greater convenience and higher efficiency. Black et al. (2001) explained that compatibility and trialability matter in the adoption process because if the cashless method is
compatible with the consumers’ personal values, they are more likely to adopt. The value-expressive function, a functional theory of attitude, supports this contention by explaining that consumers who share similar values with the system are more likely to develop favorable attitude towards it (Solomon, 2017). Moreover, the system should also be available for trials as testing the system allows consumers to experience whether the system is easy and simple to use.

On the other hand, privacy concerns with the way the data being collected, stored and used are revealed to hinder consumers’ adoption and use (Zhou, 2017). In addition, Black et al. (2001) and Bejangjaru and Vongurai (2018) supported this finding by explaining that the complexity of a system potentially prevents consumers to adopt to innovation. For instance, labor workers in India develop negative attitude towards cashless payment as it brings in so many problems. This is in reference to the burden of going to the bank if they receive checks, or network problems if they received their salaries through mobile payment (Shrikala, 2017). Compared to their Taiwanese counterparts, Thai consumers generally have negative attitude towards cashless payment specifically with the use of QR code (Wang and Kankham, 2018) as the use of the system is not clear to them (Prutthisathaporn, 2018). The knowledge function of attitude contends that consumers who have less or no knowledge about a certain system develop unfavorable attitude towards it as they find it difficult to learn (Solomon, 2017). Silvia and Duval (2001) explained that a system that is easy to use and uncomplicated is still favored by the consumers when it comes to learning a new system or adopting to an innovation.

Expectations: Consumer’s expectations as to the benefits and usage of cashless payment also matter in their adoption process. Bech et al. (2018) stated that better infrastructure, more convenient mobile terminals, and lower cost of smart phones and tablets have driven the increase in the usage of cashless payment in recent times. This means that when consumers adopt to innovation, they expect it to have the necessary tools or methods that allow them to use it conveniently; otherwise, they may have the ambivalence of adopting it (Black et al., 2001). Ramya et al. (2017) argued that the spreading of digital payment culture requires the expansion of infrastructure facilities. This implies that payment terminals, internet connectivity and mobile devices should be readily available for consumers to acquire and use. But along this line, internet connectivity and the mobile transaction mechanisms should be protected with high security system as consumers consider security risks as their utmost concern (Kulkarni and Taj, 2017, Shrikala, 2017, Rakhi and Mala, 2014). Moreover, consumers expect that the full implementation of cashless payment should be accompanied with extensive information dissemination activities and educational campaign. According to Singh and Rana (2018) education is the foremost requirement to influence consumers to use digital payment system. This includes the proper communication and implementation of cashless payment policies so that consumers can understand the limitations and scope of the system (Ejiofor and Rasaki, 2012). Humbani and Wiese (2017) suggested to use opinion leaders in creating advertising campaigns as they command attention and strong influence among the users.

3. Research Methodology

Qualitative research methodology was employed in this study, which aimed at understanding particular social phenomena and determining how people respond to a certain issue in a given circumstance (Hancock et al., 2007). Specifically, semi-structured interviewing is the technique chosen to collect the data. Semi-structured interviews, which involved 85 interviewees, were conducted during April and May 2018 in Bangkok through a constellation of “predetermined open-end questions with other questions derived from dialogue between
interviewer and interviewees” (Dicicco-Bloom and Crabtree, 2006, p.315). This allowed the procurement of reliable, comparable data through a constellation of instructions (Cohen and Crabtree, 2006). Specifically, in-depth interview helped in the exploration of how individuals react to specific social and personal issues (Chilban, 1996, Johnson, 2002) and as a result, thoughts, feelings and perceptions of the interviewees were clearly captured (Holloway, 2008). At the initial step, the purpose of the interview was explained clearly (Boyce and Neale, 2006, p. 6), and general questions were asked in a flexible interview tone (Brymann, 2002, Dicicco-Bloom and Crabtree, 2006). Each interview took 10-20 minutes to complete. After that, open-ended questions focusing on the usage of cashless payment were provided. More importantly, during the interview, multiple independent coders were applied, which helped mitigate potential bias and inaccuracy.

As for the analysis, direct content analysis was used to “validate or extend existing theory” (Hsieh and Shannon, 2005, p. 1281) referring to the self-awareness theory (Duval and Wicklund, 1972). Key concepts were initially defined through primary coding categories (Potter and Levine-Donnerstein, 1999), which was followed by operational definitions for each category based on the theory (Hsieh and Shannon, 2005). Transcripts were then thoroughly checked and highlighted, and subsequently coded using initial categories whenever possible. Once all transcripts were coded, categories were then rechecked to see if there was a need for a modification or identification of subcategories. Finally, identified subcategories were grouped into a hierarchical structure (Morse and Field, 1995).

Remarkably, QDA Miner 5.0 was used for coding frequency based on distribution of keywords. Also, CompendiumLD was used to visualize the significant issues found from the research findings.

4. Research findings

4.1. Descriptive Analysis

In this study 70.2% of the respondents were female, and another 29.8% were male. As to their nationalities, 77.0% of them were Thai, while others were Chinese (8.0%), Filipino (6.9%), Myanmar (2.3%), Korean (1.1%), Indian (1.1%), Finnish (1.1%), Bangladeshi (1.1%), and Nepalese (1.1%). Moreover, 68.2% of them were from generation Y, 29.4% were from generation X, and 2.4% were from baby boomer generation.

Regarding the understanding towards the term “cashless payment”, 88.0% of them had heard of it, while 12.0% have never heard of it. Among those who were aware of the term, 42.0% defined it as “a payment without cash”, 34.6% defined it as “online payment”, and 11.1% defined it as “effortless payment.” Similarly, 36.4% of those who were not aware of the term also defined it as “a payment without cash”, 27.3% defined it as “innovation”, while another 27.3% admitted that they had no idea about it.

In terms of methods and reasons of using cashless payment, the findings indicated that credit card/debit card was the most popular cashless payment method (42.9%) while other methods revolve around online banking (16.9%), mobile banking (13.2%), mobile wallet (11.0%), and e-wallet (9.1%). The reasons of using these methods were convenience (41.8%), secured payment (12.4%), ease of use (11.1%), and it is prompt and fast (9.2%). These reasons were perceived to be important because cashless payment could save time (28.7%), is convenient (25.4%), secured payment (12.3%), and easy to use (7.4%). In addition, the findings also
revealed that 48.8% of the respondents used cashless payment on a weekly basis (48.8%), while others use it monthly (25.6%), occasionally (14.0%), and, interestingly, 11.6% of them used it every day (11.6%).

As for their attitudes toward cashless payment, most of them or 70.2% were happy when using it, 14.3% were unhappy, and 15.5% were neutral. Those who were happy with it reasoned that it is convenient (45.2%), easy to use (17.2%), and fast and simple (11.8%). However, those who were unhappy with it reasoned that they were afraid of using it too often/overuse it (26.7%), lack of trust (20.0%), limited usage (13.3%), less benefits (13.3%), privacy concern (13.3%), and complexity of a system (13.3%). Some respondents were neutral with it because they said there is nothing special about it (69.2%).

Regarding the improvement, respondents expected the improvement on the security of the system (22.6%), extensive coverage (18.5%), educating consumers (12.9%), while another 12.9% expected no further improvement.

4.2. Issue Map

Figure 1. Main issues found regarding cashless payment
Source: developed by authors (2018)

The findings provided in Figure 1 are categorized into 4 domains with 15 issues attached into them. The four main groups are awareness, mechanism, attitude and expectations. Three issues are associated with awareness, four issues are associated with mechanism, two sub-domains and five issues are associated with attitude, and three issues associated with expectations. The details of each domain are presented as follows:

Regarding the awareness towards the term “cashless payment”, for those who have ever used cashless payment (88%), they mainly defined the term as “a payment without cash” (42%), “an
online payment” (34.6%) and “an effortless payment” (11.1%). The interviewees understood cashless payment from different angles:

“It is a payment without cash. Our bank account is linked to the mobile application, and cash is deducted automatically from the bank account.” – Female, 33 years old

“It is an online or digital transaction that does not require paper money.” – Male, 30 years old

Regarding the mechanism, the issue map indicated four main methods of cashless payment being used by informants: credit card/debit card, online banking, mobile banking, and mobile wallet. Specifically, almost half of informants or 42.9% were using credit card and debit card when doing the transactions, 16.9% were using online banking, 13.2% were using mobile banking, and 11.0% were using mobile-wallet. This implies that consumers in Thailand were still relying on the most basic or less online methods of cashless payment despite the availability of other more online/convenient methods.

As for the attitude, after experiencing the usage of cashless payment, 70.2% of the informants were happy about using it, while 14.3% of them were unhappy. Based on the issue map, it was revealed that the driving forces on the happiness were related to three main issues: convenience (45.2%), ease of use (17.2%), and fast and simple (11.8%). This implies that the significant influencing factors were all related to convenience/user-friendliness.

“At first I found it to be troublesome. But as I have used it more often, I found it to be very convenient. I do not have to carry a lot of cash around because it can be very dangerous in the current situation. So, I am very happy with it.” – Female, 34 years old

“I am happy with the cashless payment because it saved time. Since some method used the credit system where I did not need to worry about planning my spending. Moreover, it normally offers many attractive promotions and privileges, such as point collections, discounts, premiums, free coffee or cashback.” – Male, 33 years old

“It is very convenient, no fees, and already on my mobile phone. I use it all the time because it is not convenient for me to leave the house, especially when I am having a small baby. It gets to the point where I prefer the M-Payment to cash. I was too lazy to use cash.” – Female, 33 years old

On the other hand, two main issues were found to be associated with unhappiness with the usage: overuse (26.7%) and lack of trust (20.0%). That is, many informants were afraid that the convenience of cashless payment would facilitate them to spend money easily while some do not trust the security of the system.

Finally, in terms of expectations, three issues were identified: security concern, extensive coverage, and educating consumer. Specifically, 22.6% of the informants expected the service providers to strengthen the security of the system, 18.5% suggested the service providers to increase the coverage of the service, while another 12.9% recommended the service providers to educate consumers about the functions of cashless payment.

“There should be more collaborations or business partnerships among banks and companies.” – Female, 50 years old
Financial transactions are pervasively and increasingly performed through various cashless payment methods (Bank of Ayudhya, 2017). Cashless payment has an inarguable impact at all levels. While it has been studied to have a compelling contribution for a country’s economic growth, it is also believed to facilitate a more efficient payment mechanism for business entities and consumers’ spending habits (Zandi et al., 2016; Krueger and Seitz, 2014). Nevertheless, despite the government’s vital initiatives through the introduction of “PromptPay” (Bank of Ayudhya, 2017; SCB Economic Intelligence Center, 2016), the adoption of this mechanism among the consumers in Thailand has rather been slow. This study then aims to examine how consumers in Thailand define the term “cashless payment”, as well as to identify the factors that motivate and prevent them from using it by conducting an in-depth interview with the target respondents.

Cashless payment can be referred to as a payment transaction for products and services that are not paid with cash, but rather via electronic means, such as credit and debit cards, smart cards, stored-value cards, electronic cash, ACR, ATM, smart phones and implants (Tee and Ong, 2016; Akinola, 2012). Even though most respondents (88%) claimed that they were aware of such term, many of them (42%) appeared to either define it in a broad term as “a payment without cash” (42%) or as “an online payment” (34.6%), not as a comprehensive term. Moreover, even though there are approximately eight methods considered to be a cashless payment as suggested by Akinola (2012), most respondents accepted that they used only certain familiar methods, such as credit or debit card (42.9%), mobile banking and m-wallet (24.2%), online banking (16.9%), and e-wallet (9.1%). Another important result indicated that even those who claimed to be unaware of such term have used it. This indicates that despite having long experience of cashless payment, their awareness level towards cashless payment is somehow low.

Regarding the attitude domain, it implies the potential influential and hindering factors on the adoption of cashless payment. That is, after having experienced the cashless payment method, most of them (70.2%) had a positive attitude towards it due to convenience (45.2%), ease of use (17.2%), and fast and simplicity (11.8%). Consistently, Ozturk (2016) also explained that perceived ease of use had a significant influence on intention to accept cashless payment in hospitality industry. While Teo, Tan, Ooi, Hew and Yew (2015) also confirmed that perceived transaction speed also has a significant impact on behavioral intention in the context of m-payment. In addition, Dinh, Nguyen and Nguyen (2018) also elaborated that convenience was also another compelling factor on the use of m-payment in Vietnam.

While only few had a negative attitude towards cashless payment, but most of this is about the system’s security (20.0%). This finding is supported by Ozturk (2016), who explained that perceived risk could significantly prevent customer from accepting cashless payment in
hospitality industry. Another important result indicated that some respondents believed that cashless transaction excessively facilitated their purchase activities and subsequently reduce their control over spending (26.7%).

In addition, the respondents also indicated their expectations toward cashless payment for further improvement. They expected the cashless payment to possess better security system (22.6%), to have more extensive coverage for usage (18.5%), and to educate consumer about its mechanisms and related information (12.9%).

5. Implications

The usage of cashless payment has become a tendency worldwide, which is a predominant part to construct a cashless society. From the industry and policy perspectives, certain implications could be considered that might trigger the usage of cashless payment. From the industry perspective:

As far as security is concerned, the firms and relevant parties should invest more capital to innovative products in order to minimize the profit loss and enhance user experience. For instance, although the electronic payment reduces the risk of stealing, grabbing and accidently losing cash, it also makes the mobile phone extremely important. However, technological risks are relatively easy to resolve. For example, there is already a Bluetooth Ukey. The mobile phone payment can be used only when it is linked with Bluetooth Ukey. However, people will lose it easily. If the producers of Blue Ukey make it as bracelet or a necklace, the possibility of losing bracelet and the mobile phone become smaller. In addition, facial recognition and fingerprint recognition are alternatives. In this context, it requires innovation and supporting schemes.

From the policy perspective:

The government and relevant departments should develop and improve laws related to cashless payments. Protecting the rights and interests of consumers can be implemented at the macro level. In addition, a series of lectures and seminar on secure payment should also be carried out simultaneously. The most important thing is the payment platform, which must be self-regulated.

6. Limitations

As cashless payment is still in its infancy stage of development in Thailand, this study reveals how consumers in Thailand understand cashless payment through their attitudes, awareness, expectations as well as mechanism. The study was based on self-awareness theory and presents updated findings regarding contemporary issues that consumers in Thailand are concerned about regarding cashless payment. However, some limitations should not be neglected.

The first limitation is the limited sample size. Semi-structured interviews were conducted only to 85 interviewees, and they cannot be representatives of all consumers in Thailand. However, the research findings could serve as explorative bases to better understand cashless payment in Thailand. Another limitation is the scope of the study. Since there are various ground theories that can be employed for status quo analysis of cashless payment, only using self-awareness theory could not deliver a more exclusive analysis.
Acknowledgements
This work has received funding from Assumption University of Thailand under the grant 2018-2019.

7. References:


SCB ECONOMIC INTELLIGENCE CENTER 2016. Cashless society: Preparing to the perfect cashless society.


WHEATLEY, A. 2017. Cash is dead, long live cash. Federal Reserve Bank of San Francisco


**Appendix:**

**Appendix 1: Profiles of Respondents**

<table>
<thead>
<tr>
<th>No.</th>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>25</td>
<td>29.8%</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>59</td>
<td>70.2%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>84</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Nationality</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thai</td>
<td>67</td>
<td>77.0%</td>
</tr>
<tr>
<td>2</td>
<td>Chinese</td>
<td>7</td>
<td>8.0%</td>
</tr>
<tr>
<td>3</td>
<td>Filipino</td>
<td>6</td>
<td>6.9%</td>
</tr>
<tr>
<td>4</td>
<td>Myanmar</td>
<td>2</td>
<td>2.3%</td>
</tr>
<tr>
<td>5</td>
<td>Others, e.g. Korean, Indian, Finnish, Bangladeshi, etc.</td>
<td>5</td>
<td>5.5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>87</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Generation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baby Boomer</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td>2</td>
<td>Generation Y</td>
<td>58</td>
<td>68.2%</td>
</tr>
<tr>
<td>3</td>
<td>Generation X</td>
<td>25</td>
<td>29.4%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>85</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Appendix 2. Frequencies and percentages of attitudes and behaviors related to cashless payment**

<table>
<thead>
<tr>
<th>No.</th>
<th>Understanding the term “Cashless Payment”</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>81</td>
<td>88.0%</td>
</tr>
<tr>
<td></td>
<td>Definitions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Payment without cash</td>
<td>34</td>
<td>42.0%</td>
</tr>
<tr>
<td>2</td>
<td>Online payment</td>
<td>28</td>
<td>34.6%</td>
</tr>
<tr>
<td>3</td>
<td>Effortless payment</td>
<td>9</td>
<td>11.1%</td>
</tr>
<tr>
<td>4</td>
<td>Offline payment</td>
<td>8</td>
<td>9.9%</td>
</tr>
<tr>
<td>5</td>
<td>No-fee payment</td>
<td>2</td>
<td>2.5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>81</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
### Understanding the term “Cashless Payment”

<table>
<thead>
<tr>
<th>No.</th>
<th>Definitions</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Definitions</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Payment without cash</td>
<td>4</td>
<td>36.4%</td>
</tr>
<tr>
<td>2. Innovation</td>
<td>3</td>
<td>27.3%</td>
</tr>
<tr>
<td>3. Others, e.g. loan, no idea, etc.</td>
<td>4</td>
<td>36.4%</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Cashless payment method being used

<table>
<thead>
<tr>
<th>No.</th>
<th>Method</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Credit card/ debit card</td>
<td>94</td>
<td>42.9%</td>
</tr>
<tr>
<td>2</td>
<td>Online banking</td>
<td>37</td>
<td>16.9%</td>
</tr>
<tr>
<td>3</td>
<td>Mobile banking</td>
<td>29</td>
<td>13.2%</td>
</tr>
<tr>
<td>4</td>
<td>Mobile-wallet</td>
<td>24</td>
<td>11.0%</td>
</tr>
<tr>
<td>5</td>
<td>E-wallet</td>
<td>20</td>
<td>9.1%</td>
</tr>
<tr>
<td>6</td>
<td>Others, e.g. gift card, prepaid card, and cheque.</td>
<td>15</td>
<td>6.9%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>219</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Reasons of using cashless payment

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Convenience</td>
<td>64</td>
<td>41.8%</td>
</tr>
<tr>
<td>2</td>
<td>Secured payment</td>
<td>19</td>
<td>12.4%</td>
</tr>
<tr>
<td>3</td>
<td>Ease of use</td>
<td>17</td>
<td>11.1%</td>
</tr>
<tr>
<td>4</td>
<td>Prompt and fast</td>
<td>14</td>
<td>9.2%</td>
</tr>
<tr>
<td>5</td>
<td>No need to carry cash</td>
<td>8</td>
<td>5.2%</td>
</tr>
<tr>
<td>6</td>
<td>Others, e.g. benefits, cash is not accepted, budgeting, etc.</td>
<td>31</td>
<td>20.40%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>153</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Frequency of using cashless payment

<table>
<thead>
<tr>
<th>No.</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Weekly</td>
<td>42</td>
</tr>
<tr>
<td>3</td>
<td>Monthly</td>
<td>22</td>
</tr>
<tr>
<td>4</td>
<td>Occasionally</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>86</td>
</tr>
</tbody>
</table>

### Attitudes towards cashless payment

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Happy</td>
<td>59</td>
<td>70.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Convenient</td>
<td>42</td>
<td>45.2%</td>
</tr>
<tr>
<td>2. Ease of use</td>
<td>16</td>
<td>17.2%</td>
</tr>
<tr>
<td>3. Fast and simple</td>
<td>11</td>
<td>11.8%</td>
</tr>
<tr>
<td>4. Others, e.g. feeling secured with a system, no need to carry cash, benefits, etc.</td>
<td>24</td>
<td>25.8%</td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Unhappy</td>
<td>12</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Over use</td>
<td>4</td>
<td>26.7%</td>
</tr>
<tr>
<td>2. Lack of trust</td>
<td>3</td>
<td>20.0%</td>
</tr>
<tr>
<td>3. Others, e.g. limited usage, less benefits, privacy concern, etc.</td>
<td>8</td>
<td>53.2%</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Neutral</td>
<td>13</td>
<td>15.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nothing special</td>
<td>9</td>
<td>69.2%</td>
</tr>
<tr>
<td>2. Others, e.g. convenient, less attractive benefits, error, etc.</td>
<td>4</td>
<td>30.8%</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>100.0%</td>
</tr>
<tr>
<td>No.</td>
<td>Understanding the term “Cashless Payment”</td>
<td>Frequency</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>Security concern</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>Extensive coverage</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Educating consumer</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>No further improvement</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>User friendly</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Others, e.g. stabilized system, more benefits, unlimited amount to use, information updates, etc.</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>124</strong></td>
</tr>
</tbody>
</table>
Fraud Risk Management Model: Theoretical Framework And Governance
Issues On Preventing Fraud

Marziana Madah Marzuki#
Universiti Teknologi Mara
marziana@kelantan.uitm.edu.my

Wan Zurina Nik Abdul Majid
Universiti Teknologi Mara
wzurina@kelantan.uitm.edu.my

Nur Kamaliah Azis
Universiti Teknologi Mara
kamaliah.azis@yahoo.com

Romzie bin Rosman
International Islamic University Malaysia (IIUM)
romziersman@gmail.com

Nik Kamaruzaman bin Haji Abdulatiff
Universiti Teknologi Mara
nklatiff@kelantan.uitm.edu.my

Abstract

The never ending story of corporate failures led to congressional questions about the weaknesses in fraud detection mechanism and the role of fraud risk management. Despite of the importance of this fraud risk management process, most of the previous studies do not discuss thoroughly the whole process of it. Therefore, the objective of this study is to explore the whole process of fraud risk management strategies that should be implemented by the organizations. Based on the content analysis of the literatures, this study finds that fraud risk management process would be compose at least of five stages which are determining the objectives, identifying the risks, evaluating the risks, determining preventive action and implementing and reviewing stage. Our extended analysis of fraud risk management process find that a lot of governance issues need to be solved in order to ensure that risk management process is not merely a process, but embedded as corporate culture.

Keywords: fraud, fraud risk management process, governance, culture
A Comparative Study of Fraud Regulation in Malaysia and United States

Wan Zurina Nik Abdul Majid
Faculty of Accountancy
Universiti Teknologi Mara
wzurina@kelantan.uitm.edu.my

Marziana Madah Marzuki#
Faculty of Accountancy
Universiti Teknologi Mara
marziana@kelantan.uitm.edu.my

Romzie bin Rosman
Institute of Islamic Banking & Finance
International Islamic University Malaysia (IIUM)
romziersman@gmail.com

Nik Kamaruzaman bin Haji Abdulatiff
Faculty of Accountancy
Universiti Teknologi Mara
nklatiff@kelantan.uitm.edu.my

Nur Kamaliah Abd Azis
Universiti Teknologi Mara

Abstract

Business failure due to financial fraud has caused organization to focus on risk management. Many organizations are now alarmed with the implementation of risk management processes as a proactive serve in maintaining economic and financial balance. Nevertheless, despite of having fraud risk management framework, the occurrences of fraudulent financial statement keep on increasing as the reported numbers were at 4.8% in 2010, then increased to 7.6% in 2012, and further increased to 9% in 2014. A claim that the collapse of several Malaysian companies is partly due to the ineffectiveness of the regulatory bodies in their legislation enforcement, punishment and protecting minority shareholders. This paper highlights the statutory efforts undertaken by the Malaysia and United States relating to financial fraud. This area has become a regularly debated topic due to the vast acknowledgment on fraud and other misbehavior of corporations to ensure better corporate governance of corporations. Therefore a comparative analysis would be undertaken on the law on fraud cases and to determine their similarities, differences, strengths and weaknesses. Improvements in the regulation on fraud are essential to restore investor’s confidence and confirm with national social economic objectives.

Keywords: fraud, regulation, corporate governance, SOX 2002

The authors wish to express their gratitude to the Ministry of Higher Education for funding this research project through the Grant Scheme (600-IRM/FRGS 5/3 (070/2017)) and University Teknologi MARA (UiTM) Kelantan for the administrative support.
1. Introduction

Notable financial scandals in Malaysia have caught special attention from media, academia, researcher and policy makers. According to Mohamed Sadique et al. (2010) corporate fraud is one of the most problematic issues for business around the world. The Price WaterhouseCooper survey highlights the number of reported cases of economic crime committed by companies’ employees in Malaysia is higher than that reported for the Asia Pacific region and for other countries around the world. The report also highlights that the decline in financial performance, presumably as a result of economic down turn. Anwar (2008) mentions from the Malaysia Securities Commissions (MSC) investigation, many of the losses suffered by PN 4 and PN 17 companies were largely caused by mismanagement fraud and other unethical practice.¹

Corporate fraud is a classic manifestation of the agency problem and of weak corporate governance [Yu, Zhen and Zhang (2010); Kamaruddin,Wan Ismail and Wan Mustapha, (2012)]. The authority given to the managers (agents) to act on their behalf of shareholder creates the principal-agent problem (Ross, 1973). Principally, it is due to divergence of interests and asymmetry of information between the managers and owners (Jensen & Meckling, 1976). According to Jensen and Meckling (1976), agency problems could be eliminated if both parties had the same interests. The list of corporate failures led to congressional questions about the role of fraud risk management. In 1980s, The Treadway Commission (1987) report was focused on the ‘risk of fraudulent financial reporting’ and mentions ‘fraud risk assessment’ at several stages. For example, it has been mentioned that ‘for the top management of a public company to discharge its obligation to oversee the financial reporting process, it must identify, understand, and assess the factors that may cause the company’s financial statements to be fraudulently misstated’. According to Raju & Murthi (2015), there are four steps in fraud risk management which are assessment of risk, designing and developing fraud controls mechanisms, implementation of fraud control designs and lastly evaluation of fraud control design. Furthermore Auditing Standards Board (ASB) Statement on Auditing Standards No. 82 (AICPA, 1997) requiring auditors to separately assess the risk of fraud and design audit plans that are more sensitive to fraud risk. With respect the auditors’ responsibility to consider fraud in an audit of financial statement; Malaysian auditors are governed by the principle-based, International Standard on Auditing 240 (ISA/AI240). ISA 240 provides to a certain extent, some form of “leeways” for an auditor to exercise his or her professional judgment in determining whether a fraud risk factor is present and whether it is to be considered in assessing the risks of material misstatement of the financial statement due to fraud. As in the case of SAS 99, ISA 240 too classifies fraud risk factors into the fraud triangle dimensions namely incentive, opportunity and rationalization (Moyes et al., 2009)

Nevertheless, despite of having the framework for fraud risk management, the number of fraud cases keep on rising as the reported numbers were at 4.8% in 2010, then increased to 7.6% in 2012, and further increased to 9% in 2014. The famous case is the controversy over the debt-laden company transactions 1Malaysia Development Berhad (1MDB) where billions of dollars were misappropriated from 1Malaysia Development Bhd., an economic-development fund set up by Malaysian Government in 2009 (Wall Street Journal, 2016). The case has caused 1MDB to bear RM42 billion in debt and struggling to pay interest to both local and international banks.

¹ PN 4 is Practice Notes Number 4 and PN 17 is the Practice Notes Number 17 are the regulation issued by Bursa Malaysia Securities in dealing with companies that is facing financial difficulties
While the latest case reported in 2018, involving MISC, Malaysia International Shipping Corp Bhd, it was reported that the company had come under MACC’s radar following allegations of abuse of power, corruption and false payment claims involving about RM109 million.

Port Klang Free Zone scandal (PKFZ) occurred in 2009 reported a loss of about RM12.5 billion after the Port Klang Authority chairperson lodged a report following a financial audit of the project (Free Malaysia Today, 2013). According to Vlad et al. (2011), fraud can pose serious threats such as erode public confidence, particularly investors’ confidence, in the reliability of the financial information reported. They also emphasized that fraud undermines the reliability, quality, transparency, and integrity of companies, its financial reporting and auditors. The ACFE Report to the Nations on Occupational Fraud and Abuse (2014) also noted higher overall losses from fraud in the Asia-Pacific region with a median loss of USD240,000. Table 1 presents list of notable scandal in Malaysia.

According to Mohamed Sadique et al. (2010) and the collapse of several Malaysian companies is relatively due to the ineffectiveness of the policy maker in their legislation enforcement, punishment and protecting minority shareholders Therefore this study aims to conceptualize the market regulation in Malaysia and other developed countries such as United States in their efforts to fight corporate fraud. Any differences highlight could help Malaysia in strengthening the legislation.

The rest of this paper is organised as follows. The next section explains the regulation in Malaysia followed by US setting. The last part will be the discussion and conclusion.

2. Malaysia’s regulatory and legislation on financial reporting standard and fraudulent financial reporting

Malaysia is one of the developing countries that has improve remarkably in their economy especially since its independence. Just like any other nations Malaysia has gone through a set of their own ups and downs throughout the years and as a country that aiming to be a developed nation in the future Malaysia has strived to continuously improve their practices and regulations in making sure that the business and economy growth are at their best credibility. In order to promote a good business practice and balance organization that look after the benefit of stakeholders, shareholders, and all related parties Malaysia has their own set of regulation and legislation and appointed a regulatory bodies to carry out the responsibility. Consequently, the well-practiced market and stability in economy provide a great benefit to Malaysia since it is able to attract investors internally and externally, and not only that it could attract investors but also to sustain long-term investment in the country in the future. Table 2 presents the summary of regulation in Malaysia relating to fraud.

The Malaysian Parliament has from time to time introduced legal protection for whistleblowers in an attempt to counter malpractices and fraud of companies. Such protection is found in the Companies Act 1965 (Act 125) (hereinafter referred to as ‘CA 1965’), Capital Markets and Services Act 2007 (Act 671) (hereinafter referred to as ‘CMSA 2007’) and the newly enacted Whistleblower Protection Act 2010 (Act 711) (hereinafter referred to as ‘WPA,2010’).

Financial fraud can be broadly defined as an intentional act of deception involving financial transactions for purpose of personal gain. Fraud is a crime, and is also a civil law violation. Many fraud cases involve complicated financial transactions conducted by ‘white collar criminals’ such as business professionals with specialized knowledge and criminal intent.
An unscrupulous investment broker may present clients with an opportunity to purchase shares in precious metal repositories, for example. His status as a professional investor gives him credibility, which can lead to justified credibility among potential clients. Those who believe the opportunity to be legitimate contribute substantial amounts of cash and receive authentic-looking bond documentation in return. If the investment broker is fully aware that no such repositories exist and still receives payments for worthless bonds, then victims may sue him for fraud.

2.1 Companies ACT 2016 and capital markets and services ACT 2007

Section 368B (1) CA 2016 states that an officer of a company who in the course of performance of his duties has reasonable belief on any matter which may or will constitute breach of the CA 1965 or its regulations or a serious offence of fraud or dishonesty has been, is being or likely to be committed against the company or by other officers of the company may report the matter to the Registrar of company. The definition of officer refers to any director, secretary or employee of the company, receiver and manager appointed under a power contained. Section 368B (2) CA 2016 expressly prohibits the company from removing, discharging, discriminating or interfering with the livelihood or employment of the officer who makes a ‘protected disclosure’. Furthermore, such officer shall not be liable to be sued in any court (for instance, breach of confidentiality agreement or defamation) or be subject to any tribunal process including disciplinary action due to the ‘protected disclosure’ if he is acting in good faith and in the intended performance of his duties as an officer of the company. Any person who breaches s.368B (2) or (3) shall be guilty of an offence and is liable to pay fine, subject to imprisonment or both. The protection of whistleblowers as provided in the CMSA 2007 is largely similar to s.368B CA 2016. Section 321 CMSA 2007 applies to disclosure of information made by a chief executive, any officer responsible for preparing or approving financial statements or financial information, an internal auditor or a secretary of a listed corporation. Information disclosed should involve breach or non-performance of any requirement or provision of securities law or breach of rules of the stock exchange or any matter which may adversely affect to a material extent the financial position of listed corporations. Disclosure of information must be made to the Securities Commission in relation to matters involving breach of securities law, and to the relevant stock exchange for breach of rules of the stock exchange. The protection is only available for those who have in the course of the performance of their duties reasonable belief that there has been a breach of law regarding matters as mentioned earlier. A breach of s.321 (1) or (2) amounts to an offence. Section 367(1) CMSA 2007 states that where a corporation is liable for breach of any provision in CMSA 2007 or its regulations, its chief executive, director, an officer or a representative of the body corporate is deemed to have committed the offence.

2.2 Evaluation of the whistleblower protection provisions in CA 2016 and CMSA 2007

The scope of protection found in CA 2016 and CMSA 2007 is limited and inadequate. First, the protection for a whistleblower is only applicable if he forms a reasonable belief in the course of performance of his duties. It is questionable whether an officer who learns about the circumstances amounting to a wrongdoing outside office hours may be entitled to protection under the CA 1965 and CMSA 2007. Besides, from the wordings of both s.368B CA 2016 and s.321 CMSA 2007, it appears that an employee is only protected if he reports the wrongdoing committed by his employer or its officers. As such, an officer of one company who is aware of the wrongdoing of another company would not be protected if he reports the wrongdoing to the Registrar of Company, Securities Commission or the stock exchange. It is possible for
employees of one business entity to learn about the wrongdoing of another company as there may be some relationship between them such as between an auditor firm and its client company or between a parent and its subsidiary company.

Secondly, there is also no provision in CA 2016 and CMSA 2007 protecting the anonymity of the whistleblower. Thirdly, it is not expressly provided in the CA 1965 and CMSA 2007 as to whether the officer who makes a ‘protected disclosure’ is entitled to any civil law remedies such as damages. Fourthly, there is no duty imposed on the Registrar of Companies, Securities Commission and the stock exchange to investigate the matter highlighted by the officer. This is important as it would instill confidence on officers of companies if their complaint is taken seriously and is investigated. Otherwise, if a person realizes that the relevant body may not investigate his complaint, he may be discouraged to blow the whistle. This is due to the fact that his whistle-blowing would subject himself to the possibility of reprisal by his employer but yet the wrongdoing of his employer remains hidden from the public. In addition, there is also no clear guideline offered to the officers to lodge a complaint in the event that they suffer any reprisal in the course of their employment as a result of their ‘protected disclosure’. As a result, the protection of whistleblowers based on CA 19652016 and CMSA 2010 is clearly inadequate and lacks the necessary clarity to create assurance that individuals would be protected if they spill the beans on their employer’s wrongdoing. So far, both s.368B CA 1965 and s.321 CMSA 1965 have not received any judicial treatment as there is no reported case on these two provisions.

2.3 Whistleblower Protection ACT 2010 (WPA 2010)

With the enactment of the WPA 2010, the officers of a company or any other person who provides information as to the misfeasance or wrongdoing of any company or its directors are entitled to wider protection under the this Act. The WPA 2010 applies generally to whistleblowers who disclose information relating to the wrongdoings in the private or public sector. The enactment of the WPA 2010 is part of the efforts taken by Malaysia to fulfill its obligations under the United Nation Convention against Corruption. The WPA 2010 came into force on 15 December 2010. Section 6 (1) WPA 2010 states that the whistleblower protection is only available to a person who makes a disclosure of improper conduct to any enforcement agency based on his reasonable belief that any person has engaged, is engaging or is preparing to engage in improper conduct. Section 2 WPA 2010 defines ‘improper conduct’ to mean any conduct which amounts to a disciplinary offence or criminal offence.

The scope of ‘improper conduct’ is wide and clearly includes any breach of the CA 1965, CMSA 2007, other securities law or listing rules and the code of ethics relating to auditors. However, the protection afforded by WPA 2010 is only limited to a disclosure made to an enforcement agency. This includes any ministry, department, agency or other body set up by the Federal Government or State Government conferred with investigation and enforcement powers. The five main enforcement agency involved in the implementation of the WPA 2010 includes the Police, Customs, Road Transport Department, Malaysian AntiCorruption Commission and the Immigration Department. Arguably, the Company Commission of Malaysia, the Securities Commission and the stock exchange fall within the definition of ‘enforcement agency’. This inclusion is necessary as following the discussion above, the protection afforded to whistleblowers under the CA 1965 and CMSA 2007 is inadequate compared to the protection granted under the WPA 2010 as explained below. The enforcement agency under the WPA 2010 is given a number of powers including the power to receive disclosure of improper conduct, to implement and enforce the provisions of the WPA.
2010. The coordination of all the enforcement agencies would fall within the responsibility of the Legal Affairs Division of the Prime Minister’s Department. Section 6 (2) (a) WPA 2010 allows disclosure of improper conduct to be made even if the person making the disclosure is not able to identify a particular person involved in the misconduct. Disclosure of improper conduct which occurs prior to the commencement of the WPA 2010 is also included. Disclosure of improper conduct can be made in writing or orally.

A whistleblower who makes a disclosure in accordance with s.6 WPA 2010 would be conferred with whistleblower protection under s.7(1) WPA 2010 such as (a) protection of confidential information; (b) immunity from civil and criminal action; and (c) protection against detrimental action. The term ‘confidential information’ used in the WPA 2010 refers to information about the identity, occupation, residential and work address of the whistleblower and the person complained of by the whistleblower, information disclosed by the whistleblower and any information if disclosed may cause detriment to others. According to s.8 (1) WPA 2010, the whistleblower is entitled to full anonymity of any information about himself and the alleged improper conduct that he provided to the enforcement agency. Any person who makes disclosure of ‘confidential information’ to others unless allowed by the WPA 2010 would be guilty of an offence. Section 9 WPA 2010 states that a whistleblower should not be subject to any civil or criminal liability, including disciplinary action as a result of the disclosure of improper conduct. It must be remembered that an employee owes a number of duties to his employer such as duty of loyalty, duty to act in the interest of the employer and duty of confidence. Any disclosure of information relating

**Fraudsters can contact their potential victims through many methods**, which include face-to-face interaction, by post, phone calls, sms and/or emails. The difficulty of checking identities and legitimacy of individuals and companies, the ease with which fraudsters can divert visitors to dummy sites and steal personal financial information, the international dimensions of the web and ease with which fraudsters can hide their true location, all contribute to making internet fraud the fastest growing area of fraud. (bank Negara Malaysia)

Bank Negara Malaysia established the **Special Investigations Unit (SIU)** in 1986 to conduct surveillance and investigate illegal financial schemes. This Unit essentially conducts search and seizure operations, and interview of witnesses to gather pertinent information towards successful prosecution of offenders.

The Bank takes seriously of such criminal offences and those breaking the law will be investigated and prosecuted. The Bank **will not hesitate to take action** against any illegal perpetrators.

The Bank maintains close working relationships with the Attorney General’s Chambers as well as with other enforcement agencies such as the Polis Diraja Malaysia, Companies Commission Malaysia, Cooperatives Commission of Malaysia, Securities Commission Malaysia, Malaysian Anti-Corruption Commission, the Royal Customs of Malaysia, Ministry of Domestic Trade, Co-operatives and Consumerism and CyberSecurity Malaysia (formerly known as National ICT Security and Emergency Response, NISER).
3. US regulatory and legislation on fraudulent financial reporting

In the light of a number of huge corporate scandals in the United States such as the Enron and Worldcom scandals, the Congress had enacted the Corporate and Auditing Accountability and Responsibility Act 2002 which is commonly known as Sarbanes-Oxley Act (hereinafter referred to as ‘SOX 2002’). Section 806 SOX 2002 provides protection for employees of publicly traded companies who provide evidence of fraud by inserting s.1514A into Chapter 73 of title 18 of the United States Code. There are a number of academic articles which discuss the inadequacies and weaknesses of the SOX 2002 in protecting whistleblowers. Thus, it is not surprising that the Dodd-Frank Wall Street Reform and Consumer Protection Act 2010 (hereinafter referred to as the 'Dodd-Frank Act’) which was passed by the Congress includes significant changes to the whistleblower protection law in the United States by amending the SOX 2002, Securities Exchange Act 1934 and the Commodity Exchange Act 1936 as well as providing new whistleblower protection in a new Act entitled Consumer Financial Protection Act 2010 (hereinafter CFPA 2010’). The DoddFrank Act was signed into law by the United States President on 21 July 2010.

3.1 SOX 2002

The protection under SOX 2002 is afforded to an employee who provides information, causes information to be provided or assists in an investigation regarding any conduct in which he reasonably believes that his employer has violated any rules of the Securities Exchange Commission or any Federal law relating to fraud against the company or shareholder. The employee is not required to show that there is actual violation of the Federal laws as long as he reasonably believes that such violation has occurred. Thus, an employee is still entitled to protection under s.1514A if the action that he complains of does not amount to a crime. The information must be provided to a Federal regulatory or law enforcement agency, any member of Congress or any committee of Congress or the employee’s supervisor or someone appointed by the company to investigate complaints about violation of law by the company. As a result of the Dodd-Frank Act, SOX 2002 applies to not only the employees of any publicly traded company but also to employees of its subsidiaries or affiliates.

These companies are not allowed to discharge, demote, suspend, threaten, harass or in any manner discriminate against an employee due to the ‘protected disclosure’ of information as mentioned in the preceding paragraph. Any employee who faces such detrimental acts may file a complaint with the Secretary of Labour within 180 days after the occurrence of the violation of s.1514A. The employee bears the burden to prove that (i) the employer has knowledge of his ‘protected disclosure’ and (ii) the ‘protected disclosure’ is a ‘contributing factor’ resulting in retaliation acts taken against him. According to Watnick (2007), an employee only needs to show that his ‘disclosure of information ‘had a role to play in the decision to act adversely towards him’. The courts are entitled to grant all relief necessary to make the employee whole. The remedies include reinstatement with the amount of back wages with interest and compensation for special damages such as litigation costs and expert witness fees. Any person who retaliates against an employee for making a ‘protected disclosure’, for instance, taking any action harmful to the employee or interfering in any manner with his lawful employment or livelihood commits an offence. Any agreement to exclude the rights and remedies of employees under SOX 2002 cannot be waived or excused. A predispute arbitration agreement providing that any dispute arising from SOX 2002 to be settled by arbitration is void.
3.2 Securities exchange act 1934

Section 922 Dodd-Frank Act made a significant change to the whistleblower protection law by inserting new provisions into the Securities Exchange Act 1934 (hereinafter referred to as ‘SEC 1934’) which states that the Securities Commission shall pay an award to whistleblower(s) who voluntarily provided original information to the Commission that led to the successful enforcement of a ‘covered judicial or administrative action’. The whistleblower is entitled to an amount of 10 to 30% of the monetary sanctions (exceeding USD 1 million) imposed in the ‘covered judicial or administrative action’. The amount payable to the whistleblower is determined at the discretion of the Commission. It would have to take into account the significance of the information and the degree of assistance provided by the whistleblower to the success of the ‘covered judicial or administrative action’, the interest of the Commission in deterring violations of the securities laws and any additional relevant factors. The award payable to the whistleblower is paid from the Securities and Exchange Commission Investor Protection Fund. However, a whistleblower is not entitled to any reward if he is an employee of the Commission or any other organizations related to law enforcement, where he is convicted of a criminal violation related to the judicial or administrative action which he would otherwise receive an award under s.922, where he gains the information through the performance of an audit of financial statements required under the securities laws or when disclosure of information to the Commission is not in compliance with the requirements of the Commission. Disclosure of information to the Commission can be made anonymously through an attorney. However, the whistleblower shall disclose his identity prior to the payment of the award. The Commission is expressly required to protect the anonymity of the whistleblower. Section 922 Dodd-Frank Act also prohibits any retaliation taken against an employee for disclosing information to the Commission, initiating, testifying or assisting in any investigation or judicial or administrative action of the Commission or in making disclosure as required or protected under SOX 2002 or relating to any securities law within the jurisdiction of the Commission.

The employee is entitled to bring a legal action against the employer as a result of any retaliation suffered due to the earlier mentioned protected activities. However, the legal action created by the Dodd-Frank Act under the SEC 1934 is different from the legal action under SOX 2002. First, under the SEC 1934, the whistleblower is entitled to bring the legal action in the appropriate district court in the United States without the need to refer the matter to the Secretary of Labour. Secondly, the limitation period under the SEC 1934 is longer, that is the whistleblower can bring a legal action within 6 years after the date on which the retaliation or violation takes place. Alternatively, the whistleblower is only entitled to a three year limitation period from the date when materials to the right of action are known or reasonably should have been known by the employee alleging retaliatory acts. Nonetheless, no action can be taken after more than 10 years after the date on which the retaliation occurs. Thirdly, the whistleblower is entitled to two times the amount of back pay besides the other reliefs available under SOX 2002.

3.3 Consumer financial protection Act 2010

Section 1057 CFPA 2010 provides protection for employees belonging to any organization providing financial products or services to consumers from any retaliation as a result of disclosure of information, testifying or assisting in any investigation relating to the violation of this Act or objecting to or refusing to participate in any activity to be in violation of this Act. The whistleblower protection is available if the information or assistance in any related
investigation is rendered to the whistleblower’s employer or the Consumer Financial Protection Bureau, or any other State, local, or Federal, government authority or law enforcement. Any employee who was discharged or suffered from any retaliation as a result of a breach of s.1057 may file a complaint with the Secretary of Labour within 180 days after such violation occurs. The remedies which the whistleblower is entitled to are similar to the remedies provided by SOX 2002. Nonetheless, if the Secretary of Labour finds that a complaint made by the employee is frivolous or has been brought in bad faith, the employee can be made to pay to his employer reasonable attorney fee not exceeding USD 1,000.

4. Discussions and Conclusions

The related regulation and legislation and the regulated bodies that plays important role in financial statement development and any breach of conduct Malaysia has done a fair share of prevention step in promoting healthy practice in the market. To this end, a specific law in deterring white collar crime or fraudulent action has yet to be developed in Malaysia; such has been enacted in the United State; Sarbanes Oxley Act 2004. Therefore, in regard of fraud deterring through regulation in Malaysia is to be subject for development and improvement in order to create a clear statutory on the matter of white collar crime.

A clear massage of prevention for white collar crime could deliver and provide a stronger deterrent factor to such crime. Specifically, there are at least three differences between the United States and the Malaysian position in relation to this matter. First, under the United States position, a reward is only granted to a whistleblower in the event of a successful ‘judicial or administrative action’ taken against the companies involving monetary sanctions exceeding USD 1 million. Secondly, the Dodd-Frank Act imposes a duty on the Securities Exchange Commission to make an award to the whistleblower. Thirdly, the payment of award is from a designated fund that is the Securities and Exchange Commission Investor Protection Fund. On the contrary, the wordings of the WPA 2010 are more general when it comes to the provision of a reward to a whistleblower.

5. References

Koon Swan saga: Will the truth emerge? | Free Malaysia Today.
Mohamad, N. (200), Corporate governance in Malaysia, University of Birmingham:Birmingham, UK.
PricewaterhouseCoopers, The 3rd biennial global economic crime survey. 2005,
Siapa Dalang Disebalik Kejatuhan Tan Koon Swan | mae.
### Table 1

**Notable scandals in Malaysia**

<table>
<thead>
<tr>
<th>Scandal</th>
<th>Year reported</th>
<th>Scope Malaysian Ringgit</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISC</td>
<td>2018</td>
<td>RM108.57mil</td>
<td>It was reported that the company had come under MACC’s radar following allegations of abuse of power, corruption and false payment claims involving about RM109 million. Government-linked maritime company, Malaysia International Shipping Corp Bhd (MISC), is giving full support to the Malaysian Anti-Corruption Commission (MACC) following its probe into recent reports on alleged bribery. It was reported that the company had come under MACC’s radar following allegations of abuse of power, corruption and false payment claims involving about RM109 million. “The group has a zero-tolerance policy against any form of bribery or corruption by employees, subsidiaries or any persons or companies acting for MISC or on its behalf,” it said in a statement today. MISC said it was fully committed to the highest standards of integrity and accountability throughout its businesses and operations.</td>
</tr>
<tr>
<td>1Malaysia Development Berhad scandal</td>
<td>2000s</td>
<td>42 billion debt</td>
<td>yekee controversy the debt-laden company transactions 1Malaysia Development Berhad (1MDB) continues unabated, but this is not the first time the federal government plagued by large financial scandals. There are many similar cases in the last three decades, beginning during the tenure of former Prime Minister Mahathir Mohamad. RM42 billion in debt and struggling to pay interest to both local and international banks. 1MDB established in 2009, and immediately implement the various aspects of raising bonds and joint ventures that shocked the world of international finance. Two major flagship projects, Tun Razak Exchange (TRX) and the ongoing development of Malaysia granted to 1MDB. There was talk</td>
</tr>
<tr>
<td>Scandal</td>
<td>Year reported</td>
<td>Scope Malaysian Ringgit</td>
<td>Summary</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------</td>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Port Klang Free Zone scandal</td>
<td>2000s</td>
<td>12.5 billion loss</td>
<td>that 1MDB sell or liquidate certain assets, but the extent of damage caused by the transaction will only be known after the audit report on the company, in late June.</td>
</tr>
<tr>
<td>Port Klang Free Zone scandal</td>
<td>2000s</td>
<td>12.5 billion loss</td>
<td><strong>Port Klang Free Zone scandal</strong> (PKFZ) occurred 6 years ago, the government estimated a loss of about RM12.5 billion, but no one so far convicted him. Six people were charged, two were acquitted, while 4 other cases pending. <strong>Port Klang Authority</strong> (PKA) recently discussed to drop RM720 million suit against the contractor Kuala Dimension Sdn Bhd (KDSB), raises the question of whether the money will be recovered. This project was known when it was found that the cost of establishing a free zone in excess of RM3.5 billion. Kuala dimensions also make RM993 million for capital gains when it bought the land from Pulau Lumut Development Cooperative Berhad at only RM95 million before selling it to PKA at a price of RM 1.8 billion. The government also extended a soft loan of RM1 billion for the project, after PKFZ advisable to develop the entire project in a single phase, at a cost of RM1.8 billion. Former Transport Minister <strong>Ling Liong Sik</strong> was among those charged, but he was acquitted of cheating related irregularities in land valuation.</td>
</tr>
<tr>
<td>Malaysian Airlines financial scandal</td>
<td>1990s</td>
<td>9.4 billion debt</td>
<td>In 1994, businessman <strong>Tajuddin Ramli</strong> taking a loan from a government-linked company to buy a controlling stake in <strong>Malaysian Airlines</strong> share price much higher than the market price - RM8 per share. For seven years he led the MAS, this is a period of various alleged fraud occurred. The company has cash reserves of RM600 million when Tajuddin took over, but the accumulated losses of RM9.4 billion when he left the company in 2001. Despite the big loss, the government has bought back from MAS Holdings with the same price it was sold - RM8 per share - out of desperation to keep the airline afloat for allowing the construction of <strong>Kuala Lumpur International Airport</strong> (KLIA). Tajuddin was involved in</td>
</tr>
</tbody>
</table>
## Notable scandals in Malaysia

<table>
<thead>
<tr>
<th>Scandal</th>
<th>Year reported</th>
<th>Scope Malaysian Ringgit</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Negara forex scandal</td>
<td>1990s</td>
<td>30 billion loss</td>
<td>In the early 1990s, the Bank Negara Malaysia (BNM) began to dabble in speculative currency trading and foreign exchange trading with large sums of money, alarming other banking institutions worldwide. Bank Negara Malaysia lost almost RM30 billion between 1991 and 1994, before technically bankrupt and had to be rescued by the Ministry of Finance. None of the top executives in the Bank Negara Malaysia accused of trading activities as the government fully absorb losses. After that, the Bank Negara Malaysia is not involved in any high-risk business to prevent it recurring.</td>
</tr>
<tr>
<td>Pan-Electric Industries scandal</td>
<td>1980s</td>
<td></td>
<td>[1]</td>
</tr>
<tr>
<td>Deposit-taking co-operative scandal</td>
<td>1980s</td>
<td>552,000 Depositors and RM1.5 Billion Involved</td>
<td>The 1986 deposit-taking cooperatives (DTCs) was a scandal waiting to happen. A year before the scandal erupted, Consumers Association of Penang (CAP) had already written to JPK to find out the control exercised over cooperatives and the protection given to depositors should a cooperative face financial trouble or a “run”. CAP’s investigations disclosed that malpractices in the cooperatives included directors using the cooperatives’ funds to buy land which they owned or controlled at above market price. Directors were also making the cooperatives buy the shares they owned in private companies at above market value. The cooperatives also</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Scandal</th>
<th>Year reported</th>
<th>Scope Malaysian Ringgit</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>gave big unsecured loans to directors, their relatives or their companies.</td>
<td>On 29 July 1986, CAP sent a memorandum on “The Need for Greater Control over Co-operatives” to Bank Negara Malaysia (BNM), the Ministry of Finance, Jabatan Pembangunan Koperasi (JPK), and the Ministry of National and Rural Development. The memorandum pointed out that unless the Co-operative Societies Act 1948 was amended and cooperatives activities strictly regulated, depositors may lose billions. However, our early warning fell on deaf ears and the scandal exploded. The DTCs fiasco which occurred the following month involved 24 cooperatives, 522,000 depositors and about RM1.5 billion in deposits. It was triggered off by Koperasi Belia Bersatu Berhad (KOSATU) suspending payments to depositors who wanted to withdraw their savings in July 1986. The Essential (Protection of Depositors) Regulation 1986 promulgated on 20 July 1986 allowed BNM to freeze the assets of KOSATU and its key management and also to investigate into the affairs of the cooperatives. Other depositors became jittery and this led to a run on other DTCs. On 8 August 1986, the activities of 23 other cooperatives were also suspended. 17 accounting firms were then appointed to assist BNM in its investigations and to come up with a White Paper. The White Paper on the DTCs indicated that the 24 DTCs had by November 1986, together lost approximately RM673 million through mismanagement or fraud. The White Paper revealed that a significant number of cooperatives suffered from bad management, either due to lack of expertise or professionalism or through imprudent, and in some cases, corrupt management. This result in gross mismanagement of funds such as overinvestment in land and property, with nearly one-fifth of assets in housing development projects and fixed assets, some of...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scandal</th>
<th>Year reported</th>
<th>Scope Malaysian Ringgit</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra Malaysia Finance scandal</td>
<td>1980s</td>
<td>2.5 billion faulty loan</td>
<td>The first major financial scandal in Malaysia erupted in 1983 when it was found that Bumiputra Malaysia Finance (BMF), a subsidiary of Bank Bumiputra Malaysia Bhd (BBMB) providing RM2.5 billion loans to companies that have a vague track record, including Carrian Group based in Hong Kong.</td>
</tr>
<tr>
<td>Scandal</td>
<td>Year reported</td>
<td>Scope Malaysian Ringgit</td>
<td>Summary</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Perwaja Steel scandal</td>
<td>1980s</td>
<td>10 billion loss</td>
<td>The scandal dragged on with the murder of an assistant manager who was sent to Hong Kong to investigate the transactions, Carrian Group bankruptcy, and ultimately the government to pump more money to save BBMB from being closed. Then prime minister, Mahathir Mohamad repeatedly distanced himself from the scandal, referring to it as the business of the bank that is not affiliated with the government. Losses incurred in the crisis, including capital injections repeatedly by the government, estimated at RM10 billion. At that time, BBMB is Southeast Asia's largest bank and the Carrian collapse is the largest bankruptcy in Hong Kong. The scandal came just two years after Mahathir leading the government, at the time he vigorously pursue on Malaysia's industrialisation. The Royal Commission is established but no one is prosecuted in Malaysia. In Hong Kong, a few of executives is prosecuted while BMF Chairman, Lorrain Esme Osman live in exile until his death on 2011.</td>
</tr>
<tr>
<td>Maminco scandal</td>
<td>1980s</td>
<td>1.6 billion debt</td>
<td>In 1982, Perwaja Steel started as a joint venture between the Government and Nippon Steel Corporation of Japan. It is supposed to be a mega project for promoting Mahathir's industrialisation, however turning to be incoherent because the company confronting with production problems, ultimately Nippon Steel quit from the co-operation. The interest payments was rising and the Government was forced to inject RM2 billion to save the company, together with loans from the EPF and Bank Bumiputra. Eric Chia, Mahathir's ally, was brought in to lead the Perwaja for 7 years, but he left the company with the worst situation as compared to the situation when he takeover. The company incur additional losses of RM5.7 billion and RM2.5 billion loss. Chia was charged with breach of trust in 2004 but was freed three years later, and no one is responsible for the loss of Perwaja scandal, which allegedly included interfering accounting records. Overall losses from the scandal are estimated to be RM10 billion. In 1981, a company namely Maminco Sdn Bhd was established soon after Mahathir became</td>
</tr>
<tr>
<td>Scandal</td>
<td>Year reported</td>
<td>Scope Malaysian Ringgit</td>
<td>Summary</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>-------------------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>prime minister, seeks to control the price of tin on the London Stock Exchange. Maminco take out loans amounting to RM1.5 billion from Bank Bumiputra but in debt when tin prices fell at last. Another company called Makuwasa Sdn Bhd is established to cover losses that Maminco. The new shares supposedly created and reserved for the poor natives, was converted to the Employees Provident Fund (EPF), to sell the shares and the low market price to indemnify Maminco. Taxpayers lost about RM1.6 billion in the Maminco scandal.</td>
<td></td>
</tr>
<tr>
<td>Legislation / Regulatory Bodies responsible for Fraudulent Financial Reporting</td>
<td>References</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Company Act 1965</strong></td>
<td><strong>Company Commission of Malaysia (CCM)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- responsible for the management and enforcement of the Companies Act 1965 (Act 125); Business Registration Act (Act 197); Companies Trust Act (Act 100); and any other law under of the mentioned acts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- CCM works with other regulatory bodies and authorities such as the Insolvency Department of Malaysia, Bank Negara Malaysia, Securities Commission of Malaysia and related government agencies, to ensure that good corporate governance is practiced by the market players.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Securities Commission Act 1993</strong></td>
<td><strong>Securities Commission Malaysia (SC)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- established on 1 March 1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- self-funded statutory body</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- responsibility to regulate and develop the Malaysian capital market.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References

Securities Commission (2019)
Legislation / Regulatory Bodies responsible for Fraudulent Financial Reporting

Malaysian Code or Corporate Governance (MCCG)
- Issued by SC to promote the internalisation of a culture of good governance amongst capital market participants
- A set of best practices to strengthen corporate culture anchored on accountability and transparency
- In the latest MCCG 2017 the guide I strengthen and provide a clear and better representation of required corporate governance practices including the risk management required by the company. This shows the effort by the SC to stress the important of strong corporate governance by having the good risk management control in an organization to prevent unethical conduct.

Auditing Oversight Board (AOB)
- ensure the transparency of financial information in the capital market, the SC formed the Auditing Oversight Board, which is regulated under CMSA 2007

Financial Reporting Act 1997

Financial Reporting Foundation
- The ultimate reason for standard developed are for the organization to always maintain on the right track and differentiating whether the reporting are according to the standard or not.
- members of the Financial Reporting Foundation appointed by the Minister of Finance for the purpose of standard-setting process.

Malaysian Accounting Standard Board in Malaysia (MASB)
- independent authority functioning with the Financial Reporting Foundation
- responsible for the financial reporting framework in Malaysia.

References

Securities Commission (2019); MCCG 2017

MASB (2018)
<table>
<thead>
<tr>
<th>Legislation / Regulatory Bodies responsible for Fraudulent Financial Reporting</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>- mainly concerned with developing and issuing financial reporting standards in Malaysia.</td>
<td></td>
</tr>
<tr>
<td>- MASB and lists of its functions false under Section 7 of the Act</td>
<td></td>
</tr>
<tr>
<td>- The MASB is responsible for issuing the accounting standards as approved accounting standards and at the same time to provide the guide for the right practice of financial reporting environment in Malaysia.</td>
<td></td>
</tr>
<tr>
<td>- false statement or the alteration of financial information in the financial statement can be charged under section 464 of making the false document</td>
<td></td>
</tr>
</tbody>
</table>
Legislation / Regulatory Bodies responsible for Fraudulent Financial Reporting

The Penal Code (Act 574)

**Malaysia Royal Police (Commercial Crime Department)**
- The main function of this department is to investigate, catch and prosecute white collar criminals who commit fraud or corruption, including commercial falsification and cyber crime.
- The department consists of anti-laundering unit, forensic accounting unit, financial investigation unit, corporate investigation unit, multimedia and cyber investigation unit, and other units for forgery including credit card forgery.
- The fraudulent crime most likely false under the Penal Code section 415; cheating.
- This department and other regulatory bodies are important bodies in the role of combating white collar crime include fraud.

References

Laws of Malaysia (2015);
Sadique, Raziah, Roudaki, Clark, & Alias (2010).
Shaping an Independent Ethical Climate and an Innovative Organizational Culture: The Influence of Managers’ Risk-Taking and Integrative Characteristics

Anthony Kuo  
Fu Jen Catholic University  
076667@mail.fju.edu.tw

Ying-Tzu Lin  
Fu Jen Catholic University  
137036@mail.fju.edu.tw

Wanny Oentoro  
Assumption University  
woentoro@msme.au.edu

Abstract

Building an independent ethical climate and an innovative organizational culture is important for all organizations, but how managers’ leadership characters shape such a culture and climate has yet been fully investigated. This study examines the influence of two important characteristics of leadership—being risk-taking and integrative—in building an innovative organizational culture and an independent ethical climate. Using a sample of firms in the department store industry and international hotel industry in Taiwan and LISREL 8, the authors empirically test the relationship. Results support that organizations whose managers are risk-taking and integrative are more likely to possess an innovative organizational culture. In addition, the risk-taking characteristic of leadership and the innovative organizational culture also contribute to an independent ethical climate.

Keywords: innovation, organizational culture, ethical climate, risk-taking, integration, business ethics
Nowadays, one of the biggest challenges is defined as environmental crisis in China. At the same time, Environmental management is the essential objective of many Chinese companies. This issue is focused not only by a company but also by the whole business society. Recently, Chinese government has understood that what challenge the country is facing and publishes some guidelines and regulations about environmental disclosure. This study examines the effect of environmental information disclosure (EID) on firm financial performance and firm’s characteristic of Chinese mainland stock exchange. However, the topic is unexplored in academic research. The panel data gathering from Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) and GRI’s Sustainability Disclosure Database, regarding EID, Firm’s characteristic and Firm financial performance during 2014 –2017. Fixed effect model is applied in the research. The empirical finding is expecting to display a positive relationship on the environmental information disclosure and firm financial performance. Moreover, there is significant difference in firm’s characteristic to explain the relationship between environmental information disclosure and firm financial performance.

Keywords: environmental information disclosure (EID), shanghai stock exchange (SSE), shenzhen stock exchange (SZSE), GRI, firm financial performance.
Investor Heterogeneity and the Sustainable Investment Preferences:
Evidence from Indonesia Stock Exchange*

Dwitya Aribawa
Assumption University
Universitas Atma Jaya Yogyakarta
dwitya.aribawa@uajy.ac.id

Abstract

FTSE 4Good ASEAN 5 Index is the index that selected and screened in accordance with transparent and defined Environmental, Social and Governance (ESG) criteria which was launched in 2016. This phenomenon has been strengthening the importance of sustainable investment practice on the leading ASEAN financial markets, including Indonesia. Meanwhile, Indonesia is lagged behind the peers ASEAN countries in the sustainable disclosure ranking. This study addressing to identify the sustainable investment preferences in the heterogeneity of investors (foreign-domestic and institutional-individual) that become one of the unexplored topics in emerging stock exchange. The unique dataset from Indonesia Stock Exchange free float ownerships and GRI’s Sustainability Disclosure Database, and gathered as evidence to addressing insight for the importance to analyze the sustainable investment preferences and the heterogeneity of investors. In this study, the researcher examines the fixed-effect ordinary least squares between heterogeneity of free float shares ownership of investors and their preferences to invest into specific equity characteristics, including sustainability aspect. Statistical results are expecting to shows a positive effect on the firm sustainable characteristics towards investment preference for certain investors. In addition, to show the robustness of the data the result will show free heteroscedasticity and relevant to two different panel data (foreign and domestic investors). This study arises an insight on the regulation update in the stock market in order to foster the likelihood of Sustainable Stock Exchange in ASEAN stock exchanges, especially in Indonesia. Ultimately, there are demanding of further study in sustainable investment in positive screening, heterogeneity of institutional investors related to non-financial considerations and activism role of institutional ownership in developing countries financial markets.

Keywords: institutional investors, individual investors, investment preferences, sustainability, Indonesia stock exchanges

*I would like to thank to Assistant Professor Nopphon Tangjitprom and Dr. Veeranuch Leelalai for valuable foment on an earlier draft. We acknowledge financial support from PhD BA Program Assumption University of Thailand to join this conference.*
Assessment of Students Working Part Time in Hospitality Sector in Mumbai Region Based on Work Design

James Joseph
Department of Humanities and Management
Manipal Institute of Technology,
Manipal Academy of Higher Education,

Asish Oommen Mathew
Department of Humanities and Management
Manipal Institute of Technology,
Manipal Academy of Higher Education,

Sriram K.V
Department of Humanities and Management
Manipal Institute of Technology,
Manipal Academy of Higher Education,

Amit Ravindra Shintre
Department of Humanities and Management
Manipal Institute of Technology,
Manipal Academy of Higher Education,

Abstract

The study focuses on a trend observed in Mumbai region where students from hospitality institutions are engaged in part time work in hospitality sector while pursuing studies. The study aims to assess work design of the part time work carried out by the students and its consequences. The work design characteristics which foster the work to be fit for part time are studied. Knowledge characteristics of the work were studied and its influence on academic performance was analysed. The work context of the part time work was studied and its influence on working hours was determined. It was observed that the characteristics relating to work design fit for the part time work were acceptable. It was revealed by the analysis that there was no relation between the knowledge characteristics of work and the academic performance of the students. However, it was found that the working condition of the workplace and the physical demand of the work influenced the working hours of the students. It was also observed that working hours negatively influenced the academic performance. Thus it was concluded that working part time provides a learning experience and harnesses the skills of the students but it has a negative impact on their academic performance.
The Effect of Management level Internal Communication and Communication Practices on Employee Job Outcomes

Sudarat Kliangsa-Art
Phranakhon Si Ayutthaya Rajabhat University
sudarat_k@hotmail.com

Wanny Oentoro
Assumption University
woentoro@msme.au.edu

Abstract

Communication is central to every organization where information is passed from one source to another through the use of both internal communication and communication practices. The service industry, like other industries, uses communication in daily activities for both interactions between different management levels and within the same management level. In every industry, communication is essential in daily activities that require interactions either between different organization levels or within the same organization level. This is a conceptual paper that aims to develop a comprehensive model to investigate the insights about effective internal communication and communication practices between management levels and employee job outcomes. Specifically, this study examined the information and communication technologies (ICT) skill that might affect the internal communication and communication practices between management levels and employee job outcomes. The study reviews the literature on organization communication, employee’s job outcomes and information and communication technologies. The study contributes to the knowledge of internal communication and interaction practices that management provides to employees and the influence of the information and communication technologies (ICT) skills that are provided by managers toward the perspective of job outcomes among the employee. Finally, employee job outcomes could be further enhanced by the effectiveness of internal communication and communication practice between management level and employees.

Keywords: internal communication, communication practice, employee job outcomes
HR Analytics: Effective Enabler for Sustainable Competitive Advantage of MSMEs

Yatindra Dwivedi
Power Grid Corporation of India Ltd
yd@powergridindia.com

Krishna Nath Pandey
Lingaya’s University
knv.powergrid@gmail.com

Abstract

Though Micro, Small and Medium Enterprises (MSMEs) are considered to be drivers of economic growth, the fast changing global economic scenario has thrown up various challenges and opportunities for them. Apart from complementing to large scale sector, most of MSMEs have their own identity in making contribution to socio-economic development of the country. However, due to various challenges being faced, it is imperative that MSMEs focus on sustainable competitive advantage and various enablers for achieving it. Sustainable competitive advantages are organizational capabilities that are difficult to imitate or surpass; and provide an advantageous long term position over competitors. Organizations which consistently high profitability will have a sustainable competitive advantage with a unique process or product or ability. HR Analytics is one of such essential processes an organization may have for sustainable growth and competitive edge.

Common applications of analytics include the study of business data using statistical analysis in order to discover and understand historical patterns with an eye to predicting and improving business performance in the future. Major HR analytics that play a significant role in an organization are Employee performance analytics, Leadership analytics, Recruitment channel analytics, Corporate culture analytics, Employee churn analytics, Capability analytics, Capacity analytics, Competency acquisition analytics.

This paper will focus on exploratory and evaluative research on uses and effectiveness of HR Analytics in one of MSMEs in India named “Flourtech Engineers Pvt Ltd. (FLOURTECH) and find out the emerging trends as how the organization is applying HR analytics for sustainable competitive advantage , how much the organization value HR analytics and how do it communicate this across the length and breadth of the organizations. Whether the systems and structures which channelize the resources, support HR analytics initiatives to gain maximum benefit? It is also to be explored for linkages with technology and other drivers. A keen study is also required to find out as how the organization and similar MSMEs facilitate and enhance HR analytics for their long term advantage. The paper will conclude with the findings related to effectiveness of HR Analytics, especially for MSMEs, and various parameters of HR Analytics contributing towards a sustainable competitive advantage.

Keywords: HR analytics; sustainable competitive advantage; MSME; capability
The Role of Top Management Support on The Relationship between
Supply Chain Management Practices and Manufacturer’s Performance in
Thailand

Siriwadee Sawaengdee
Assumption University
sawaengdee.s@gmail.com

Nichanan Sakolvieng
Assumption University
nichananskl@au.edu

Abstract

This paper aims to examine the mediating role and the effect of Top Management Support (TS) among Supply Chain Management Practices (SCMPs), Supply Chain Performance (SCP) and Manufacturing Firm Performance (MFP). The SCMPs in this study include Sales and Operations Planning (S&OP), Strategic Supplier Partnership (SSP), Internal Lean Practices (ILP), Customer Relationship management (CRM), and Total quality management (TQM). A quantitative online-questionnaire survey was used to collect data from 279 respondents. The respondents consist of managers and staff from 241 manufacturing companies in Thailand which have been established for at least 5 years and have at least 50 employees. This study applies the moderation and mediation analysis based on Preacher, Rucker, and Hayes (2007) and Hayes (2013 & 2015) through the ordinary least square regression. The results show a statistically significant direct effect of SCMP on SCP and an indirect effect of SCMP on SCP which is mediated by TS. The results reveal significant relationships in both the direct effect of SCMP on MFP and the indirect effect of SCMP on MFP through TS. TS is also statistically significant to moderate the relationship between SCP and MFP, especially at a high level of TS.

Keywords: supply chain management practice, manufacturing firms’ performance, top management support
Business Integration, Supply Chain Innovation and Supply Chain Performance: A case of Thailand Consumer Sector

Nathida Khongkant
Martin De Tours School of Management and Economics
Assumption University
Nathida.kho@gmail.com

Abstract

The global business environment is in high turbulence condition, thus the economic increases in the complexity to manage the new environment settings. With the intense competitions and challenges, survivability of the organization depends fundamentally on the ability to adapt to the new environment and continuously creates the competitive advantage. In this research study, the context focuses on a concept of supply chain in the strategic integration level rather than the technical and operational side of view. The supply chain perception of network can be applied with the foundation theory supporting an interaction between variables. It is clarified as the network perspective used for Thai consumer industry sectors that link to unique characters for the supply chain network perception against the normal supply chain view. The research objectives focus on diminish previous research gaps and broaden the perspective of contemporary supply chain philosophy such as supply chain innovation, or supply chain network. Moreover, the conceptual framework has been also developed, with the intention to explore the topic from the macro perspective then discover further in depth in each components of the whole model. Research methodology included with the qualitative method of semi-structure interview used to test the relationship and existence of variables in the context of study. Then, after variables have been gathered the quantitative methods allowed the researcher to accumulate data in the larger scales.

Keywords: supply chain, innovation, performance, consumer sector, business integration
Abstract

The purpose of this paper is to examine the influence of knowledge management, strategic improvisation, and learning orientation on SME performance. This study also assesses the mediating role of innovation in the relationships between strategic improvisation, knowledge management, learning orientation and SME performance. A quantitative study was employed and data were collected through questionnaires. A total of 1920 SME owners/managers were randomly selected and 368 responses were returned and found useable for the final analysis using the structural equation model partial least square (SEM-PLS). The findings indicated that knowledge management, strategic improvisation, learning orientation have significant influence on SME performance. Moreover, the study also found that innovation mediates the relationships between knowledge management, strategic improvisation, learning orientation and SME performance.

Keywords: SME, knowledge management, strategic improvisation, learning orientation, performance
The Role of Intrapreneurship for Sustainable Innovation through Process Innovation and Product Innovation on Sustainability Knowledge of MNC’s in Thailand: A Conceptual Framework

Phairat Boonsuwan
Siam University
Phairat.boo@siam.edu

Piyawan Puttibarncharoensri
Assumption University
piyawanptt@gmail.com

Abstract

At present, Sustainability is an important role that creates new business opportunities to responsibility with governments and all parties which quest for sustainability development in the high growth in production and consumption upon the middle income or emerging economies in the globally business. In order to accelerate the development in the field, Thailand’s business is one of place that have concerning in quest for sustainable development which creating a better understanding of and facilitating sustainable development and business opportunities in an emerging economy context. The purpose of this paper is to study the role of Intrapreneurship for Sustainable Innovation through Process Innovation and Product Innovation on Sustainability knowledge integration by presented a model for sustainability innovation based on process & product innovation and intrapreneurship in organization. On the other sides, we studied on the Intrapreneurship role as internal initiative of a firm as firm-specific capabilities is proposed to achieve on their innovation and sufficiently for sustainability in MNC’s business environment in Thailand. The objectives of this research are to investigate and evaluate the level of Intrapreneurship attitude, enthusiasm and participation in MNC’s innovative activities. Hence, process innovation is utilized to translate intrapreneurship capability for sustainable innovation. This paper focused on new circumstances in Thailand business environment for sustainability of MNC’s enterprises, the role of intrapreneurship in transforming process and product innovation and LEDI (Learning employee-driven innovating) under existing technology for sustainable innovation achievement is another interesting view to be explored. The role of intrapreneurship is spirit of internal initiative of a firm as firm-specific capabilities is proposed to accomplish in sustainability knowledge. As Successful new products and services are critical for many organizations, since product innovation is one important way that organizations can adapt to changes in markets, technology, and competition. We examined problems with sustained product innovation and process innovation in MNCs organization in Thailand. Findings reveal that the intrapreneurship in organization has the high influence and related with product innovation and process innovation and we suggest that these innovator in organizations must reconfigure their innovation by comply with LEDI (Learning employee-driven innovating) to become capable of sustained innovation and offer recommendations for practice by integrated framework. The framework shows the elements of proactiveness, risk taking and autonomy in intrapreneurship provides, leverage for sustainable economic, environmental and social innovation. The study suggests empirical investigation for the business contribution to
sustainable development with sustainability knowledge by confronting and integrating the literatures on management innovation such as process innovation and product innovative and LEDI (Learning employees-driving innovative) which understand to involve organization and social innovation leading to change. The study further suggests empirical investigation in the firms for future research.

*Keywords*: intrapreneurship, sustainable innovation, process innovation, product innovation, sustainability knowledge, organizational performance.
The Impact of HoRenSo Organizational Culture on Organizational Commitment and Organizational Performance

Siriwut Rungruang  
Assumption University  
kh.siriwut@gmail.com

Nichanan Sakolvieng  
Assumption University  
nichananskl@au.edu

Abstract

This study aims to evaluate the impact of the Japanese HoRenSo organizational culture on the level of organizational commitment and organizational performance of Japanese multinational companies (MNCs) in Thailand. A key emphasis is on the investigation of human resource practices that influence the perceived HoRenSo, i.e., the relationships between HR practices and HoRenSo which lead to varying levels of organizational commitment and organizational performance. The study adopts Allen and Meyer (1990)’s three-componential model, which comprises normative, affective, and continuance commitment, to measure organizational commitment and proposes a model that incorporates human resource practices, HoRenSo, and organizational performance. It highlights the unique aspects of HoRenSo organizational culture that can enhance the level of organizational commitment and performance among Japanese MNCs. A quantitative questionnaire survey is used to collect the data from 384 respondents who work in Japanese MNCs in Thailand. The data has been analyzed by using a structural equation modeling (SEM). The results indicate that HoRenSo organizational culture can enhance the level of organizational commitment which leads to an improved organization performance. However, there exist the differences between male and female employees in terms of their perceived HoRenSo organizational culture on the level of organizational performance. The influence of HoRenSo organizational culture on organizational performance is significant for the male employees only. The study provides practical implications on multinational management regarding the adoption of HoRenSo organizational culture in local subsidiaries of Japanese MNCs. The training on HoRenSo practices should be implemented to improve the overall organizational performance. In addition, the study also suggests companies to be aware of collective cultures that might influence the adoption and implementation of HoRenSo.

Keywords: HoRenSo organizational culture, organizational commitment, organizational performance, human resource practices
1. Introduction

International business consists of business transactions between parties from more than one country. There is a propensity to increase continuously due to several regional economic integrations, such as NAFTA, European Union, and ASEAN Community, to promote free trade and to boost up an economy. Furthermore, the international business typically concerns with cross-border transactions that there are more complex than domestic transactions. Firms engaged in international business transactions usually confront with various environmental differences between their home and the host countries, including different currencies, legal systems, and cultures (Griffin & Pustay, 2015).

Since the end of the 1960s, there have been the establishments of 7,000 multinational corporations. Furthermore, in the early 1990s, the number of multinational corporations has increased continuously around 37,000 to 170,000 for affiliates. Fifteen years later, the number of multinational corporations has been almost duplicated for 70,000 corporations (Forsgren, 2013). Consequently, there is no doubt why the international business becomes interesting and attracting many scholars conduct research regarding cultural dimension, investment, and strategy in the international business field.

JETRO Thailand (2015) surveyed business activities of Japanese MNCs in Thailand. The result shows that the number of Japanese MNCs in Thailand is 4,567 which has been increased for 683 from 3,884 in the previous survey conducted six years ago. Composition by sector shows that 47% of them are in the manufacturing factor and 49.5% belong to the service sector (JETRO Thailand, 2015). Consistent with Swierczek and Onishi (2003), they point out that Japanese companies began to increase their hiring and production by expanding affiliates overseas and gave a loan and an equity stake to Thailand subsidiary at the end of the first stage of crucial time in 1990. Given these reasons, Thailand is an attractive location for foreign direct investment (FDI) (Kearney, 2001). In managing international business, Salacuse (1988) points out strongly that culture remains the most important factor in multinational management. Similarly, Swierczek and Onishi (2002) indicate that cultural differences are the most challenging task for managing MNCs. Wolf (2013) highlights that Japanese business culture focuses on the importance of group harmony within the society.

Interestingly, *HoRenSo* is a cultural symbol of Japanese culture. The foundation of its value typically consists of collaboration and communication processes between the manager, superior, colleague and subordinate over all projects in the organization (Kameda, 2013). Moreover, Maxwell and Steele (2003) point out that coordination and trust among employees and superiors can be important factors to increase the level of commitment. On the other hand, the researcher really gives an opinion that Thai business culture is similar to Japanese culture in term of a business relationship based on personal relationship and the respect of high position in an organization hierarchy. On the contrary, Thai business culture is still remaining to maintain the saving face with a person who is holding the higher position. To clarify the cultural differences between Japanese and Thai cultures, Swierczek and Onishi (2003) indicate that Thai people dislike the Japanese business culture in case of consensual making decision approach. This might due to the fact that Thais usually avoid showing some (conflicting) opinions that make someone lose his face. Broadly speaking, many studies found that performance may influence negatively due to cultural differences. (Sorndee, Siengthai, & Swierczek, 2017).
In the same way, commitment is also relatively important for the organization due to loyalty is embedded employees. According to the international human resource department is a major role to recruit under the concept of put the right man in the right job, control employee performance, increasing organizational commitment and design organizational culture for both headquarters or affiliate in the host country. Consistent with Valaei and Rezaei (2016) found that payment, co-worker and communication are positively influenced on affective commitment. Furthermore, payment, promotion, and supervision are positively influenced on normative commitment. In case of corporate culture, Parra and Castillo (2013) mention the corporate culture is a considerable role for building the employee characteristic, which is supported by employees who are joining a company due to they are adhered by it, helping to develop productivity.

For approaching the better investigation and achievement of the study of organizational culture affects organizational commitment and organization performance, the study is thus guided by the following research questions:

1. Do human resource practices affect the perceived organizational culture?
2. Is there a positive relationship between HoRenSo organizational culture and organizational commitment in Japanese multinational corporations in Thailand?
3. Is there human resource practices correlation with HoRenSo organizational culture and organizational commitment and organization performance
4. Do Japanese multinational corporations in Thailand conserve team atmosphere by the following Japanese business culture?

2. The objectives of this study

According to the research questions ask regarding human resource practices affect HoRenSo organizational culture on organizational commitment and organization performance, the researcher can explain the important human resource system that may contribute the employees who are joining the organization perceive HoRenSo organizational culture which may enhance the organizational commitment and the organization performance, even though, Thai business culture and Japanese business culture are different in case of the group-oriented. Consequently, the researcher manipulates the purpose of this research is to investigate HoRenSo organizational culture based on cultural differences that affect the organizational commitment and the organization performance by considering human resource practices which may help subordinates in Japanese multinational corporations where have established a subsidiary in Thailand absorb HoRenSo organizational culture yet.

To clarify the objective of this exploration. Specific objectives of this study are:

1. To investigate the relationship between human resource practices and HoRenSo organizational culture affect directly organizational commitment and organization performance.
2. To investigate direct the effecting HoRenSo organizational culture enhance commitment and organization performance.
3. To examine subordinates in Japanese multinational corporations have highly perceived HoRenSo organizational culture over projects.

Given the research questions and objectives, the paper is organized as follows: the next section provides background information based on organizational culture which is cultural differences
between Japanese and Thai that can affect organizational commitment and organization performance. The fourth section details the research questions and the research objectives. The fifth section is the approached taken data collection and test reliability. The sixth section answers the research objectives and hypothesis on the impact of organizational commitment and organization performance.

This study actually yields three contributions. First, this paper building a Thai subordinate perspective appreciate the link Japanese business culture. Second, Improving organizational commitment and organization performance. Third, Top management acknowledges designing a completely successful strategy for keeping retention’s employees. Fourth, the result of this study contributes to the new literature by formulating the research finding and new construct.

3. Theoretical background and conceptual framework

3.1 HoRenSo

The important principles of Japanese business culture perceive group and group harmony, its atmosphere is their preferable toward business culture, while a person who has not a group that lacks of power but a person who belongs a group is the foundation value of society (Wolf Ruth, 2013). Therefore, the concept of HoRenSo organizational culture is widely recognized in Japanese business culture.

HoRenSo is an activity to interact between superior and subordinate while they are operating over the projects. In term of the unique aspect of HoRenSo, it is based on the idea by collaborating as a group among superior and subordinate. Likewise, most superiors will often give some suggestion and guidance to their subordinates while subordinates are doing over the project (Kopp Rochelle, 2013). In a more understandable a unique aspect of HoRenSo, Inomata Atsuo et al (2012) defines HoRenSo as a sharing information process based on members’ knowing and synchronizing action for changing the environment on the internal and external organization. In addition, they give a construction of HoRenSo consists of three proportions include Ho defines “Report”, Ren is short from “Contact” and So is refer to “Consult”

Moreover, Kameda (2013) defines HoRenSo as a typical basis of communication and collaboration between superior, subordinate and colleague over the course of the project. The psychological statement has at least 3 distinguishable aspects as follows:

1. **Hokoku )Reporting** (refers to report to the supervisor on the progress and also result in your work on time.
2. **Renraku )Contacting** (refers to transmit useful information to those who need it.
3. **Sodan )Consulting** (It is discussion and consultation to a supervisor and those who involve over a topic and get their suggestion or guidance for solving the problem.

All of these definitions are primarily concern Japanese business culture has implemented a project as a group by communicating and collaborating between subordinate and supervisor. In the same way, Earley and Erez (1997)consider the working environment in Japanese business culture is the following characteristics:

1. group responsibility and participative management
2. use “ringi” which is a decision-making system in the type of bottom-up.
3. an organization of both participative management and authoritative management.
3.2 Organizational Commitment

The major point of organizational commitment tends to increase attention for many researchers to explore what factors are to support commitment and employee intention within the organization. Another reason is to explore organizational commitment that they perform to achieve the task, and to contributes organization in order to increased performance (Htay, 2007).

Base on the problem defines employee turnover, the problem may a cause from lacking commitment to the organization (Farrel & Stamm, 1988). The researcher has an opinion may come from a different working style makes a cause of the problem. While the concept of commitment is based on degree loyalty toward the organization. Likewise, innovation and supportive culture are positively perceived by employee commitment (Odom, Boxx, & Dunn, 1990).

Allen and Meyer (1990) define the organizational commitment is composed of three components include normative commitment, affective commitment, and continuance commitment. Valaei and Rezaei (2016), who really indicate the all of types organizational commitment perspective are not seemed different meaning within those commitments. For more understandable each organizational commitment. Many researchers truly define the definitions of all commitments. For instance, Chan and Mak (2014) explain that normative commitment talks about the feeling of the employees depend on the obligation to stay in the organization. Likewise, Valaei and Rezaei (2016) explain that the belief of an individual is obligated after coming into the organization. Likewise, Allan and Meyer (1990) define that normative commitment is reflected employees’ feeling of obligation to be in the organization. Consistent with Gunlu, Aksarayli and PerÇin (2010) define that normative commitment is reflected obligation in the organization. Lastly, Bergman (2006) explains that an individual still remains in the organization because of obligation regards to the individual.

According to affective commitment, Gunlu, Aksarayli, and PerÇin (2010) explain that affective commitment is reflected by affective attachment to the organization. Similarly, Allen and Meyer (1990) point out that employees feel emotional belonging, work engagement to the organization. In addition, Mowday, Steers, and Porter (1982) mention that the emotional attachment is to an organization through agreement of organization value and voluntariness remain with the organization. Furthermore, Nakornthum (2005) defines that affective commitment concerns with emotional attachment, not reason from social and norm effect. Lastly, Sitavarin (2006) defines that affective commitment refers to employee’s identification with, emotional attachment and also involvement in an organization.

For continuance commitment, Gunlu, Aksarayli, and PerÇin (2010) explain that continuance commitment is perceived by cost which is associated with intention in the organization by employees. Similarly, Allen and Meyer (1996 & 1990) define that continuance commitment is the feeling perceives cost or profit on continued or losses connected with leaving the organization for employees. Correspondingly, Chan and Mak (2014) define that the costs are based on continuance commitment by an employee that are associated with leaving the organization.
3.3 Organization performance

To understand the definition of organization performance, Venkatraman and Ramanujam (1986) and Lin and Kuo (2007) explain that organization performance refers to the level accomplishment with the organization based on formulation its goal and targets. Furthermore, Day and Nedungadi (1994) and Neill and Rose (2004) suggest that the working mind of its manager is measured the organization performance. Likewise, Hanom (2003) and Al Saifi (2016) indicate that organization performance is an indicator to measure how the organization achieves successfully with its goal and target.

Extending organization performance in case of financial and non-financial. Tomlinson (1970), Lecraw (1983) and Lu (2006) identify that the financial department measures performance by evaluating the return on investment and getting a profitable growth. Kathuria and Porth (2003) explain non-financial performance that productivity is considered by the performance of the internal process’s organization, while customer aspect can be considered by the level of customer satisfaction. To identify what variables can be formed a category of internal process, the quality of work, employee morale, innovation, and operating efficiency can be considered for internal organization performance (Van de Van & Ferry, 1980)

3.4 Cross cultural management

When the firms expand business more than one country, multinational corporation cannot avoid confronting the different environment such as political, economic, regulation and culture which they unfamiliar with the local environment. Therefore, the liability of foreignness occurs due to lack of knowledge in the local environment) Salomon & Martin, 2008. Therefore, many researchers endeavor to explore the relationship between culture distance and leadership, commitment and culture conflict.

To understand the definition and the reason why cultural factor is the most important for studying, many researchers define the definition of culture. For instance, Griffin and Pustay (2015) explain that culture is the collective program of attitude, values, behaviors, beliefs, custom, and manner which separate one society from another. In addition, they define learning behavior, interrelated, adaptive and shared are characteristics of culture. Similarly, Hofstede (2001) defines that culture is a mental collective program. As referred by scholars mention the characteristic of culture, we can define that culture is related as customary beliefs, values, religious, and social group that are transmitted from one generation to new generation) Griffin & Pustay, 2015. Furthermore, Salomon and Wu (2012) indicate that social norms, value, custom, and tradition are in the category of informal institution.

To study cultural dimension, Geert Hofstede is a researcher who explores culture difference and similarity through collecting the data in IBM for 116,000 people. Geert Hofstede has recognized to study in the international business field. He defines six cultural dimensions. For example, power distance, individual and collective, masculinity and femininity, uncertainty avoidance, long term and short-term orientation and indulgence and restraint. Particularly, Geert Hofstede explains the context of cultural dimensions is the following.

1. **Large power distance.** This dimension is a propensity to respect the power who occupies in the superior position) Griffin & Pustay, 2015. Hence, the structure of large power distance is as hierarchy and appreciate regarding inequality within the organization) Wild, Wild, & Han, 2003. Therefore, face-saving and top-down
management style still remain in the organization. Contrary, low power distance is a propensity to a greater degree in accepting equality in society)Wild et al., 2003( and less important to a person who is holding the superior position in the hierarchy of the organization)Griffin & Pustay, 2015).

2. **Individual and collective.** Collective culture maintains group and member include family and colleague in the unit)Wild et al., 2003(. Consensus and harmony remain the most important for the group. In contrast, the individual culture is a propensity to give an authority to decide by themselves, focusing on their capacity and personal goal. Hence, individual social gives freedom to all employees within the organization due to all of them have equality in organizational structure.

3. **Uncertainty avoidance.** This dimension measure preferable ambiguity which organizations confront. This dimension defines as uncertainty acceptance and uncertainty avoidance. The characteristic of uncertainty acceptance defines an ambiguity is seen as a context with employees to grow)Wild et al., 2003.( Furthermore, a context of uncertainty acceptance tends to open the freedom to listen to a new idea. On the contrary, uncertainty avoidance tends to dislike an ambiguity. Therefore, the organization needs to conserve the security system to survive in an ambiguity situation. To remain uncertainty avoidance, the organization structure is a strong system of rule and formal procedure in the organization, the organization structure and rule are difficult changing.)Wild et al., 2003(

4. **Masculinity and Femininity.** In masculinity social context tends to separate gender in work role)Hill, Wee, and Udayasankar, 2012( due to the gender is sharply differentiated in masculinity societies. Furthermore, masculinity indicates an achievement, reward, and competition. In contrast, Femininity social context tends to less significant a gender, it is less differentiation between men and women)Hill et al., 2012(. Likewise, femininity social context concentrates modesty, quality of life, cooperation and consensus within the organization and group.

5. **Long-term and Short-term orientation.** In the social context of long-term orientation tends to maintain the relationship since past to present orientation. On the other hand, short-term orientation maintains intermediate time orientation. Correspondingly, Hofstede (2011) the event of life occurs in the past and the present now.

6. **Indulgence and Restraint.** In indulgence social context tends to allow relative satisfaction base on human need and enjoying life, while restraint social context is a capacity to control their desire and impulse base on human need.

According to the cultural dimension’s Geert Hofstede launches for six cultural dimensions. He also compares cultural differences between Japan and Thailand culture in table 1.1

<table>
<thead>
<tr>
<th>Cultural Dimension</th>
<th>Japanese</th>
<th>Thai</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Distance</td>
<td>54</td>
<td>64</td>
<td>Thai+10</td>
</tr>
<tr>
<td>Individualism</td>
<td>46</td>
<td>20</td>
<td>Japanese+26</td>
</tr>
<tr>
<td>Masculinity</td>
<td>95</td>
<td>34</td>
<td>Japanese+61</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>92</td>
<td>64</td>
<td>Japanese+28</td>
</tr>
<tr>
<td>Long-term orientation</td>
<td>80</td>
<td>56</td>
<td>Japanese+24</td>
</tr>
<tr>
<td>Indulgence</td>
<td>42</td>
<td>45</td>
<td>Thai+3</td>
</tr>
</tbody>
</table>

According to table 1.1, the result of cultural differences in Japanese and Thai national cultures show that the intermediate score is 54 for Japan while Thailand is a score of 64 that tend to be high. Both Japan and Thailand respect the hierarchical position. Both are rate tend to be low in individualism which is determined collectivism culture. But Thai culture is more collective than Japanese culture. In contrast, Japanese culture is more masculinity than Thai culture, Thai culture is a propensity to maintain femininity style. In uncertainty avoidance, Japanese culture tends to be high, while Thai culture is moderate high. Both national cultures try to avoid ambiguity in the situation. Regulation and policy in the organization are important and stress for both supervisor and employee. In long-term orientation, Japanese culture is more long-term orientation than Thai culture. Lastly, Both Japanese and Thai cultures are the low rates in indulgence (Swierczek & Onishi, 2003). According to the result, we can mention that masculinity and femininity that Japanese culture has more masculinity index than Thai culture and also the most difference from all cultural dimensions. Therefore, Japanese culture tends to reach an achievement, avoiding ambiguity and stress working higher than Thai culture.

3.5 Organizational culture

To define the definitions of national culture and cultural dimension, many academicians try to define the meaning of organizational culture. For example, Odom et al. (1990) indicate that most of the definitions of organizational culture consist of beliefs, assumptions, shared values, and pattern of behavior. Correspondingly, Uttal (1983) points out that organizational culture consists of shared values, beliefs that they appreciate an acceptable pattern interaction with the company’s people in the organization and ensure system to produce behavioral norms. Moreover, Messner (2013) indicates that the icon, heroes, rites, story are reinforced for organizational culture.

In order to understand the types of organizational culture, Wallach (1983) mentions cultural typology includes bureaucratic, innovative and supportive culture. These types of organizational culture are used in investigating commitment, satisfaction, and cohesion. The characteristic of three types of organizational culture are the following:

1. **Bureaucratic culture** can be referred to as procedural, hierarchical and structure.
2. **Innovative culture** defines a challenging environment, creative idea and result-oriented.
3. **Supportive culture** defines a people-oriented, maintaining teamwork, good relationship and trusting is preferable

3.6 International human resource management

To get and develop a valuable human capital in an organization, and achieve the organization performance directly the organization’s objective. To achieve the mission’s organization, human resource department is the most important in all departments of the organization due to human resource department is able to design a job description and job specification through job design to recruit a new employee. Consistent with Noe, Hollenbeck, Gerhart, and Wright (2014) explain that human resource management is a necessary component of an organization’s success. Accordingly, many researchers endeavor to investigate commitment and retention with the organization.

For understanding the definitions and characteristic of human resource management. Griffin and Pustay (2015) indicate the nature of human resource management that it is a set of process
directed at attracting, maintaining and enhancing the effectively essential manpower to complete an organization’s objective. In addition, they indicate the human resource activity includes recruitment and selection both managers and nonmanagers, providing training and development, doing appraising performance, providing salary and other benefits. In the same way, Noe, Hollenbeck, Gerhart, and Wright (2014) mention that policies, practices, and system that affect employee performance, behavior and attitude. Moreover, they mention that human resource management concerns with people practice. This is consistent with Wild et al. (2003) explain that human resource management is a method of staff company and certify high production possible. In conclusion, human resource management is controlled processing from recruitment to appraising performance for developing employee performance and achievement organization objective.

According to increased multinational corporations due to the economic integration and handle the global assignment, human resource section needs to ensure that the employee qualification should have appropriately absolute knowledge in managerial skill, and cultural adaptation skill which are available their capacity with the global assignment. Moreover, Decenzo, Robbins, and Verhulst (2013) distinguish the functions area of human resource management are the following

1. **Employment:** The main employment function embarks to recruit new employees and advertise a job to attract those who have an ability, knowledge consistent with the job description and job specification of the job vacancy.

2. **Training and development:** The main responsibility of the training and development division of the human resource department is often an obligation for increasing employees’ skill and enhancing employees’ quality to develop organizational productivity. Likewise, when the organizational structure and strategy change, the result can be laid off, team environment, new job assignment, and change in culture that make human resource department provide orientation for those who have been working within the organization. To clarify training and development, Griffin and Pustay (2015) give a suggestion that human resource manager should assess the training and development that need to the workforce in the host country for helping them to perform their work is efficiency. In addition, Wild et al. (2003) suggest the extent multinational corporation corresponds to absorb the level of culture, cultural training should add in training program for the multinational corporation.

3. **Compensation and benefit:** Human resource department concerns with providing benefit package and pays to all employees in the organization. For organizations where have based in the host country, the human resource department needs to provide a compensation and benefits package which support local environments such as level economic, wage and cultural differences. This is consistent with Griffin and Pustay (2015) explain the compensation and benefits package for multinational corporations that compensation and benefit are provided suitably by considering the local environment such as economic condition, culture, and local law. To define the compensation and benefits package for the multinational corporation, Noe, Hollenbeck, Gerhart, and Wright (2014) suggest compensation for expatriate that human resource department should provide a base salary, tax equalization allowance, benefits and allowances to make a foreign assignment more support.

4. **Employee relation:** This function is the final phase in the scheme of the human resource department. To clarify the employee relation, Decenzo, Robbins, and Verhulst (2013) explain that employee relation concerns with communication among organizational member. The purpose of employee relation is to keep some information
from employees of what problem in the organization and procedures are affecting them. Another purpose of employee relation is to build employees loyalty and commitment toward organization through communication, while employee relation is typically maintained organization value by building accurately communication.

In brief, human resource management is important to achieve the mission and objective of the organization by managing job analysis, HR planning, recruitment, selection, training and development, compensation, performance management and employee relation which are effective HRM to customer satisfaction, innovation, high productivity and more favorable reputation for the organization when all of these processes are managed well.

3.7 Conceptual Framework and Research Hypotheses

**Implementing HoRenSo organizational culture toward subsidiary in the host country.**

According to organizational culture is based on the belief, value, pattern of behavior and hero which make all employees in the organization agree to practice in the same behavior in the organization. For practice in international business, the headquarter requires to maintain the same behavior between home and the host country, the centralization strategy would be required for headquartering in the home country to practice in the host country Furthermore, In Japanese management interested male rather than female in the organization. For this study, first, the researcher investigates the level of HoRenSo organizational culture is differently perceived for male as compared to a female by using independent sample t-test. Base on this assumption, the researcher can formulate the following hypothesis:

**H1:** The level of HoRenSo is different for male as compared to female.

**Is there organizational culture, International human resource management, and commitment related?**

In term of types of organizational culture and commitment, Odom, Boxx, and Dunn (1990) investigated organizational culture, commitment, satisfaction, and cohesion. They separated cultural typology was included bureaucratic, innovative and supportive dimension. They collected the data at officials of highway and transportation organization and also found that the organizational culture is stronger perceived by bureaucratic culture, somewhat innovative and less supportive culture. Moreover, Odom, Boxx, and Dunn (1990) suggest that working group style is positively associated with the norm and strong morale should have greater organization performance. In the same way, the encouraging, trusting, people-oriented are begun to establish stronger level commitment, satisfaction, and cohesion. While innovation and supportive culture reflect employee commitment, satisfaction, and cohesion. Furthermore, Valaei and Rezaei (2016) investigated job satisfaction and organizational commitment in ICT-SMEs, the result shows that communication, payment, promotion, co-worker are only significant with affective commitment. Further, payment, promotion, supervision are significant with normative commitment.

For the study, the impact of human resource practices and organizational commitment, Mosadeghrad et al (2008) found a positive relationship between promotion, fringe benefit and organizational commitment among hospital staff. In the same way, Lemon and Jones (2001) found a positive influence between promotion and employee commitment from working students in the USA. Similarly, Ferres et al. (2004) also found a positive association with a co-worker and affective commitment. Likewise, Valaezi and Rezaei (2016) investigated job
satisfaction and organizational commitment. They found that payment, fringe benefits, supervision, promotion, contingent reward, operating procedures and nature of work have a positive relationship with normative commitment. Likewise, Decenzo, Robbins, and Verhulst (2013) indicate that an employee needs to study and understand the culture of the organization. Hence, the training procedure is important to perceive the level of organizational culture. Therefore, the researcher can formulate the following hypotheses:

**H2a**: HoRenSo organizational culture is positively related with human resource practices.

**H3a**: Human resource practices are positively related to the increased perception of organizational commitment.

**H4a**: Human resource practices are positively related to the increased perception of organization performance.

**H5a**: HoRenSo organizational culture is positively related to the organizational commitment by Thai subordinate.

Is there cultural distance, organizational culture, human resource practices and organization performance related?

Sorndee, Siengthai, and Swiercek (2017) indicate that cultural distance is a factor has important inference for productive performance in international business, while larger cultural distance has been found to affect negatively the organization performance due to misunderstanding and conflict from a larger cultural distance between managers and subordinates. On the contrary, Lin and Germain (1998) investigated in China and the result found that culture similarity with partners is positively associated with performance satisfaction. The researcher can formulate the following hypotheses:

**H6a**: HoRenSo organization culture is positively related to organization performance.

According to the researcher formulates the hypotheses for answering research statement the conceptual framework to explore all hypotheses is shown in picture 1.1:

**Picture 1.1 Conceptual Framework**
4. Research methodology

4.1 Measurement development

This research is conducted by adopting a quantitative research method. The questionnaire was adapted from Valaei and Rezaei (2016), Sitavarin Sutheera (2006) and Nakornthum Chuleekorn (2005). The questionnaire consisted of 45 questions that were used to evaluate individual attitude on human resource practices, HoRenSo organizational culture, organizational commitment, and organizational performance. The design of these questions in the questionnaire addressed the effect of each HoRenSo organizational culture either related to human resource practices in the organization, organizational commitment and organization performance or those are independent. Furthermore, the questions also asked demographic information such as gender, age, education, position, income, and job tenure. In other words, the independent variables are human resources practices in each organization, the mediating variables are HoRenSo organizational culture and the dependent variables are the organizational commitment which is composed of normative commitment, affective commitment and continuance commitment and another dependent variable is organizational performance.

4.2 Sampling process and research design

The study was drawn from Japanese multinational corporations in Thailand. The area was distributed in Bangna-trad road. A total of 384 questionnaire copies were distributed in the area. The respondents must be working in Japanese multinational corporation in Thailand yet. In case of the questionnaire, the questionnaires are translated into Thai language and English version for preventing interpret mistake the questions from Thai employees.

4.3 Data analysis

In this study, all respondents were required to evaluate a questionnaire under 45 questions. The researcher manipulated the questionnaire with a five-point Likert scale. The Likert scale was designed to examine the level perception ranging from 1 strongly disagree to 5 strongly agree for each question (Sekaran and Bougie, 2009).

The study employed a statistical technique to analyze the research objective and research hypotheses such as independent sample T-Test was adopted to evaluate comparing means of gender in order to find the population is a significant difference. Further, Structural Equation Modelling “SEM,” is a multivariate technique to perceive the regression weight of each variable. Prior to running SEM, the researcher prepared Cronbach’s alpha and a correlation matrix to look into possibly risky multicollinearity.

5. Results and Analysis

5.1 Reliability

The questionnaires were distributed to Japanese multinational corporation for 384 copies, the questionnaires were returned to the researcher for only 265 copies. After gathering the data from the pretest questionnaires for 30 copies, the questionnaires were interpreted in a SPSS program by using Cronbach’s Alpha scale. After encoding the data in the program, the result of the reliability testing was shown in the following table 1.2.
Table 1.2 The reliability of the questionnaire for the pilot survey

<table>
<thead>
<tr>
<th>Questionnaire section</th>
<th>Number of pilot</th>
<th>Number of questions</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment</td>
<td>30</td>
<td>3</td>
<td>0.703</td>
</tr>
<tr>
<td>Promotion</td>
<td>30</td>
<td>3</td>
<td>0.847</td>
</tr>
<tr>
<td>Supervisor</td>
<td>30</td>
<td>3</td>
<td>0.920</td>
</tr>
<tr>
<td>Training</td>
<td>30</td>
<td>2</td>
<td>0.840</td>
</tr>
<tr>
<td>Hokoku</td>
<td>30</td>
<td>5</td>
<td>0.882</td>
</tr>
<tr>
<td>Renraku</td>
<td>30</td>
<td>5</td>
<td>0.833</td>
</tr>
<tr>
<td>Sodan</td>
<td>30</td>
<td>5</td>
<td>0.848</td>
</tr>
<tr>
<td>Normative Commitment</td>
<td>30</td>
<td>4</td>
<td>0.872</td>
</tr>
<tr>
<td>Affective Commitment</td>
<td>30</td>
<td>4</td>
<td>0.864</td>
</tr>
<tr>
<td>Continuance</td>
<td>30</td>
<td>4</td>
<td>0.927</td>
</tr>
<tr>
<td>Commitment</td>
<td>30</td>
<td>3</td>
<td>0.839</td>
</tr>
<tr>
<td>Productivity</td>
<td>30</td>
<td>3</td>
<td>0.744</td>
</tr>
<tr>
<td>Customer satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result shows in table 1.2 that all questions in the questionnaire were higher than 0.70 scores. However, there was lower 0.70 score for one variable due to its scale was 0.684. When this item was removed from the analysis, none of the variables appeared to be no reliability, while some of the sub-variables were higher than 0.8 scores, the result can be considered as “good” (Sekaran and Bougie, 2009).

5.2 Descriptive analysis

The majority of respondents represent for a male employee, represented by 158 respondents and 59.6 percent while the female respondents represent of 107 respondents and 40.4 percent. The data of the age of respondents represents that the major group of respondents represents between 36-40 years old while the second range was 31-35 years old, the third range was 26-30 years old, there were only 2 respondents for lower than 20 years old. The education of respondents that the major group of respondents was below a bachelor degree while the second range was bachelor degree, the third rang was master degree. Finally, the minority was a doctoral degree. For the job position, the majority of respondents was the technician while other job position was the second, the third range was the supervisor. Lastly, the minority was the section manager. In the part of income’s respondents, the majority of respondents had income for 10,000-19,999 baht, the second range was 20,000-29,999 baht, the third range was over 50,000 baht, follow by 40,000-49,999 and 30,000-39,999 baht. Finally, the minority was lower 10,000 baht. Finally, the part of job tenure, the data shows that the majority of the group was 10 years and above while the second range was 5 less than 5 years, the third range was 7 less than 10 years, the fourth range was 1 less than 3 years, follows 3 less than 5 years. Finally, the minority was less than 1 year.
Table 1.3 Perception of respondents on HoRenSo

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HoRenSo</td>
<td>3.89</td>
<td>.593</td>
<td>Agree</td>
</tr>
</tbody>
</table>

From the table 1.3, the column shows that the unique aspect of HoRenSo organizational culture was perceived by Thai subordinates in Japanese multinational corporations at 3.89, the result can be interpreted by the researcher that HoRenSo organizational culture has been extended into affiliates in host country yet even though cultural differences.

Table 1.4 Correlation Matrix

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human resource practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HoRenSo</td>
<td>.600**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative Commitment</td>
<td>.520**</td>
<td>.348**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective Commitment</td>
<td>.537**</td>
<td>.560**</td>
<td>.653**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuance Commitment</td>
<td>.347**</td>
<td>.223**</td>
<td>.644**</td>
<td>.584**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productivity</td>
<td>.380**</td>
<td>.354**</td>
<td>.394**</td>
<td>.422**</td>
<td>.394**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>.329**</td>
<td>.421**</td>
<td>.391**</td>
<td>.475**</td>
<td>.380**</td>
<td>.711**</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed)

Prior to running SEM in AMOS, the researcher prepared the correlation matrix in table 1.4 to look for possible sign multicollinearity due to the score is lower than 0.80 or above (Field, 2013). The result shows that none of the relationships was possibly signed multicollinearity.

For testing the first hypothesis, the researcher used the independent sample T-Test technique described the assumption that H1 investigates the level of HoRenSo organizational culture is different for male as compared to female. The result of this hypothesis shows in the table 1.5 as follows.
Table 1.5: The perception of respondents on HoRenSo: Independent Sample T-Test

Levene’s test for equality of variances

<table>
<thead>
<tr>
<th>HoRenso</th>
<th>F</th>
<th>Sig</th>
<th>T</th>
<th>DF</th>
<th>Sig-(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Equal variances assumes</td>
<td>1.141</td>
<td>.286</td>
<td>-2.841</td>
<td>263</td>
<td>.005</td>
</tr>
<tr>
<td>2. Equal variance not assumes</td>
<td></td>
<td></td>
<td>-2.873</td>
<td>236.272</td>
<td>.004</td>
</tr>
</tbody>
</table>

First, the independent sample t-test, the column shows that the null hypothesis of testing was significant at level P-value 0.05, the level of p-value shows .005. Therefore, null hypothesis was rejected and accepted the alternative hypothesis. Finally, the result of the testing hypothesis shows that there was different between men and women in perceiving unique aspect HoRenSo organizational culture among Thai employees in Japanese multinational corporations in Thailand.

Table 1.6 Correlation coefficient between variables in the causal model

<table>
<thead>
<tr>
<th>Human</th>
<th>Team</th>
<th>Commitment</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>0.650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team</td>
<td>0.806***</td>
<td>0.851</td>
<td></td>
</tr>
<tr>
<td>Commitment</td>
<td>0.661***</td>
<td>0.610***</td>
<td>0.763</td>
</tr>
<tr>
<td>Performance</td>
<td>0.501***</td>
<td>0.489***</td>
<td>0.593***</td>
</tr>
</tbody>
</table>

*Level of significant is 0.05

In this stage, structural equation modeling was a suitably statistical tool to investigate the structural relationship among those variables. Prior to running SEM, the researcher also checked the correlation coefficient between variables in table 1.6. The result shows that the correlation coefficient in the causal model was in a moderate level.

Table 1.7 Model fit measure for male (N =158)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Estimate</th>
<th>Threshold</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMIN/DF</td>
<td>2.533</td>
<td>Between 1 to 3</td>
<td>Excellent</td>
</tr>
<tr>
<td>CFI</td>
<td>0.940</td>
<td>&gt;0.95</td>
<td>Acceptable</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.065</td>
<td>&lt;0.08</td>
<td>Excellent</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.054</td>
<td>&lt;0.06</td>
<td>Excellent</td>
</tr>
<tr>
<td>PClose</td>
<td>0.178</td>
<td>&gt;0.05</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

According to the data for the testing model fit measure in Table 1.7, the result showed that the chi-square value was 334.326 with the degree of freedom at 132. Furthermore, based on CMIN/DF of 2.533 and CFI of 0.940, it can be interpreted excellent and acceptable while the value of SRMR was 0.065, it can be determined that excellent. While RMSEA was 0.054 and PClose of 0.178, Both values can be interpreted excellent.
Table 1.8 Model fit measure for female (N = 107)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Estimate</th>
<th>Threshold</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMIN/DF</td>
<td>2.490</td>
<td>Between 1 to 3</td>
<td>Excellent</td>
</tr>
<tr>
<td>CFI</td>
<td>0.941</td>
<td>&gt;0.95</td>
<td>Acceptable</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.076</td>
<td>&lt;0.08</td>
<td>Excellent</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.053</td>
<td>&lt;0.06</td>
<td>Excellent</td>
</tr>
<tr>
<td>PClose</td>
<td>0.224</td>
<td>&gt;0.05</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

From Table 1.8, the result shows that the chi-square value was 336.178 with the degrees of freedom at 135. Furthermore, CMIN/DF of 2.490 and CFI of 0.941, it can be interpreted excellent and acceptable while the value of SRMR of 0.076, it can be determined that excellent. While RMSEA of 0.053 and PClose of 0.224, Both values can be interpreted excellent. Both male and female modeling were reasonably well fitted.

Picture1.2: Structural equation model--the impact of perceived organizational culture for male
Second, **H2 HoRenSo** organizational culture was positively related with human resource practices were accepted both male and female. For male, the variable of **HoRenSo** organizational culture in Japanese multinational corporations in Thailand was positively related to human resource practices of 0.84 for male and 0.96 for female respectively. Third, **H3** human resource practices were positively related to the increased perception of organizational commitment for a female of 0.04 and 0.55 of male. Therefore, the third hypothesis was accepted for a male but rejected for female.

Fourth, **H4** human resource practices were positively related to the increased perception of organization performance. The results indicate that there was indirect effect between **HoRenSo** organizational culture and organizational commitment of 0.60 and 0.51 of female and human resource practices were not positively related on organization performance whereas organization performance was indirect effect between **HoRenSo** organizational culture, human resource practices and organizational commitment of 0.84, 0.55 and 0.34 of male respectively. The results indicate that the perceived organization performance was actually different between male and female.
To test mode of HoRenSo organizational culture is related between organizational commitment and organization performance. Fifth, H5 HoRenSo organizational culture was positively related to the organizational commitment by Thai subordinate for male of 0.18 and 0.60 of female. The fifth hypothesis was rejected for a male but accepted for a female. Lastly, H6 HoRenSo organizational culture was positively related to organization performance for a male of 0.36 but 0.16 of the female. Interestingly, organization performance was perceived indirect effect by HoRenSo organizational culture toward Human resource practices and organizational commitment of 0.84, 0.55 and 0.34 of the male. Likewise, organization performance was perceived indirect effect on HoRenSo organizational culture and organizational commitment of 0.60 and 0.51 for female. Moreover, affective commitment was perceived as the highest in all types of organizational commitment for both male and female. Finally, the sixth hypothesis was accepted for a male but rejected for a female in case of direct effect.

6. Discussion and contributions

The research in international business is suggested by many researchers and academician mention exploration to study culture differences operating aboard. The object of study is to eliminate the liability of foreignness from aboard due to unfamiliarity with a foreign country and culture difference, especially organizational culture. Regarding this study investigates the impact of perceived HoRenSo organizational culture by subordinates in Japanese multinational corporations in Thailand. With the assumption of researcher mention that Thai business culture dislikes to the belonging group and avoid showing some opinions when they are operating over a project. In the same way, Thai business culture is seniority based on system (Rupavijetra Phetcharee, 2011) On the contrary, Wolf (2013) mentions Japanese business integrates “group” which is a preferable atmosphere for them. Moreover, Swierczek and Onishi (2003) refer to Geert Hofstede who highlight possibly conflict cultural difference between Thai and Japanese culture. According to his exploration, there is quite a gap in the masculinity dimension. Consequently, this research aims to investigate organizational commitment and organization performance by collecting the data in the Japanese multinational corporation in Thailand.

According to the research finding, there are both practical and theoretical from emerging the research finding. The finding of this research is interesting in term of both male and female perceived differently regarding organizational culture toward organizational commitment and organization performance.

In term of human resource practices, the result is interesting because there are enforced by HoRenSo organizational culture both male and female. Hence, they would be a participant over the project by holding group and also maintain communication within a group which is the indeed main behavior from headquarter requiring. Both of gender require more training while they are working over a project and provide more training for new staff to absorb grouping. Furthermore, the supervisor should have communication skill by focusing on HoRenSo perspective responsibility while they are dealing with their project and their subordinates. Opening the subordinates report and give a consult to them without unbiased is a mainly important supervisor behavior.

Additionally, Human resource practices are positively related to the increased perception of organizational commitment for a male but except female. Consistent with Swierczek and Onishi (2003) indicate that Japanese business culture is higher masculinity scale than Thai business culture and really majority respondents are male. While they point out that Thai subordinates appreciate dealing by implementing consensus decision-making style. In the same
Rupavijetra Phetcharee (2011) mentions that high masculinity can determine a stressful achievement and result. Moreover, Odom, Boxx, and Dunn indicate that supportive culture exhibits a people-oriented, friendly and teamwork seemed to develop commitment which is consistent with the result of this research. To solve the lacking commitment, HoRenSo is suitably adopted in Thai organization. Human resource department should focus on training in cross cultural management and more training in a group to all subordinates in the organization due to grouping atmosphere is an acceptably pleasant environment. It spreads to all subsidiary in worldwide.

To develop manage human resource practices and organization performance, Human resource practices is positively related to the increased perception of organization performance. There perceived differently between both of them. According to male, organization performance is perceived in case of the indirect effect on HoRenSo organizational culture toward human resource practices as training is the most characteristic for them. Next, organizational commitment is a direct effect toward organization performance. Furthermore, affective commitment is the highest perceived for them. While the result was not consistent with Sorndee, Siengthai and Swierczek (2017) argued that large culture distance has been found a negative effect on organization performance. In contrast, Swierczek and Onishi (2003) also support this finding as Thai subordinates and human resource system can adapt to Japanese management style.

For developing organization performance in case of female. The organization should focus on HoRenSo rather than human resource system due to the statement of Swierczek and Onishi (2003), who explain the cultural difference in case of masculinity has a higher value than femininity. Consistent with the result that human resource practices have a little direct effect on organizational commitment of 0.04. While Chin (2014) supports the finding that harmony can increase affective commitment. In the same way, Odom, Boxx, and Dunn (1990) support this finding that supportive culture influence on organizational commitment. Therefore, the organization exhibits group-oriented as HoRenSo in the mainly pleasant female subordinates in the organization to enhance affective commitment.

Another contribution of this study also examines HoRenSo organizational culture is positively related to the organizational commitment by Thai subordinate. The result shows that HoRenSo organizational culture was not a direct effect on the organizational commitment for male while there is direct effect among HoRenSo organizational culture and organizational commitment for female. Furthermore, both genders perceived the highest weight in affective commitment. Therefore, the result is actually consistent with Valaei and Rezaei, who found that promotion, payment, co-worker and communication are positively related to affective commitment. Moreover, the male is also perceived by human resource practices toward organizational commitment. The organization considers both promotion and payment in order to maintain intention and increase affective commitment similar to what perceiving for female.

Interestingly, this study explores HoRenSo organizational culture is positively related to organization performance. This exploration found that both genders perceived differently organization performance. For a male, organization performance was perceived both direct and indirect effect. For direct effect HoRenSo organizational culture influences on organization performance. For indirect effect, organization performance is an indirect effect by HoRenSo organizational culture toward human resource practices and direct to organizational commitment in case of affective commitment. In the same time, customer satisfaction is the highest perceived in organization performance.
For a female, they perceived organization performance only for indirect effect on HoRenSo organizational culture toward organizational commitment. Likewise, productivity is the highest value in organization performance. Finally, the increased organization performance which exhibits eliminated waste and enhances revisit rate from customers. The organization considers adapting HoRenSo implements in the organization due to this practice is a pleasant atmosphere for Thai subordinates. Consistent with indicate that Thai subordinates become adaptation to be Japanese manager, preferring more team oriented.

Lastly, team-oriented is a pleasant atmosphere for Thai business culture. The manager in both local and international corporations should propose group-oriented into the training division of the human resource system and announce the importance of HoRenSo by launching intranet of the organization to let all subordinates adsorb the unique aspect of HoRenSo. Furthermore, calling the manager to open and accept an inductive process to deal with the subordinates due to group-oriented helps them to enhance commitment toward organization especially affective commitment. Finally, the problem regarding the high turnover rate is propensity and boost up affective commitment in order to develop organization performance in global competition.

7. Conclusion and Limitations

The current research has been explored to develop a new causal model to describe the impact of perceived organizational culture on organizational commitment and organization performance in Japanese multinational corporation in Thailand by Thai subordinates who are operating at there yet. Specially, this study is formulated by proposing HoRenSo which is a preferable atmosphere of Japanese management to investigate at subsidiaries in Thailand. Interestingly, the result of this research between male and female is differently perceived on organizational commitment and organization performance. For a male, HoRenSo organizational culture is indirect effect on organizational commitment and organization performance. Supervisor variable of human resource practices is the highest influenced for male subordinate while affective commitment is interesting to maintain for them. Likewise, female subordinates perceive directly organizational commitment and organization performance by HoRenSo organizational culture. Interestingly, affective commitment appears for them. HoRenSo is a pleasant atmosphere to be mainly accepted their behavior when they all have been operating over projects.

In the causal model cannot be assumed that HoRenSo is a mediating variable which leads to organizational commitment and organization performance due to the model is not fitted. The other variables are composed of the type of leadership, harmony can be determined by the mediating variable. The period of collecting data is for 3 weeks which leads to getting the questionnaire is not an achievement, respondents have not time to fill in the questionnaire, Then, the answer in the questionnaire is not reasonably well. Therefore, future research can be considered as harmony and types of leadership. Furthermore, many companies are in an industrial estate. Next, research needs to collect the data in an industrial estate. Lastly, future research needs to design the objective of this research by comparing more than one national such as the Western companies establish in Thailand because the Western company maintains individualism and low power distance from studying of Geert Hofstede.
8. Reference


__________ (n.d.). Promotion. Retrieved October 1,2018, from Human resource Website: https://www.hr.admin.cam.ac.uk/hr-staff/information-staff/staff-guide/terms-employment/promotion


_________. (n.d.). *Classification of general staff positions*. Retrieved October 1, 2018, from The university of Western Australia Website: http://www.hr.uwa.edu.au/policies/policies/reclassification/classification#two


Wolf, R. (2013). Management relations in the work culture in Japan as compared to that of the West. *Innovative journal of business and management, 2*(5) 116-122.
Factors Driving Corporate Sustainability in Small Businesses: A Leadership Perspective

Suparak Suriyankietkaew
College of Management
Mahidol University,
suparak.sur@mahidol.ac.th

Abstract

Enterprises are currently forced to rethink their business-as-usual management and shift toward corporate sustainability. Worldwide, scholars assert that it takes strategic leadership and management to successfully drive corporate success and sustainability in firms. However, identifying strategic leadership and management factors that drive corporate success and sustainability is limited to date. In particular, the literature calls for further leadership and management studies in small business and SMEs since they are the economic backbone in most nations worldwide. The paper responds to a crucial quest for many leaders and entrepreneurs, specifically small business owners, has become finding what they can do to increase long-term performance, enhance stakeholder satisfaction and drive corporate sustainability. And, to bridge the research gaps and advance our limited knowledge, this paper empirically examines which strategic leadership and management factors significantly and positively drive superior corporate performance and sustainability in small businesses. Using a convenience sampling, data were collected on a voluntary basis from a sample of 280 business leaders and/or entrepreneurs of small enterprises across service and trading sectors in Thailand. An exploratory factor analysis (EFA) identified seven valid and reliable leadership and management factors derived from a sustainable leadership framework and the literature as new constructs in small Thai businesses. These factors are predicted to enhance long-term performance and stakeholder satisfaction, thereby contributing to corporate sustainability within the context of small enterprises. Results from multiple regressions reveal two significant leadership and management factors or predictors (i.e. trusting, innovative team orientation and strong, shared vision) of enhanced financial performance and stakeholder satisfaction, thus contributing to corporate sustainability. Other leadership and management factors examined did not contribute significantly to either dependent variable, namely: empowerment, high quality, long-term consideration, change management, and ethics. Possible explanations are provided. Implications and future directions are discussed later.

Keywords: leadership; sustainability; performance; entrepreneurship; small business; Thailand
The Effect of Transformational Leadership, Job Satisfaction, and Job Embeddedness towards Organizational Citizenship Behavior in Indonesia:
A case study in Shane English School, Indonesia

Wylen Djap
Pelita Harapan University
Wylen230499@gmail.com

Innocentius Bernarto
Pelita Harapan University
Bernarto227@gmail.com

Niko Sudibjo
Pelita Harapan University
Niko.sudibjo@uph.edu

Abstract

This paper examines the effect of transformational leadership, job satisfaction, and job embeddedness on organizational citizenship behavior. Organizational citizenship behavior can lead to positive attitudes of employees. This is evident in a research carried out in 12 Shane English School campuses across four provinces in Indonesia which shows that employees are willing to assist their colleagues so that a collective organization goal could be achieved. This research uses census data collection as a means to gather data. The data were analyzed by partial least square-structural equation modeling (PLS-SEM) to test all the hypotheses. The entire population of the research, 51 staff and teachers, has claimed that there are positive effects from job satisfaction, transformational leadership and job embeddedness towards organizational citizenship behavior. This paper will also offer concepts into the practical implications of organizational citizenship behavior as well as the limitation and future directions for future research.

Keywords: transformational leadership, job satisfaction, job embeddedness, organizational citizenship behavior.
The Impact of Entrepreneurial Framework Conditions Towards Entrepreneurial Capacity and Opportunity: A Case Study of SMEs in Thailand

Suphakit Limlertratana
Bangkok University
suphakit.l@bu.ac.th

Sasirin Sayasonti
Bangkok University
sasirin@seiwa-sppc.co.th

Suchart Tripopsakul
Bangkok University
suchart.t@bu.ac.th

Panupong Pituksung
Bangkok University
panupong.p@bu.ac.th

Abstract

The purpose of this research is to examine the impact of entrepreneurial framework conditions (finance, government policies, government programs, education and training, research and development transfer, commercial and service infrastructure, market openness, physical infrastructure, and culture and social norm) to entrepreneurial capacity associated with entrepreneurial opportunity. A total of 210 entrepreneurs were used as the sample in this study. A self-administered questionnaire and purposive sampling methods were developed to collect the data from Thai SMEs. Multiple regression was used to analyze the quantitative data. Results showed that market openness, physical infrastructure, and cultural and social norm were significant factors in predicting entrepreneurial capacity. Additionally, the results also indicated that the capacity of entrepreneur associated with entrepreneurial opportunity to start a business. The implication of this study is that in order to increase the capacity to start a new business of Thai SMEs, the government is need to develop market openness, physical infrastructure and communicate entrepreneurial culture to support Thai SMEs to enhance entrepreneurial capacity and entrepreneurial opportunity to start a business.

Keywords: entrepreneurial framework conditions, entrepreneurial capacity, entrepreneurial opportunity, SMEs
Difficulties in Selling Unsellable Goods: Current Challenges in the Japanese Game Meat Trade

Yukichika Kawata
Kindai University
ykawata@kindai.ac.jp

Abstract

The purpose of this study is to exemplify a way to improve demand for unsellable products. We select Japanese game meat as an example. Before the examination, we provide the reasons why demand needs to be increased for game meat and show that a promising way to accomplish this is to increase consumers’ willingness to pay for game meat. To do so, we propose the creation of game meat certifications and brands. We examine the roles of these tools and point out the possibility of suffering from lemon market issues at two stages. Because the quality of game meat differs more than livestock meat, it is sensible for a company to create a brand to distinguish its products, which may otherwise suffer from the first type of lemon market issues. Creation of a regional brand may enhance demand for game meat of the area. However, if a company does not sufficiently distinguish its products from other regional game meat, it may face the second type of lemon market issues.

Keywords: unsellable goods, game meat, brand, certification
1. Introduction

It is sometimes necessary to sell or utilize goods that are in excess supply (Vogliano and Brown, 2016; Garcia-Herrero et al., 2018). One such example is Japanese game meat. Currently, demand for game meat is limited; although no accurate estimate exists, it is believed that less than 10% of hunted deer and wild boar is utilized and the remainder is discarded. The purpose of this study is to examine a promising solution for reducing the amount of unsellable goods using Japanese game meat as an example.

We briefly examine the background behind unsatisfactory game meat consumption in Japan. The primary reason that local people in rural areas in Japan have promoted selling game meat is to sustain human hunting activities through the utilization of hunted carcasses. Otherwise, the population of game animals may continue to increase, exacerbating issues such as agricultural and forestry damage and incidences of game animals colliding with cars and trains (Kawata, 2014).

There are two components that have brought about the current increase in game animals in Japan. One is the absence of natural predators. Among large carnivores, wolves were exterminated more than 100 years ago (Knight, 2003); wild dogs can be effective predators but are small in number (Kawata, 2012); and, although bears may consume deer and wild boar carcasses, there is little evidence that they attack living deer or wild boar (Kawata, 2012). The other component is decreased human hunting pressure due to an aging and declining number of hunters over the past half century (Ministry of the Environment, 2015).

There are two potential solutions to cope with this situation. One is the reintroduction of natural predators and the other is an increase in human hunting pressure. Kawata and Watanabe (2012) examine these two possibilities and conclude that, after considering the risks accompanying the reintroduction of large carnivores, Japanese people prefer an increase in human hunting pressure. An increase in game meat consumption could contribute to sustaining hunters and their hunting activities.

However, most game meat is currently unsellable in Japan. Following centuries of Buddhist influence, the Japanese ostensibly avoided eating meat, although some people continued consuming it (Sakata, 2010). Additionally, traditional Japanese society encouraged farming and ranching rather than hunting. Under the influence of these traditions, Japanese people do not currently use game meat, despite consuming meat from domestic animals. With these points in mind, we examine the most feasible and effective ways of boosting demand for game meat to ensure income for hunters. Of specific interest are the methods of applying brands and certifications to increase consumers’ buying motivation.

We selected the wild boar (Sus scrofa) and Japanese sika deer (Cervus nippon) as species of our investigations. This is because they are currently categorized as game species and they are the most popular game meats in Japan.
2. Materials and Methods

2.1. Comparison with the results of the price sensitivity measurement analysis (sika deer)

Real sika deer meat prices are compared with the acceptable price provided in an existing study that applies the price sensitivity measurement (PSM) analysis (Van Westendorp, 1976). Several prices and price ranges are usually detected in the PSM analysis based on the following four questions:

Q1) At what price would you find product A to be a bargain?
Q2) At what price would you find product A to be expensive?
Q3) At what price would you find product A to be too cheap to sustain the quality of the product?
Q4) At what price would you find product A to be too expensive?

In the analysis, responses from the subjects are placed in decreasing order (Q1 and Q3) and increasing order (Q2 and Q4) and are connected with a line. The intersection of the lines for Q1 and Q2, Q2 and Q3, Q3 and Q4, and Q4 and Q1 are referred to as the indifference price point (IPP), point of marginal cheapness (PMC), optimal price point (OPP), and point of marginal expensiveness (PME), respectively.

To examine whether the current market prices for deer meats are reasonable, we compare real prices with the results of the PSM analysis conducted in the existing study. Kawata (2016) provides the results of PSM analyses under different assumptions (Table 1). The prices for PMC, OPP, IPP, and PME per 100 g are 100–150 JPY, 109–200 JPY, 150–200 JPY, and 200–250 JPY, respectively. Because current real prices of sika deer are normally higher than the PME, we check how much higher the percentage of real prices is than the PME (i.e., 250 yen / 100 g).

![Table 1. Results of the PSM analysis (Unit: yen)]

<table>
<thead>
<tr>
<th>Analysis</th>
<th>PMC</th>
<th>OPP</th>
<th>IPP</th>
<th>PME</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (guideline) Yes</td>
<td>120</td>
<td>185</td>
<td>200</td>
<td>200</td>
<td>572</td>
</tr>
<tr>
<td>No</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>316</td>
</tr>
<tr>
<td>2 (experience) Yes</td>
<td>138</td>
<td>189</td>
<td>200</td>
<td>250</td>
<td>239</td>
</tr>
<tr>
<td>No</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>649</td>
</tr>
<tr>
<td>3 (knowledge) Yes</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>785</td>
</tr>
<tr>
<td>No</td>
<td>100</td>
<td>109</td>
<td>150</td>
<td>200</td>
<td>103</td>
</tr>
</tbody>
</table>

Note: Original samples were categorized into two groups using criterion 1 (external circumstances; existence of a hygiene control guideline for wild meat in the subject’s prefecture) in analysis 1, criterion 2 (personal experiment; subject’s experience of sika deer meat consumption) in analysis 2, and criterion 3 (personal knowledge; subject’s knowledge concerning damages caused by sika deer) in analysis 3.

2.2. Comparison with the pork market price (wild boar)

Because the wild boar is considered the ancestor of the domestic pig (Sus scrofa domesticus), we use the average market price of the domestic pig when checking the wild boar price level.
It may be reasonable to regard the wild boar price as high if it is more than double the pork price.

Because we gathered wild boar price data on January 2019, as explained in the next subsection, we checked the pig price as of January 2019 (Table 2). We also checked past prices. The pork loin price level has been stable around 250 yen / 100 g with a slight growing trend. We therefore adopt 528 yen / 100 g as double the pork price.

<table>
<thead>
<tr>
<th>Year / Month</th>
<th>2019.01</th>
<th>2015.01</th>
<th>2014.01</th>
<th>2013.01</th>
<th>2012.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>264</td>
<td>264</td>
<td>243</td>
<td>240</td>
<td>245</td>
</tr>
</tbody>
</table>

Source: MAFF (2019a)

2.3. Price data

We gathered the meat prices of wild boar and sika deer by browsing websites in January 2019. We obtained 107 and 246 price data for wild boar and sika deer, respectively. When gathering data, we distinguished the following parts based on the cut charts provided by the Ministry of Agriculture, Forestry and Fisheries (2019b): neck, clod, loin, rib, round, shin, shank, and others (such as not specified or a mixture of parts) (Figure 1). We transformed the crude price data (e.g., per 1.3 kg) into price per 100 g.

3. Results

3.1. Current status of carcass utilization

In this section, we estimate the total weight of the annual deer meat provision and per capita consumption. Note that we mainly provide the results for deer meat.

The number of sika deer and wild boar harvested are provided by the Ministry of the Environment (2018). The latest statistics indicate that the total harvest of sika deer and wild boar is an average of 582,150 and 570,900 heads, respectively (Table 3).
<table>
<thead>
<tr>
<th>Year</th>
<th>Sika deer</th>
<th></th>
<th>Wild boar</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hunt</td>
<td>Others</td>
<td>Sum</td>
<td>Hunt</td>
</tr>
<tr>
<td>2017</td>
<td>149,800</td>
<td>439,900</td>
<td>589,700</td>
<td>130,400</td>
</tr>
<tr>
<td>2016</td>
<td>156,500</td>
<td>418,100</td>
<td>574,600</td>
<td>147,400</td>
</tr>
</tbody>
</table>

Note: Rounded off to the hundreds. “Others” includes control kills.

The percentage of sika deer utilization is around 10%, based on existing literature. For example, MAFF (2015) states that about 10% of hunted birds and beasts are utilized as meat, based on its questionnaire for 30 Japanese municipalities. In the case of Hokkaido sika deer (*Cervus nippon yesoensis*), 13–14% of hunted bodies are utilized as meat (Hokkaido, 2011; MAFF, 2011; Ishijima, 2014). When considering that Hokkaido is the most advanced area in utilizing game meat, we may guess that around 10% of harvested bodies are utilized.

The percentage of yield from harvested sika deer bodies is around 43%. Hokkaido (2011) provides an estimation of the total weight and total amount of meat of harvested sika deer for the hunters’ self-consumption and suppliers’ utilization, respectively: 1) total weight and meat are 3,544 tons and 1,506 tons and 2) total weight and meat are 818 tons and 352 tons. By dividing the meat weight by total weight, we have 42.5% and 43.0% as the percentage of yield.

Hokkaido (2011) implicitly supposes the weight of Hokkaido sika deer at 60 kg. Sika deer in Japan follow Bergmann's rule—the tendency that the body size of the same species decreases with the latitude (Bergmann, 1847; Freckleton, Harvey, and Pagel, 2003). Hence, we assume the average sika deer weight in areas other than Hokkaido to be 35 kg. The number of Hokkaido sika deer harvested between 2011 and 2017 was approximately 132,064 heads (Hokkaido, 2017).

Based on these values and assumptions, we estimate the total deer meat provision as follows.

Hokkaido sika deer:

\[
130,000 \text{ heads } \times 60 \text{ kg/head } \times 10\% \times 43\% = 335,400 \text{ kg}
\]

Sika deer other than Hokkaido:

\[
450,000 \text{ heads } \times 35 \text{ kg/head } \times 10\% \times 43\% = 677,250 \text{ kg}
\]

Therefore, the total provision of sika deer meat is about 1,013 tons (335,400 kg + 677,250 kg). The total provision of domestic beef, pork, and chicken in 2017 (tentative figures) was 470,000 tons, 1,270,000 tons, and 1,580,000 tons, respectively (Agriculture & Livestock Industries Corporation, 2019). It is obvious that the current sika deer meat provision is substantially lower than those of domestic beef, pork, and chicken.

Currently, sika meat seems to be mainly utilized by hunters. According to the Ministry of the Environment (2019), the total number of hunters between 2011 and 2015 was approximately 189,660. By dividing the total provision of sika deer meat by the total number of hunters, we estimate that the amount of deer meat per hunter is 0.53 kg/year. Note that the total number of hunters includes both non-active hunters and those who hunt game species other than deer.

We also calculate per capita consumption by dividing the total provision of sika deer meat by the Japanese population as of 2017 (126.71 million; MIAC, 2018), which is 8.0 g. Reinken (1998) finds that the annual consumption of deer meat is 19 g for the EU and 14 g for European.
countries. It follows that Japanese citizens consume nearly the half of the amount of deer meat that Europeans consume.

We do not provide calculations for wild boar in this study because of some limitations. We observe the tendency that people prefer wild boar meat to that of sika deer because wild boar meat contains fat and tastes similar to pork, whereas sika meat is lean, which is not familiar for most Japanese citizens. In other words, wild boar meat is more marketable than sika deer meat.

3.2. Unit price of deer and wild boar meat

We suspect that one of the main obstacles to increasing game meat consumption is its high price: current prices can be often higher than the acceptable price range. To confirm this possibility, we gathered 246 sika deer meat price data and compared them with the price range provided in the existing PME study. Here, we set the PME at 250 yen / 100 g. The results are tabulated in Table 4 and Figure 2. On average, 67.5% of deer prices are higher than 250 yen.

We also gathered 107 wild boar meat price data and compared them with the average pork loin price doubled (528 yen / 100 g). The results are tabulated in Table 5 and Figure 3. On average, 86.0% of wild boar prices are higher than 528 yen.

Table 4. Results of sika deer

<table>
<thead>
<tr>
<th>Part</th>
<th>N</th>
<th>Average unit price (yen / 100 g)</th>
<th>Maximum / minimum price (yen / 100 g)</th>
<th>&gt; PME (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>neck</td>
<td>2</td>
<td>102</td>
<td>98 / 106</td>
<td>0.0%</td>
</tr>
<tr>
<td>clod</td>
<td>13</td>
<td>292</td>
<td>120 / 698</td>
<td>69.2%</td>
</tr>
<tr>
<td>loin</td>
<td>68</td>
<td>499</td>
<td>220 / 1,283</td>
<td>98.5%</td>
</tr>
<tr>
<td>rib</td>
<td>23</td>
<td>266</td>
<td>180 / 486</td>
<td>65.2%</td>
</tr>
<tr>
<td>round</td>
<td>79</td>
<td>346</td>
<td>150 / 780</td>
<td>68.4%</td>
</tr>
<tr>
<td>shin</td>
<td>6</td>
<td>199</td>
<td>180 / 247</td>
<td>0.0%</td>
</tr>
<tr>
<td>Shank</td>
<td>17</td>
<td>206</td>
<td>100 / 398</td>
<td>29.4%</td>
</tr>
<tr>
<td>others</td>
<td>38</td>
<td>349</td>
<td>130 / 1,080</td>
<td>42.1%</td>
</tr>
<tr>
<td>Total</td>
<td>246</td>
<td></td>
<td></td>
<td>67.5%</td>
</tr>
</tbody>
</table>

Note: PME is set at 250 yen / 100 g.

Table 5. Results of wild boar

<table>
<thead>
<tr>
<th>Part</th>
<th>N</th>
<th>Average unit price (yen / 100 g)</th>
<th>Maximum / minimum price (yen / 100 g)</th>
<th>&gt; 528 yen / 100 g (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>neck</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clod</td>
<td>1</td>
<td>760</td>
<td>760 / 760</td>
<td>100%</td>
</tr>
<tr>
<td>loin</td>
<td>27</td>
<td>1,093</td>
<td>653 / 3,267</td>
<td>100%</td>
</tr>
<tr>
<td>rib</td>
<td>8</td>
<td>970</td>
<td>642 / 1,620</td>
<td>100%</td>
</tr>
<tr>
<td>round</td>
<td>17</td>
<td>766</td>
<td>573 / 1,566</td>
<td>100%</td>
</tr>
<tr>
<td>shin</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shank</td>
<td>1</td>
<td>551</td>
<td>551 / 551</td>
<td>100%</td>
</tr>
<tr>
<td>others</td>
<td>53</td>
<td></td>
<td>238 / 2,232</td>
<td>71.7%</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td>826</td>
<td></td>
<td>86.0%</td>
</tr>
</tbody>
</table>
4. Discussions

4.1. Three options to increase game meat consumption

In the previous section, we showed the following. First, demand for game meat is low. We estimated that the annual sika deer meat provision was 1,013 tons, which is 0.2% of beef’s, 0.08% of pork’s, and 0.06% of chicken’s domestic production. We also showed that the deer meat provision for Japanese citizens is nearly half that for Europeans. Second, we demonstrated that the prices of both sika deer and wild boar are high compared to the PME (i.e., 250 yen / 100 g) and the average pork loin price doubled (i.e., 528 yen / 100 g), respectively. On average,
67.5% and 86.0% of sika deer and wild boar prices are higher than the reference values. In short, we showed there is a mismatch between game meat provision and its demand, thus requiring an increase in game meat consumption.

There are several potential ways to increase game meat consumption. The first involves explaining game animal issues such as agricultural and forestry damage to citizens and asking them to increase their game meat consumption. This method’s feasibility has already been examined by Kawata (2016) through a university classroom experiment. The result was affirmative, although the subjects were limited to students studying at a region incurring serious damages caused by deer.

A second option involves the reduction of game meat prices. However, this solution may not be feasible because there is little room for decreasing production costs: game meat processing costs are so high that any reduction in price will not allow for recovering these costs. The main reasons for high game meat processing costs are as follows. First, game animals are wild and less suitable as a source of table meat than livestock, whose meat productivity has improved through breeding. Second, there is higher uncertainty in the acquisition of game carcasses when compared to livestock carcasses because the former depends on hunting, whereas the latter depends on production at livestock farms. Third, game meat processing requires more workers per unit (e.g., per one ton of carcasses); in addition, the necessary staff number fluctuates depending on the number of hunted bodies. The number of livestock carcasses can be stable throughout the year but game carcasses are mainly available only during hunting season and the number may fluctuate daily.

A third solution may be to increase citizens’ willingness to pay (WTP) for game meat using brands and certifications. In the next subsection, we examine this third solution.

4.2. How to increase citizens’ WTP for game meat

Normally, table meat sold in markets should satisfy minimum requirements set by an authority. Similarly, minimum requirements such as hygiene level should be assured and clearly shown on game meat packaging through a certification. This is the necessary condition for selling game meat.

Livestock meat that satisfies the minimum requirements may be sold with a simple label showing the type of meat (e.g., beef, pork, or chicken; Figure 4, left upper illustration). However, it is often the case that meat suppliers differentiate their products through branding. For example, swine can be classified as landrace, Large White (Large Yorkshire), Duroc, or a crossbreeding of the three types (known as LWD). Each abattoir further classifies their swine into subtypes, which is normally referred to as branding. For example, Berkshire’s meat in some regions may be called Kurobuta pork or black pig pork (Figure 4, left middle illustration). When selling, some suppliers may differentiate their product through their company labels (Figure 4, left bottom illustration). Table 6 shows examples of differentiation through animal type, regional brand, and company brand.

The quality of livestock meat can be more consistent than that of game meat. To demonstrate this, we compared swine and wild boar in Table 7. Whereas “parents,” “diseases,” and “feed” of swine are artificially controlled to produce uniform products, those of game animals are not controlled by humans. On the other hand, the slaughtering and hunting processes of game animals are much more influenced by humans, resulting in a difference of quality. When
considering these facts, we may say that livestock meat is far closer to industrial goods than wild meat.

As discussed, game meat quality lacks consistency: it depends on individual characteristics and hunters’ skills, among other factors. Because of this difference between livestock and game animals, we may infer that the creation of a regional brand, which helps differentiate livestock, is not enough for game meat (Figure 4, right middle illustration). For the sake of simplicity, we suppose that the game hunter and game meat seller is the same person at each company. Because the quality of game meat depends on each company, if they do not differentiate their products through a company brand, they may face a lemon market issue (Akerlof, 1970).

Here, we briefly overview the lemon market issue in the context of game meat. There are some factors that differentiate game meat quality. For example, the pressure that game animals incur during hunting can vary and result in differences in carcass quality. Skillful hunters may lessen this issue but the acquisition of skillful hunters or training to become a skillful hunter may cost more. Furthermore, it is reasonable to suppose that game meat quality may be higher if carcasses are treated with higher levels of care, although this also costs more. Therefore, when considering the cost associated with providing higher quality meat, its prices must also be higher. If abattoirs do not describe and distinguish their products, consumers will buy cheaper products. This phenomenon is often referred to as a lemon market. Brand creation can be used to avoid this issue. In other words, the creation of a company brand can be a sufficient condition for selling game meat at a fair price (Figure 4, right bottom illustration).

### Table 6. Examples of animal types, regional brands, and company brands

<table>
<thead>
<tr>
<th>Animal type</th>
<th>Livestock (swine)</th>
<th>Wild boar</th>
<th>Deer</th>
</tr>
</thead>
</table>
|                    | ý Landrace        | ý Japanese wild boar<  
|                    | ý Large White     | ý Ryukyu wild boar<  
|                    | ý Duroc           | ý Sus scrofa riukiuanus<  
|                    | ý Berkshire       | ý Crossbreeding of wild<  
|                    | ý Crossbred pig (LWD) | boar and swine<  
|                    |                   | (Inobuta)                  |
| Regional brand     | ý Black Berkshire | ý Town B’s wild boar<  
| (Kurobuta)         |                   | ý City D’s sika deer<  
| Company brand      | ý Farm A’s Kurobuta<  
|                    |                   | ý Company C’s wild boar<  
|                    |                   | ý Hunting club E’s venison<  |

### Table 7. Comparison of factors that may influence meat quality of livestock and game animals

<table>
<thead>
<tr>
<th></th>
<th>Swine</th>
<th>Wild boar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>Limited because of selection based on genetic traits, etc.</td>
<td>&lt; No artificial limitations.</td>
</tr>
<tr>
<td>Diseases</td>
<td>Prevented through vaccination. When infected, eradicated if necessary.</td>
<td>&lt; No artificial interventions.</td>
</tr>
<tr>
<td>Feed</td>
<td>Artificial diets may be used. Some regional brands may restrict the quality / ingredients of feed.</td>
<td>&lt; No artificial interventions. Because a wild boar is an omnivorous animal, diet may depend on the individual and its living environment.</td>
</tr>
<tr>
<td>Slaughter process</td>
<td>Swine</td>
<td>Wild boar</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| Slaughtered at the same place using the same methods. | | 1) If chased before shot, an elevation of body temperature may decrease meat quality. 
2) Initial treatment after hunting such as the blood extraction technique depends on hunters, resulting in differences in meat quality. 
3) Game meat quality may also depend on the distance from the hunting ground. Because some meat production processes are not allowed to be performed on the hunting ground and hunters must carry hunted bodies to a facility that satisfies legal requirements, the meat quality may change depending on the distance between the hunting ground and facility. |

**Figure 4. Illustrative image of brands and certifications**

Note: The light blue frame indicates minimum requirements that are necessary when selling meat. Blue and green labels show regional and company brands in addition to animal type.

### 4.3. Implications to the actual policy

We briefly examine the implications of our results to real-life game meat provision. Suppose that demand for game meat is low. Based on our examination, we recommend the following actions for local authorities and suppliers regarding certification and branding:

1) Local authorities should create a system that indicates the satisfaction of minimum requirements. This is a necessary condition for selling game meat.
2) Local suppliers should create their own company brand to differentiate their products from other brands of the region. This is a sufficient condition for selling game meat at a fair price. Otherwise, the first type of lemon market may emerge.

3) Local authorities may create a regional brand. This is a promising way to enhance demand for game meat of the region.

4) Suppose that local authorities create a regional brand and each company has launched a brand and promotes it on its website, packaging, and other materials. Local authorities or groups of local suppliers should create a regional brand platform and differentiate each company’s products clearly. Otherwise, consumers may simply select the cheapest products among regional brands and cause the second type of lemon market.

However, the creation of a regional brand may be sufficient for pork but is not enough for wild boar meat.

We summarize the relationship of brands and certifications in Figure 5. Satisfaction of minimum requirements set by an authority is a necessary condition for selling game meat, as explained in subsection 4.2. The left illustration in Figure 5 shows this condition. To avoid the first type of lemon market, each supplier creates its own brand, which describes the characteristics of its products, such as taste (e.g., juicy and salty), sort (e.g., roin, round, raw, or smoked), and region (e.g., town’s name or a place of origin). These descriptions may help explain the validity of a product’s price. For example, if a supplier’s product is more juicy and tasty compared to the average products in the region, they may stress these characteristics (Figure 5, right illustration). The important thing is that each company should distinguish the characteristics clearly when a regional brand is launched. Otherwise, the second type of lemon market may emerge. The regional brand may enhance demand for game meat of the region because it guarantees the quality from each company at some level (Figure 5, middle illustration). To increase the demand, each supplier should improve the quality of their products (green arrow in Figure 5, right illustration), which may heighten the level of regional game meat (blue arrow in Figure 5, right illustration).

Figure 5. Relationship between brands and certifications

5. Conclusion

We often search for commodities on websites and may easily find many products. If there is no regional brand, we may select one that is cheap and has an attractive description. This may result in high-quality products being overlooked because of their high prices. The creation of a regional brand would effectively increase demand for these products. However, suppliers may think that the creation of a regional brand is sufficient to boost demand for their products but
this study indicates this is not the case with game meats. This is because the quality of game meats heavily depends on each carcass and the people concerned, such as hunters, and lemon markets may emerge unless products are distinguished through company brands and detailed explanations. If local authorities intervene in the creation of a regional brand, they may satisfy a condition that will boost demand. However, this study finds that this may cause the second type of lemon market.

Acknowledgement:
This work was supported by JSPS KAKENHI (16K00691).

6. References


http://www.pref.hokkaido.lg.jp/ks/skn/est/index/h29hokakusuu_kakutei.pdf

http://www.env.go.jp/council/12nature/124-02b.html


http://www.maff.go.jp/j/zyukyu/anpo/kouri/k_gyuniku/


Impact on idol group's members' preferences to Social Network Services engagement and spending behaviors. Case study: BNK48

Dhirachat Chayaporn
Assumption University
dhirachatchy@msme.au.edu

Abstract

BNK48 is a group of Thai singers, aka idols. Unlike other music groups, BNK48 has unique business models, and special rules apply to their members. Idol attachment is one form of influence on human brand royalty. The business model of BNK48 inherits from Japanese older sister group AKB48. The group gains popularity enormously since December 2017. Social network services were a vital communication channel of the group to its fans aka Wota. However, the BNK48 business model is to let their fans support its member individually through products selling and participation in the events. This study is to find out whether an individual member attachment affects the respondent's engagement on popular social network services.

Furthermore, the research has included the relationship between member attachment and respondent's spending behavior. The online questionnaire has been launched through a broad set of fans like school and college students and working people. There are 599 responses. The responses are composed of 583 usable responses and 16 error responses — the research use SAS Enterprise Guide software to analyze data. The finding revealed that the member attachments did not have an association with social network services engagement but have a strong association with spending behaviors. The result indicates that different members influence different spending behaviors among their fans.

Keywords: idol attachment, human brand royalty, social network service, spending behavior, consumer behavior
1. Introduction

Social network service (SNS) or social media play a big role in the entertainment business. In the present day, it made the traditional way that celebrity indicates and gain their popularity like TV and radio become obsolete. The celebrity constructs a social media presence like they are building their brand. (Williams, 2016). A part of this study is to find out whether the engagement of popular SNS platforms (e.g. Facebook, YouTube) correlated with the member's preference in an idol group "BNK48" or not.

BNK48 is an idol girl group franchised from its older sister group "AKB48". The group is different from other entertainment girl groups. There are a lot of spoken and unspoken rules and regulations. For example, members are not allowed to take a 2-person photo with fans. The fan can take a 2-person photo only in the paid events called 2-shot. (เดลินิวส์, 2018) The number of members in a band is quite large compared to other music girl group. As of Jan 2019, there are currently 51 members. (BNK48 Office, 2018) The band indicates the performance of the members using the amount of fan spending money. There are a number of activities where the fans can support specific members. There is no limitation on spending activities. The number of fans is not as significant as the money spent on each event. Like BNK48 older sister group AKB48, BNK48 has its definition of fans. Wota refers to a fan who like a band. (Wendy Xie, 2015) Some fans may have their preferred member call Kami Oshi. (BNK48 Office, 2018) Kami Oshi is the term dedicated to a specific member. Mostly, the fans will spend money on his/her Kami Oshi. Some activity like BNK48 general election. The fans need to pay for the ticket to vote for their preference member. The members will be ranked by counting the vote. Ranked members will have the chance to perform in the music video and an opportunity to perform entertainment activity like on-stage performance, TV program, sport and sometimes politic events. Since the opportunities are limited, not every member will have a chance. The fans have to spend money on the activities via his/her Kami Oshi member. The members with the low-spending record will have less entertainment activity to perform.

A part of this study is to find out whether the preference of particular members has a correlation with spending behavior. The study collects the data by launching an online questionnaire for 599 individuals. Data collection period is 23 Aug to 30 Oct 2018. 583 responses are valid. There are 568 responses that answer until the last question. The questionnaire includes questions like the relationship between respondents and BNK48, the SNS platform they used for receiving BNK48 news and information, the activity attendance, BNK48-related spending and respondent’s general information questions.

2. Literature review

Social network service and Idol attachment

According to the study in the year 2012 (Huang 2012), Idol's attractiveness has a positive impact on human brand royalty. Idol is an English word from the Latin word "Idolum". It's original meaning in such a context of religious and invisible divinity goddess symbol. Until the 20th century, the media use the term "idol" in the context of celebrity (Wendy Xie, 2015).

The BNK48 office has a policy for the member to publish a daily post via official Instagram and Facebook. However, the official website of BNK48 has provided a link to member official Instagram account. Nowadays, celebrity use and SNS to connect to their fans. Self-disclosure is a technique used on social networks to assist in the maintenance of relationships. (Jian Rui, 2015)
2013) Beside the SNS channels provided by BNK48 official, there are many fan made social media contents created by fans. As of February 2019, top Facebook member is Cherprang with 693,552 followers. Top Instagram member is Pun with 948,673 followers. (BNK48-Stat, 2019)

Case study of AKB48

Idol attachment is key for revenue generating. BNK48 Thailand version of Akimoto’s AKB48 idol group. (Today, 2016) BNK48 inherits a lot of business activities from AKB48. Xie’s study on 2015 on the topic of Japanese trans-cultural has identified the following terminology for AKB48 group. (Wendy Xie, 2015)

<table>
<thead>
<tr>
<th>Terms</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otaku</td>
<td>Middle-age man whose lives preoccupied with video games, manga/animation, cosplay, and idols</td>
</tr>
<tr>
<td>Wota</td>
<td>A man who invests a large amount of time and money in their favorite female idols.</td>
</tr>
<tr>
<td>Oshimen (推しメン)</td>
<td>Most preferred members (for BNK48 use Kami Oshi)</td>
</tr>
</tbody>
</table>

Table 1 AKB48 terminologies

BNK48 Business model

Since BNK48 is like girl-next-door, BNK48 official allow fans to participate in the member close-up paid activities. There are numbers of events for income generations. Handshake events - Handshake is an event that the fans need to buy the tickets to have a chance to hold a hand of BNK48 members for 8 seconds. ‘2-Shot photo’ is an event for the fan to buy a ticket to be allowed to take a photo with the preferred member. ‘BNK48 General Election’ is the event that allows a fan to vote for their preferred members to have a rank. The member with high rank means the fortune in an entertainment career. Top rank members will get the opportunity to do a music video and perform entertainment activities. In January 2019, Cherprang, top-voted member get 84,195 votes, (Official, 2019) the voting ticket cost starts from 250 Baht.

3. Research questions

The category of BNK48 followers in this study are the followers with individual idol attachment (Wota and fan with Kami Oshi) and without idol attachment (Like, Neutral and Dislike). This study is trying to find a relationship between the category of band followers and SNS engagement as well as the relationship between the type of band followers and BNK48-related spending behavior. Two research questions of this study are followed.

Question#1 Is there a relationship between the respondent's BNK48 member preference and the respondent's social network service preference?
H0 = The null hypothesis is that each respondent’s BNK48 member preference is independent of the respondent’s social network service preference.
H1 = There is a relationship between the respondent's BNK48 member preference and the respondent's social network service preference.

Question#2 Is there a relationship between the respondent's BNK48 member preference and the respondent's BNK48-related spending behavior?
H0 = The null hypothesis is that each respondent's BNK48 member preference is independent of the respondent's BNK48-related spending behavior.
H1 = There is a relationship between the respondent's BNK48 member preference and the respondent's BNK48-related spending behavior.
4. Sample size and data collection

The online questionnaire link and QR code distributed via a Facebook closed group named "BNK48 Thailand Community" and distribute manually through a group of the university student. The survey did not collect the respondent's identity. There are 19 questions in a survey. Q1 - Q4 questions are about the respondent's relation with BNK48 and its members. Q5 - Q9 questions are about SNS usage including the use of SNS as BNK48 information retrieving channel. Q10 - Q14 questions are about BNK48-related activity participation and spending behavior. Q15-Q19 questions are general information about the respondent.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Choices</th>
<th>How to answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 What is best to describe your relationship with BNK48?</td>
<td>- Wota (Go to Q4.1) - Has Kami Oshi (Go to Q4.2) - Like (Go to Q5) - Neutral (Go to Q5) - Dislike (Go to Q5)</td>
<td>Select only one</td>
</tr>
<tr>
<td>Q4.1 Wota to</td>
<td>BNK48 member name</td>
<td>Select only one</td>
</tr>
<tr>
<td>Q4.2 Has Kami Oshi</td>
<td>BNK48 member name</td>
<td>Select only one</td>
</tr>
<tr>
<td>Q5 Rank 5 social network services</td>
<td>- Facebook - Instagram - Twitter - LINE, Whatsapp, WeChat - YouTube</td>
<td>Rank from Most to Least</td>
</tr>
<tr>
<td>Q11 Have you ever join 'Handshake' event?</td>
<td>- Never - Ever - Frequently</td>
<td>Select only one</td>
</tr>
<tr>
<td>Q12 Did you buy CD/Products (Excluding events)?</td>
<td>- Yes - No</td>
<td>Select only one</td>
</tr>
<tr>
<td>Q13 How much you spend on BNK48?</td>
<td>- Never - Not over 5,000 - 5,000 – 10,000 - Over 10,000</td>
<td>Select only one</td>
</tr>
</tbody>
</table>

If the answer of Q3 is “Wota to”, the questionnaire will redirect to Q4.1. The respondent needs to select the name of the BNK48 member. If the answer of Q3 is “Has Kami Oshi”, the questionnaire will redirect to Q4.2. The respondents need to respondent need to select the name of BNK48 member. Other Q3 answers will skip Q4.1/Q4.2 and redirect to Q5.

5. Results

When asking the question "What is best to describe your relationship with BNK48?" most of the respondents' answer "Has Kami Oshi", followed by "Wota to".

<table>
<thead>
<tr>
<th>Q3</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wota to</td>
<td>136</td>
</tr>
<tr>
<td>Has Kami Oshi</td>
<td>324</td>
</tr>
<tr>
<td>Like</td>
<td>58</td>
</tr>
<tr>
<td>Neutral</td>
<td>51</td>
</tr>
<tr>
<td>Dislike</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 2 Important questions

Table 3 Q3 Frequency
When asking the question "Wota to", the respondents need to choose one BNK48 member. Top 4 selected members are Cherprang, Pun, Music, and Orn with the frequency 26, 15, 14 and 10 respectively.
When asking the question "Has Kami Oshi to", the respondents need to choose one BNK48 member. Top4 selected members are Music, Cherprang, Pun, and Jennis with the frequency 76, 49, 28 and 27 respectively.

When asking the respondent to rank five SNS services from Most (score = 5) to Least (score = 1), Facebook and Instagram get the first and second ranks based on mean values. Facebook get 3.806 mean value and Instagram get 3.268 mean value.

When using Chi-Square method to find the relationship between Q3 (respondent's relationship with BNK48) and Q5.1 (Rank Social Network: Facebook), the Chi-Square probability is 0.1036. And when using Chi-Square method to find the connection between Q3 (respondent's relationship with BNK48) and Q5.2 (Rank Social Network: Instagram), the Chi-Square probability is 0.1701. These two values reflect the independent between the SNS service rank and BNK48 and respondents' relationship.
### Table Analysis

#### Results

The `FREQ` Procedure

#### Table of Q5_1 by Q3

<table>
<thead>
<tr>
<th>Q5_1 (Rank Social Network: Facebook)</th>
<th>Q3 (Relationship with BNK48)</th>
<th>Wota</th>
<th>Has Kami Oshi</th>
<th>Like</th>
<th>Neutral</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least</td>
<td>Frequency</td>
<td>8</td>
<td>34</td>
<td>3</td>
<td>6</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Col Pct</td>
<td>5.97</td>
<td>11.00</td>
<td>5.26</td>
<td>12.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Col%</td>
<td>5.97</td>
<td>11.00</td>
<td>5.26</td>
<td>12.00</td>
<td>9.27</td>
</tr>
<tr>
<td>Less</td>
<td>Frequency</td>
<td>12</td>
<td>24</td>
<td>1</td>
<td>8</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Col Pct</td>
<td>8.96</td>
<td>7.77</td>
<td>1.75</td>
<td>16.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Col%</td>
<td>14.93</td>
<td>18.77</td>
<td>7.02</td>
<td>28.00</td>
<td>17.45</td>
</tr>
<tr>
<td>Neutral</td>
<td>Frequency</td>
<td>21</td>
<td>58</td>
<td>12</td>
<td>13</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Col Pct</td>
<td>15.67</td>
<td>18.77</td>
<td>21.05</td>
<td>26.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Col%</td>
<td>30.60</td>
<td>37.54</td>
<td>28.07</td>
<td>54.00</td>
<td>36.36</td>
</tr>
<tr>
<td>More</td>
<td>Frequency</td>
<td>23</td>
<td>51</td>
<td>10</td>
<td>9</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>Col Pct</td>
<td>17.16</td>
<td>16.50</td>
<td>17.54</td>
<td>18.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Col%</td>
<td>47.76</td>
<td>54.05</td>
<td>45.61</td>
<td>72.00</td>
<td>53.27</td>
</tr>
<tr>
<td>Most</td>
<td>Frequency</td>
<td>70</td>
<td>142</td>
<td>31</td>
<td>14</td>
<td>257</td>
</tr>
<tr>
<td></td>
<td>Col Pct</td>
<td>52.24</td>
<td>45.95</td>
<td>54.39</td>
<td>28.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cumulative Col%</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>Frequency</td>
<td>134</td>
<td>309</td>
<td>57</td>
<td>50</td>
<td>550</td>
</tr>
</tbody>
</table>

**Frequency Missing = 26**

#### Statistics for Table of Q5_1 by Q3

<table>
<thead>
<tr>
<th>Statistic</th>
<th>DF</th>
<th>Value</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>12</td>
<td>18.4164</td>
<td>0.1036</td>
</tr>
<tr>
<td>Likelihood Ratio Chi-Square</td>
<td>12</td>
<td>19.7515</td>
<td>0.0719</td>
</tr>
<tr>
<td>Mantel-Haenszel Chi-Square</td>
<td>1</td>
<td>4.3587</td>
<td>0.0368</td>
</tr>
<tr>
<td>Phi Coefficient</td>
<td></td>
<td>0.1830</td>
<td></td>
</tr>
<tr>
<td>Contingency Coefficient</td>
<td></td>
<td>0.1800</td>
<td></td>
</tr>
<tr>
<td>Cramer's V</td>
<td></td>
<td>0.1056</td>
<td></td>
</tr>
</tbody>
</table>

**Effective Sample Size = 550**

**Frequency Missing = 26**

*Figure 5 Q3 and Q5.1 Facebook*
When using Chi-Square method to find the relationship between Q3 (respondent's relationship with BNK48) and Q11 (Have you ever join 'Handshake' event?), the Chi-Square probability is less than 0.001. When using Chi-Square method to find the connection between Q3 (respondent's relationship with BNK48) and Q12 (Did you buy CD/Products (Excluding events)?), the Chi-Square probability is less than 0.001. And when using Chi-Square method to find the connection between Q3 (respondent's relationship with BNK48) and Q13 (How much you spend on BNK48?), the Chi-Square probability is less than 0.001. These three values reflect that there is a relationship between the respondent's relationship with BNK48 and respondents' BNK48-related activity attendance/spending behavior.
6. Conclusion and recommendations

The previous section has indicated the relationship between BNK48 relationship with respondent and BNK48-related activity attendance/spending behavior. But there is no connection between the SNS engagement and BNK48 relationship with respondent. The BNK48 relationship is the one form of idol attachment. Therefore, these indicate that SNS engagement is not related to the idol attachment. But the joining activity and spending behavior are linked with idol attachment. Facebook and Instagram are the most used platforms for BNK48 regardless of the relationship between respondents and BNK48.

This study may not find the correlation between SNS engagement and BNK48 idol attachment. But it is vital for BNK48 company to maintain the idol attachment to the fans since it related to revenue generation activity. Future study for this topic may include in-depth details of spending behavior and SNS contents. Many events are not involved in this study like 2-shot photo taking and BNK48 general election that leaves a room for future research.

7. Bibliography


Biography

Mr. Dhirachat Chayaporn is a full-time lecturer in Business Information Systems department, Martin de Tours School of Management and Economics, Assumption university (Thailand). He received a Master of Computer Science degree from University of Wollongong (Australia) in 2002, and obtain Bachelor of Business Administration degree from Assumption university (Thailand) in 1999.
Insights from the Comparative Study of the Thailand Marketing Research Society (TMRS) Standardized Social Economic Status between 2009-2017

Jirayu Poomontre Kasemsant  
Assumption University  
jirayutpmt@msme.au.edu

Pisal Setthawong  
Assumption University  
pisalstt@msme.au.edu

Rachsuda Setthawong  
Assumption University  
rachsuda@scitech.au.edu

Abstract

Socioeconomic status (SES) is one popular economic/sociological approach that could be used to depict economic differences in a selected society. In Thailand, one of the most influential and widely adopted SES classification in the marketing research circles has been proposed by the Thailand Marketing Research Society (TMRS). The SES classification proposed by the TMRS has been updated on a regular basis using data of household survey from the National Statistics Office (NSO) from 2009 and 2017, and a TMRS survey in 2013. With nearly a decade of comprehensive collection of household income, asset ownership, lifestyle choices, and spending patterns, the data used in creation of the SES classification for the TMRS is the most extensive undertaking in this domain in Thailand. This comparative study explores the process behind TMRS towards the proposal of the standardized SES classification in 2009, updates from the TMRS survey of 2013, and the proposal of an updated TMRS SES classification of 2017, and provide insights, patterns, and trends that are of interest.

Keywords: social economic status, Thailand, income distribution, urban and rural divide
The Mediating Effect of Consumer Identification on the Factors Influencing Purchase Intention and Actual Behaviors on Organic Food Consumption

Nitima Aungatichart  
Assumption University  
nitimaperch@gmail.com

Mayuree Aryupong  
Assumption University  
mayureeryp@msme.au.edu

Abstract

The aim of present research analyzes the relationship between the factors influencing purchase intention and actual behaviors on Thai’s organic food consumption and its mediator, consumer identification, mediating the relationship between attitude toward organic foods, subjective norms, perceived behavioral controls and purchase intention. Very few papers have tried to study the relationship between intention and actual behavior which leave a big gap for this study to fill. Theory of planned behaviors and social identity theory have been used to develop a conceptual framework. The target population is organic consumers in Bangkok. The collected questionnaires are 457 samples, 283 samples via Google online and 174 samples via organic shop near a famous hospital. The usable questionnaires are 400. For analyzing data, structural equation model (SEM) with AMOS version 24 has been used to test the hypotheses via two approached steps, measurement model and structural model. The reliability and validity of all constructs were verified by confirmatory factor analysis (CFA) while the internal reliability of the items was verified by Cronbach's alpha. The result of data analysis indicated that consumer identification presents a full mediating role between independent variables (i.e. health concern, subjective norms, and food literacy) and purchase intention. Furthermore, this study strengthens the theory of planned behavior by verifying the relationship between purchase intention and actual purchase in organic food consumption and found that actual buying is significantly affected by purchasing intention.

Keywords: literacy, familiarity, subjective norms, ecological and identification

paper type – research paper
On New Ventures' Board of Directors: Formation, Adjustment, and Influences on Internationalization*

Anthony Kuo  
Fu Jen Catholic University  
profaku@gmail.com or 076667@mail.fju.edu.tw

Ming-Sung Kao  
Fu Jen Catholic University  
gaums0327@gmail.com

Nichanan Sakolvieng  
Assumption University  
nichananskl@au.edu

Abstract

To survive and grow, young firms must leverage different means, such as strategic alliances or founders' personal networks, to access and acquire necessary external resources to overcome, or at least mitigate, liability of newness. In this study, we found that board of directors can serve as a means of resource provision for new ventures. We conducted historical analysis and case studies on high-tech new ventures to delve closely into the processes of how boards are formed, how board members provide these resources, and what factors influence the processes. Results show that a board of directors is more likely to be formed when the fund is raised from institutional investors, instead of individual investors. Moreover, for founders, formation of the board connotes an exchange of partial ownership for critical external resources. When more resources are needed, founders adjust their boards. Adjustments of the board can be categorized into two: "planned board adjustments" are initiated by the founders to acquire external resources, while "required board adjustments" are set out by disgruntled board members, and reduced resource endowments of the firm. In addition, board members exploit their individual assets, experience, reputation, and personal networks to provide personally endowed resources to new venture, and leverage their firms' assets, reputation, and business networks to contribute organizationally endowed resources. Board members also facilitate new ventures' internationalization.

Keywords: new venture, resource dependence, survival, growth, board of directors, internationalization

* The authors gratefully acknowledge the research grants from the Ministry of Science and Technology of Taiwan (MOST 105-2410-H-030-066).
Corporate Governance in Non-Banking Financial Companies in India: A Case of IF&LS

Anil Kumar
Shri Ram College of Commerce
University of Delhi
anilkumarsrcc@rediffmail.com

Santosh Kumar
Shri Ram College of Commerce
University of Delhi
sksultanpuri@gmail.com

Abstract

Non-Banking Financial Companies (NBFCs), also called shadow banks are financial intermediaries which deliver credit especially to the different sectors of the economy. They are the source of funding for borrowers who are unable to obtain funding from the main stream commercial banks and majority of them happened to from unorganised sector. They are the source of innovative financial services which are normally not available from the commercial banks. NBFCs have grown immensely in India with multiplication of financial services including lease finance, housing finance, infrastructure finance, trading in securities, hire purchase and other allied financial services. As on 26th October 2018, there were 10,545 NBFCs registered with the Reserve Bank of India (RBI), of which 102 were public deposit-accepting and rest were non-deposit accepting NBFCs, of which 276 have been declared as systemically important. Their significance in the economy in supplementing the banking and other financial institutions appears from the fact that the ratio of NBFCs’ assets in GDP increased steadily from just 8.4 per cent as on March 31, 2006 to 11.73 per cent as on March 31, 2018.

Infrastructure Financing and Leasing Services (IF&LS) is among the top 25 NBFCs in India with 24 direct subsidiaries, 135 indirect subsidiaries, 6 joint ventures and 4 associate companies having an enormous debt of about 13 billion US Dollar (Rs. 910,913.09 million) in payment obligations of bank loans (including interest), term and short-term borrowings including the commercial paper redemption obligations in June-September 2018. This paper examines the evolution and structure, regulatory provisions and corporate governance norms of NBFCs in India. It also highlights the debacle of IL&FS running like a debt ponzi scheme, questioning the role of independent directors, nominee directors, rating agencies, auditors and the regulator as no heed was accorded to the alarmingly high debt-equity ratio of 17:1 and excessive risk exposure of the company owing to the debt ponzi, reminiscent of financial crisis of 2008. The paper also makes policy recommendations to strengthen corporate governance and the asset-liability framework for NBFCs to bring it on par with that of the banks and harmonising it across different categories of NBFCs.

Keywords: NBFCs, shadow banking, corporate governance, financial crisis, financial system, regulatory provisions.
The Effect of Family Business Succession Preparation and Implementation on Post Succession Performance: Evidence from Steel Industries in Thailand

Permsin Yongvongphaiboon
Assumption University
permie2916@gmail.com

Abstract

This research paper examined the important factors affecting the succession preparation, the implementation plan and post-succession performance of the family business in steel industries in Thailand. The important factors are perceived potential, perceived commitment, and perceived capability of the successor. The objective of the research is to examine the relationship between the three factors, succession preparation, implementation and the post-succession performance of the family-owned steel firms in Thailand. A total of 169 questionnaires were collected from the top and middle managers which had gone through a leadership transition from 30 steel industries located in Bangkok, Samutsakorn and Samutprakarn. These areas have a large number of steel business owners. The results indicated that all three factors have an impact on the effectiveness of the succession preparation with perceived capability having the highest impact. The results also show that the succession preparation, succession implantation and the post-succession performance are positively related. This research paper provides an insightful outlook on how important the effects of succession preparation and implementation are for family-owned steel business in Thailand as succession issues impacted by the global business environment with increased volatility.

Keywords: family firm, succession preparation, successor, succession implementation, post-succession performance, steel industries
The Improving Quality Management Using Water-based Environmental Safe Ink for Printing Plastic Bag Industry in Thailand

Wasana Marksin  
Assumption University  
wasanamrk@msme.au.edu

Metta Ongkasuwan  
Assumption University  
mettaoks@msme.au.edu

Akechai Judkrue  
Assumption University  
akechajdk@msme.au.edu

Abstract

The printing industry has global output of approximately USD 720 billion dollars since 2013 and continues to increase due to expansion of global demand for packaging such as plastic bags for food and retail industry. Workers in the printing plastic bag industry may be exposed to chemicals used in ink solvent that evaporate into the environment during printing process and cause health problems in the long term. The use of water-based environmental safe ink becomes essential to improve health safety for workers in the printing industry. However, the use of water-based inks may lead to lower quality or higher defect rates in the printing plastic bags industry than chemical based inks. The purpose of this study is to compare the quality of printed plastic bags or defect rate using chemical-based ink and water-based ink. The quantitative research methodology adopted in this study used random sampling with 300 samples from each chemical-based ink and 300 samples from each water-based ink printing plastic bags production lines with four different settings in selected printing company. The first and second settings consist of closed ink injection units, one for low skill operator and the other for high skill operator. The third and fourth settings consist of open ink injection unit, one for low skill operator and the other for high skill operator. The statistical analysis results suggested that the water-based environmental safe ink produced an average of defect rate higher or lower quality than chemical-based ink. However, in the water-based ink printing setting with closed ink injection unit and high skill operator produced an average defect rate lower or higher quality than chemical-based, closed ink injection unit and low skill operator. Therefore, the finding suggested that the combination of water-based ink with closed ink injection unit and high skill operator lead to higher quality than chemical-based ink and may replace the use of chemical-based ink to reduce health hazard to the workers and environment in the selected printing company. The recommendation for further studies include the study of hazardous free environment for worker in printing chemical-free plastic bags for other industries, and the education and training programs for improving operator printing skill.
Keywords: quality management, chemical-based ink, water-based ink, printing industries, hazardous environment, operator printing skill
Exploring the Relationship between Entrepreneurial Development Strategy and Start-up Performance

Chia-Liang Hung
Department of Information Management
College of Management
National Chi Nan University
clhung@ncnu.edu.tw

Min-Hsuan Hsu
Department of Information Management
College of Management
National Chi Nan University
aup6vm0@gmail.com

Abstract
This research aims on exploring how entrepreneurial development strategy helps performance. It develops a measurement model of entrepreneur’s development strategy based on the resource-based theory, including four assets of market sensing, channel leverage, manufacturing coordination, and human complements. For evaluating entrepreneur’s business performance, Kaplan & Norton’s balanced scorecard perspectives have been adopted: finance, customer relationship, internal process, and learning & growth, respectively. In addition, one moderator, the linkage to industry community, has been considered to examine whether it facilitates on entrepreneur’s development strategy. Figure 1 shows the research framework.

Figure 1. Research Framework.

According to the research framework, an online questionnaire has been developed by concise measurement items for each construct in the entrepreneurial development strategy and balanced-scorecard performance. Two items of market sensing emphasize on observing market
demand shift, such that the start-up business could offer a good value position proposition to an attractive segment. The channel leverage is reflected by the co-specialized relationship and the profitable incentive mechanism between entrepreneurs and downward retailers. The question items of manufacturing coordination mainly focus on the capabilities of production scheduling and engineering design tuning. There are two items for measuring human complements, diverse expertise and related industrial experience. They mean the founder, co-founders, and other entrepreneurial members could mutually support in the start-up period. The linkage to industry community is related to the intensity of entrepreneur's participation to the local, international, and industrial societies, where he or she can find some efficient commercialization approaches and collaborative partners, promote personal novel idea, get feedbacks, and so on. For example, Junior Chamber International, Lions Clubs International, Rotary International, and other product or technician associations, such as bike club, tourism association, and so on, are all candidate industry communities for entrepreneurs to extend their personal networking. For the balanced-scorecard performance variables, the high volume of sales and stock turnover rate usually indicate the financial performance. The high degree of customer satisfaction usually produces a good word-of-mouth reputation to facilitate new customer acquisition. The perspective of internal process often emphasizes the operation efficiency. So the speed of production throughput and failure recovery are used as productivity indicators here. The prospects of learning and growth in a firm can be evaluated by the low employee turnover, the opportunities of on-job development and training, and the high job satisfaction perceived by employees.

After two-month investigation of start-ups supported by International Entrepreneur Initiatives of the Small and Medium Enterprise Administration of Taiwan Ministry of Economic Affairs and members of the Taiwanese government-based Youth Career Development Association, this study collected 77 respondents and applied the approach of Partial Least Squares (PLS) to verify the measurement validity of constructs. Figure 2 & 3 both reveal the significance of confirmatory factor analysis (CFA), indicating that each measurement item is suitable to the associated latent construct in entrepreneurial development strategy and start-up business performance.

**Figure 2. Measurement Validity of Entrepreneurial Development Strategy**

![Diagram of Measurement Validity](image)

Note: ** p<0.05
After conducting CFA, the extracted factor scores of each construct are derived. Then, the regression model examines the relationship between entrepreneurs’ development strategy and their business performance, including the moderator effect resulted from the entrepreneurs’ linkage to industry community. Table 1 shows the regression coefficients and the associated significance level ($p$-value).

### Table 1 Regression models from development strategy to start-up performance

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Balanced-Scorecard Performance</th>
<th>Finance</th>
<th>Customer</th>
<th>Internal Process</th>
<th>Learning &amp; Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Sensing</td>
<td>0.87(0.023)**</td>
<td>0.672(0.090)*</td>
<td>1.073(0.012)**</td>
<td>0.535(0.260)</td>
<td>0.648(0.113)</td>
</tr>
<tr>
<td>Channel Leverage</td>
<td>-0.115(0.773)</td>
<td>0.410(0.327)</td>
<td>-0.539(0.227)</td>
<td>-0.110(0.826)</td>
<td>-0.139(0.746)</td>
</tr>
<tr>
<td>Manufacturing Coordination</td>
<td>0.598(0.051)*</td>
<td>0.991(0.002)***</td>
<td>0.333(0.323)</td>
<td>0.387(0.310)</td>
<td>0.365(0.266)</td>
</tr>
<tr>
<td>Human complements</td>
<td>0.960(0.004)***</td>
<td>1.987(0.000)***</td>
<td>0.749(0.040)**</td>
<td>-0.496(0.225)</td>
<td>-0.326(0.352)</td>
</tr>
</tbody>
</table>

**Moderation effects**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Balanced-Scorecard Performance</th>
<th>Finance</th>
<th>Customer</th>
<th>Internal Process</th>
<th>Learning &amp; Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Sensing x Community</td>
<td>-1.482(0.137)</td>
<td>-1.483(0.155)</td>
<td>1.997(0.073)*</td>
<td>-1.212(0.332)</td>
<td>-0.783(0.464)</td>
</tr>
<tr>
<td>Channel Leverage x Community</td>
<td>0.553(0.466)</td>
<td>0.596(0.454)</td>
<td>1.363(0.109)</td>
<td>0.612(0.522)</td>
<td>0.534(0.515)</td>
</tr>
<tr>
<td>Manufacturing Coordination x Community</td>
<td>-1.179(0.125)</td>
<td>2.101(0.010)**</td>
<td>-0.805(0.344)</td>
<td>-0.249(0.795)</td>
<td>0.711(0.387)</td>
</tr>
<tr>
<td>Human complements x Community</td>
<td>2.477(0.000)***</td>
<td>4.456(0.000)***</td>
<td>1.934(0.010)**</td>
<td>1.084(0.196)</td>
<td>1.220(0.091)*</td>
</tr>
</tbody>
</table>

$R^2$-adj | 0.482 | 0.432 | 0.358 | 0.178 | 0.395 |

Note: The number in brackets indicates the $p$-value of the corresponding regression coefficient.
According to Table 1, we found that the total performance (balanced scorecard) was influenced by factors of human complements, then, market sensing, and manufacturing coordination. Meanwhile, the intensity of linkage to industry community had a positive moderation effect on human complements. That is to say the effect of human complements to start-up performance will be facilitated when entrepreneurs had participated into industry communities. Furthermore, each performance perspective was also examined. The finance performance was influenced by factors of human complements, then, manufacturing coordination, and market sensing. The linkage to industry community was positively moderated on effects of human complements and manufacturing coordination to performance. The customer performance was influenced by factors of human complements and market sensing. The linkage to industry community was positively moderated on effects of human complements and market sensing. Contrarily, the internal process performance was not significantly influenced by any development factor or moderated by the linkage to industry community. The performance perspective of learning and growth was not influenced by any entrepreneurial development factor, either. But, the linkage to industry community was little positively moderated on effects of human complements to performance.

Therefore, the degree of human complements was the most influential factor to start-up performance. The participation into industry community by entrepreneurs strongly enhanced the effect of human complements on performance. The results give empirical insights to entrepreneurs in their start-up period. The personal network of entrepreneur’s linkage to diverse societies is indeed an efficient way to configure a mutually-supported teamwork for correct positioning and timely coordination when pursuing the start-up success.

Keywords: industry community, human complements, coordination, development strategy, entrepreneurship, performance.
Discriminant Analysis for Financial Stability Factors of Agricultural Cooperatives and Non–Agricultural Cooperatives in 2017

Krieng Kitbumrungrat
Faculty of Science
Dhonburi Rajabat University
Kriengstat@yahoo.com

Abstract

This research was aimed to conduct discriminant analysis for financial stability factors of agricultural cooperatives and non-agricultural cooperatives by CAMEL analysis in 2017 based on 20 variables of financial data as well as ratios. The result showed that only 2 variables could be discriminant analysis included: (1) debtor ratio and (2) short-term debt or ability ratio. They equally showed Wilks' Lambda = 0.224 with the statistical significance. Regarding the results of the tested variables of the discriminant equations for financial security prediction of agricultural and non-agricultural cooperatives, 3 variables were found for the best prediction, i.e., ROA (Return on Asset), average business growth rate, and short-term debtor ability ratio. These variables of the discriminant equations can be manipulated for work planning to be in line with situations, and for management efficiency improvement of agricultural and non-agricultural cooperatives.

Keywords: agricultural cooperatives and non–agricultural cooperatives; CAMEL analysis; discriminant analysis; wilks' lambda.
The Insight Relationship between Infrastructure Funds and Stock Market:
The Case of Thailand

Jiroj Buranasiri  
College of Innovation, Thammasat University  
jirojb@gmail.com

Marisa Laokulrach  
International College of National Institute of Development Administration  
Marisa.laokulrach@gmail.com

Abstract

The expected surge of demand for capital to support the growth of Thailand, from Thailand 4.0 investment policy, brings about the launching of infrastructure funds to mobilize funds from public through the Stock Exchange of Thailand. Accordingly, infrastructure funds’ returns are likely to be influenced by the market sentiments. This research paper applies Capital Asset Pricing Model (CAPM) to discover the relationship between infrastructure funds’ market risk and return. In addition, the study employs Vector Auto-Regressive Model (VAR) to examine the influence of the lag information from the stock market on the funds’ returns during 2013 to 2018. The paper’s results, hence, do not only contribute the evidence on market efficiency issue in the Stock Exchange of Thailand but also provide insight understanding on infrastructure funds’ performance in relation to the market’s.

Keywords: Thailand 4.0, infrastructure funds, stock exchange of Thailand, CAPM, VAR
1. Introduction

The attempt to move Thailand out of middle income trap drives the change in the government policy to employ leverages from advanced technologies and creative industries to leap forward the country’s growth under the new policy, so called Thailand 4.0. Many investment projects, especially in infrastructure constructions which support the growth toward new technologies such as the building of internet fiber optic network and the Eastern Economic Corridor (EEC), are in progress. Several projects, for example, the high speed train projects are planned to start very soon.

Undoubtedly, a significant amount of capital must be raised to finance such development and capital market like the Stock Exchange of Thailand is targeted as one of the important funding channels. Consequently, infrastructure fund is developed as a tool to mobilize funds from the public. The fund’s natures make it attractive for investors. The securitization process for the fund creation converts infrastructure assets into several small shares for investors. Many small investors are able to participate in infrastructure investment. As a result, the liquidity for infrastructure investment is boosted.

For the fund’s investment, the Securities and Exchange Commission in Thailand restricts investment area of the fund in rail transportation, toll way, electricity, water supply, airport, deep seaport, telecommunication and alternative energy. BTS Rail Mass Transit Growth Infrastructure Fund (BTSGIF), the first infrastructure fund, was issued in April, 2013 to finance the construction of BTS’ sky train in Bangkok. The other 6 infrastructure funds including Amata B. Grimm Power Power Plant Infrastructure Fund (ABPIF), Buriram Sugar Group Power Plant Infrastructure Fund (BRRGIF), Digital Telecommunications Infrastructure Fund (DIF), Jasmine Broadband Internet Infrastructure Fund (JASIF), and Thailand Future Fund (TFFIF), have been issued thereafter.

The infrastructure fund gains high attention again when the latest IPO deal of Thailand Future Fund Infrastructure Fund (TFFIF), was introduced to people in the last quarter of 2018 and could raise 44.7 billion baht to finance the Thai government’s transportation project. The success of this government’s fund raising tool encourages the government to use the tool to ease its investment budgeting burden and to lower the public debts in the future plan.

Nevertheless, in the long run, the success of infrastructure fund in capital mobilization is rather dependent on demand side. The important problem is that the knowledge on infrastructure fund’s characteristics is quite limited. Because of its newness, the researches on infrastructure fund in Thailand are rare. Accordingly, many investors do not know whether infrastructure fund is an appropriate investment vehicle for them.

This study applies the Capital Asset Pricing Model (CAPM) of Markowitz (1952) together with the Vector Autoregressive Model (VAR) to investigate the infrastructure fund’s return. The analysis results are expected to enlighten investors the natures of infrastructure fund’s in relation to Thailand’s stock market so that they would be able to develop appropriate investment strategies for their portfolio. For issuers, the study would provide them the knowledge on the fund’s cost or return to be offered to investors. In addition, since the government plans to use them for mobilizing funds to finance the country’s growth, the findings from this paper would provide useful information for the policy makers to make suitable policy and regulation for participants. For other researchers and academics, the
research results would extend their knowledge on infrastructure fund on the ground linked to the stock market.

The paper is structured by providing literature reviews to explain the ground knowledge of infrastructure fund, followed by data and methodology, the findings, and the concluding remark.

2. Literature Review

The demand and supply sides of infrastructure investment are studied by many researchers. Bhattacharyay, B. N. (2012) reports that the expected capital need for infrastructure investment during 2010 to 2020 in all developing ASIA countries and in East and Southeast ASIA countries averages as high as 6.5% and 5.5% of their GDP, respectively. Park (1998) and Walsh, Yu, and Park (2011) reveal that different investment vehicles including infrastructure bonds, corporate bonds, and listed equities, are used to raise funds for infrastructure investment.

The innovation of infrastructure fund helps government to mobilize funds from public to support a country’s growth. The researches from Orr (2007) and Croce and Gatti (2014) report that capital market could be a significant channel for mobilizing funds to finance a country’s infrastructure. In other words, a country may use infrastructure fund to attract investors to help financing its infrastructure projects to support its economic growth.

Several researchers examine the impact of stock market on infrastructure fund’s return since the fund is registered and trading in stock market. Many of them find evidences which support the idea that there should be some influences from the market returns on infrastructure funds’ returns. For example, Bitsch, Buchner, and Kaserer (2010) finds that there is a positive relationship between infrastructure fund’s return and stock market’s return but not between infrastructure fund’s return and gross national product.

Yet there are other important determinants of the infrastructure fund which may affect its returns. For example, the study results of Torrance (2009) disclose that there are several infrastructure assets’ specific geographical factors which are related to their returns. Since cash flows from an infrastructure fund for investors are from their infrastructure assets, the infrastructure fund’s performance would greatly rely on the characteristics of the infrastructure assets. Rothballer and Kaserer (2012) suggest that there is idiosyncratic risk in infrastructure investment. Gatzert and Kosub (2016) confirm that the performance of infrastructure investment is dependent on the unique property of each type of infrastructure. Accordingly, investors must pay attention on specific properties of each particular infrastructure investment.

To analyze the relationship between infrastructure fund and stock market, the Capital Asset Pricing Model (CAPM) of Markowitz (1952) could be employed. Generally, the model is widely used for explaining the return of an asset in relation to the market return. The proxy of the asset’s undiversifiable risk, so called “beta”, is the asset’s relative to market risk and the key determinant in risk premium calculation. The lower the beta, the lower the risk premium, consequently, the lower return and vice versa.

Vector Autoregressive Model (VAR) is another important time-series analysis which is broadly applied to analyze the continuous linear interdependencies of different time-series. Many researchers use VAR to find out the impact from the lagged of indigenous variable and other variables on the investigated variable in the context of financial markets, for instance, the study
on the interdependency of different capital markets by Eun and Shim (1989), the study of lead-lag relationship among bond markets by Yang (2005), and the interaction of spot and futures markets by Tse (1995). Thus, it is interesting to use CAPM and VAR to find out the relationship between Infrastructure fund and Thailand’s stock market.

3. Data Collection and Research Methodology

3.1 Data Collection

This research is conducted under quantitative analysis by using data of infrastructure funds and SET index from Reuter database. The studied data starts from April 22, 2013, when the first Thai infrastructure fund was firstly trading, to January 31, 2019. All 7 infrastructure funds in the Stock Exchange of Thailand are used for this investigation. They are BTS Rail Mass Transit Growth Infrastructure Fund (BTSGIF), Digital Telecommunications Infrastructure Fund (DIF), Jasmine Broadband Internet Infrastructure Fund (JASIF) North Bangkok Power Plant Block 1 Infrastructure Fund - Electricity Generating Authority of Thailand (EGATIF), Amata B. Grimm Power Power Plant Infrastructure Fund (ABPIF), Buriram Sugar Group Power Plant Infrastructure Fund (BRRGIF), and Thailand Future Fund (TFFIF).

3.2 Research Methodology

The proxy of the Stock Exchange of Thailand’s return is calculated from the SET Index’s total return index provided by Reuter database and the proxy of overall infrastructure funds’ returns is the return of the equally weighted infrastructure fund portfolio. This kind of portfolio is advised by Connor and Korajczyk (1987) and Breen, Glosten and Jagannathan (1989) for the study employing one factor model. The equally weighted portfolio’s return is calculated as follows:

\[ r_p = \frac{\sum^n_i r_i}{n} \]  

Where \( r_p \) is the equally weighted portfolio’s return,
\( r_i \) is the return of asset i,
\( n \) is the number of assets in the portfolio

Next, this study examines the characteristics of infrastructure fund by applying the Capital Asset Pricing Model (CAPM) analysis, to link the market risk which is the fundamental risk according to the analysis of the relationship between the stock market and the asset class of infrastructure funds. The model is elaborated as follows:

\[ r_{i,t} = R_{f,t} + \beta_i (r_{m,t} - r_{f,t}) + \varepsilon_{i,t} \]  

Where \( r_{i,t} \) is the return of asset i at time t
\( r_{f,t} \) is the abnormal return offered by asset class i
\( \beta_i \) is the beta of asset class i to the market risk premium, \((r_{m,t} - r_{f,t})\)
\( r_{m,t} \) is the market return and risk free rate (Yield of 15 year treasury securities)
\( \varepsilon_{i,t} \) is the error term or unexpected return

For this research’s investigation, the beta could be simply tested for its statistical significance by using simple linear regression on the return of the asset with the market return as the independent variable as follows:
\[ r_{F,t} = c + \beta_t r_{SET,t} + \epsilon_{t,t} \] (3)

The null hypothesis is that the beta coefficients, \( \beta_t \), is zero. In other words, the return of SET index, the proxy of market return, does not impact the return of infrastructure fund equally-weighted portfolio.

Since the infrastructure funds are traded in the Stock Exchange of Thailand, the market’s positive and negative sentiments might create boldness or anxiety environment for the infrastructure fund’s traders. Hence, the influence of stock market on the infrastructure fund should be examined beyond the immediate impact. The Vector Autoregressive Model or VAR is employed in order to find out the impact of the stock market’s lagged returns on infrastructure fund’s return. The VAR model could be explained as follows:

\[ r_{t,t} = a_t + \sum_{k=1}^{n} b_i r_{t-k} + \sum_{k=1}^{n} c_i r_{SET,t-k} + e_t \] (4)

Where
- \( a_t \) is the intercept
- \( k \) is the number of lagged returns of the asset \( i \)
- \( b_i \) is the beta coefficient of lagged returns of asset \( i \)
- \( c_i \) is the beta coefficient of lagged return of SET index
- \( r_{m,t-k} \) is the lagged return of SET index at time \( t-k \), and
- \( e_t \) is the stochastic error

The null hypothesis is beta coefficients, \( b_i \) and \( c_i \), are zero. The lagged returns of infrastructure fund and the lagged returns of stock market do not affect the return of the infrastructure funds. However, the unit root test must be done on the time-series of the returns of the stock market portfolio and infrastructure funds’ equally-weighted portfolio to prevent the spurious problem.

4. Findings

The descriptive statistics in Table 1 A. exhibit the comparison between the daily returns from the portfolios of SET Index and equally weighted infrastructure fund Portfolio during April 22, 2013 to January 31, 2019. Both have approximately the same averages around 0.02%. The infrastructure fund’s return is not as highly volatile as common stock’s return, with the standard deviation of 0.57% and 0.85% accordingly. Unlike common stock’s return, the distribution of infrastructure fund’s return is right skewed. The infrastructure fund’s return has higher kurtosis (16.24), compared to common stock’s kurtosis (8.06). This implies the lower spread of infrastructure fund’s return. The graph in Figure 1 shows that both returns are not highly associated and Table 1B exhibits that the correlation coefficient between the two returns is 0.41.
Table 1 Descriptive Statistics of the Daily Returns from the Portfolios of SET Index, $r_{SET}$, and Equally Weighted Infrastructure Fund Portfolio, $r_{IF}$ during April 22, 2013 to January 31, 2019

A. Daily Return Distributions

<table>
<thead>
<tr>
<th></th>
<th>$r_{SET}$</th>
<th>$r_{IF}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.02%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Median</td>
<td>0.02%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.48%</td>
<td>5.21%</td>
</tr>
<tr>
<td>Minimum</td>
<td>-5.37%</td>
<td>-3.61%</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.85%</td>
<td>0.57%</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.40</td>
<td>0.25</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>8.06</td>
<td>16.24</td>
</tr>
<tr>
<td>Observations</td>
<td>1509</td>
<td>1509</td>
</tr>
</tbody>
</table>

B. Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>$r_{SET}$</th>
<th>$r_{IF}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r_{SET}$</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>$r_{IF}$</td>
<td>0.41</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Figure 1 Daily Returns from the Portfolios of SET Index, $r_{SET}$, and Equally Weighted Infrastructure Fund Portfolio, $r_{IF}$ during April 22, 2013 to January 31, 2019

The OLS regression in Table 2 reports that infrastructure fund’s return is positively statistically significantly influenced by the common stock’s return. 1% change in the SET index’s return causes 0.279% change in the equally weighted infrastructure fund’s return. The low beta suggests that infrastructure fund is the asset class with low market risk. The explanation power from adjusted R-squared of 17.14% recommends that there are other factors that could greatly affect the fund’s return.
Table 2. OLS Regression on Infrastructure Fund Return

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.000204</td>
<td>0.000134</td>
<td>1.528203</td>
<td>0.1267</td>
</tr>
<tr>
<td>rSET</td>
<td>0.279204</td>
<td>0.015783</td>
<td>17.69001</td>
<td>0.0000</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>N</td>
<td>S.E. of regression</td>
<td>Prob (F-statistic)</td>
<td>Durbin-Watson stat</td>
</tr>
<tr>
<td>0.1714</td>
<td>1509</td>
<td>0.005192</td>
<td>0.0000</td>
<td>2.0399</td>
</tr>
</tbody>
</table>

Applying the test of Augmented Dickey-Fuller test statistic, Table 3 shows that all time-series to be further investigated under Vector Autoregressive (VAR) Model have no stationarity problem. MacKinnon (1996) one-side p-values indicate that the daily returns of both SET Index and Equally Weighted Infrastructure Fund Portfolio could be used to examined and would create no spurious problem.

Table 3. Unit root test’s results of the daily returns from SET Index and Equally Weighted Portfolio of Infrastructure Fund during April 22, 2013 to January 31, 2019

<table>
<thead>
<tr>
<th></th>
<th>Augmented Dickey-Fuller test statistic</th>
<th>T-statistics</th>
<th>Prob*</th>
</tr>
</thead>
<tbody>
<tr>
<td>rSET</td>
<td>None</td>
<td>-37.71997</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-37.71922</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Constant and Linear Trend</td>
<td>-37.71294</td>
<td>0.0000</td>
</tr>
<tr>
<td>rIF</td>
<td>None</td>
<td>-38.44811</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>-38.51775</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>Constant and Linear Trend</td>
<td>-38.54118</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

*MacKinnon (1996) one-sided p-values

The Vector Autoregressive analysis in Table 4 suggests the existence of pricing inefficiency in the trading of infrastructure funds in Thailand. Nevertheless, though there are two lagged returns which are statistically significant but only 1 day lagged return of SET Index is logically significant. The lagged information contained in the market index could slightly affect overall funds’ return for one more day. The 3 day lagged return of infrastructure fund is statistically significant but logically insignificant since the previous lagged returns are not statistically significant. As a result, there is no continuity of data impact from the first day. Lastly, the 2.16% adjusted r-squared suggests that the impact of previous day information is very small.

Table 4. Vector Autoregressive Results of the daily returns from SET Index, rIF and Equally Weighted Portfolio of Infrastructure Fund, rSET during April 22, 2013 to January 31, 2019.

<table>
<thead>
<tr>
<th>rIF</th>
<th>rIF (-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>rIF</td>
<td>-0.038867</td>
</tr>
<tr>
<td></td>
<td>[-1.36601]</td>
</tr>
<tr>
<td>rIF</td>
<td>0.019111</td>
</tr>
<tr>
<td></td>
<td>[ 0.67305]</td>
</tr>
<tr>
<td>rIF</td>
<td>0.050998*</td>
</tr>
<tr>
<td></td>
<td>[ 1.80133]</td>
</tr>
<tr>
<td>rIF</td>
<td>0.029258</td>
</tr>
<tr>
<td></td>
<td>[ 1.03411]</td>
</tr>
<tr>
<td>rIF</td>
<td>0.047100</td>
</tr>
</tbody>
</table>
Meanwhile funding the infrastructure to support the leap forward growth of Thailand is a new challenge for Thailand, investors demand the new investment vehicles which are not too risky like common stocks and do not offer too low return. Infrastructure fund was introduced as the solution. This paper investigates the characteristics of infrastructure fund in comparison to the Thailand’s stock market during April 22, 2013, the first trading day of the first infrastructure fund, to the end of January 2019. Overall, the daily return averages of infrastructure fund and the common stock are approximately the same. Nevertheless, infrastructure fund’s return is not as highly volatile as common stock’s return and the fund is not highly associated with the common stocks. Under CAPM, the single factor analysis shows that overall infrastructure fund’s return is partially positively influenced by stock market’s return and the infrastructure fund should be categorized as the low risky asset class. The Vector Autoregressive analysis suggests that there exists the pricing inefficiency in the trading of infrastructure funds in Thailand. The lagged information contained in the market index could continuously marginally affect the infrastructure fund’s return in the next day.

The findings suggest that infrastructure fund is suitable for investors who prefer low risk investment. The issuers should target this kind of investors, such as pension funds and aging investors, as the potential fund providers. The low risk also suggests that the cost of financing from infrastructure fund should be lower than common stocks. The results also indicate that investors should consider other factors besides the market sentiment when they make investment decision on infrastructure fund. For academics or other researchers, the evidences of pricing inefficient of infrastructure fund trading are disclosed in VAR analysis. Lastly, the policy makers of infrastructure fund should focus on the low risky investors’ interest more than other group of investors.

The further study on infrastructure fund should be conducted in other different aspects, for example, the comparison of the fund’s performance to other asset classes or the study on idiosyncratic risk. The knowledge from in-depth studies of infrastructure fund would promote

<table>
<thead>
<tr>
<th></th>
<th>rIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>rSET</td>
<td>[1.68792]</td>
</tr>
<tr>
<td>rSET (-1)</td>
<td>0.064029***</td>
</tr>
<tr>
<td>rSET (-2)</td>
<td>0.013823</td>
</tr>
<tr>
<td>rSET (-3)</td>
<td>0.022302</td>
</tr>
<tr>
<td>rSET (-4)</td>
<td>-0.011649</td>
</tr>
<tr>
<td>rSET (-5)</td>
<td>0.028160</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[1.49123]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.021606</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Adj. R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.015053</td>
</tr>
</tbody>
</table>

* Significant at 0.10 ** Significant at 0.05 *** Significant at 0.01

5. Conclusion
more understanding and benefits for market participants because the fund is still new for Thailand and many developing countries’ capital markets.

6. References


Factors Affecting the Assurance of Savings in Cooperative from the Perspective of Member: A Case Study of Assumption University Savings & Credit Cooperative Limited (AUSCC)

Annop Peungchuer
Assumption University

Amara Tirasriwat
Assumption University

Asha Mathew
Assumption University

Naruemol Tridechapol
Assumption University

Abstract

The purpose of this study was to examine factors affecting savings in AUSCC, focusing on factors affecting the confidence or assurance, needs assessment for confidence, and guidelines to enhance the level of confidence in members. This is an empirical research with questionnaire being used as the tool for collecting data from 140 sample AUSCC members. The collected data were analyzed in terms of mean, standard deviation, factor analysis, priority need index, and analysis of variance for testing the difference in members’ qualifications towards the assurance of savings in AUSCC. The research findings focused on internal factors such as competency and experience of AUSCC management team, AU incremental salary, bonus and fringe benefits, confidence towards sustainability of AU, confidence in Au Financial policy, and confidence in Au internal organization management. There is a significant difference relating to difference in position and salary of AUSCC members towards the competency and experience of management team that affected their confidence in savings at a significant level of 0.05. The need assessment analysis found that the needs for enhancing the level of confidence in AUSCC savings are: ability of management to communicate clearly at meetings; ability to investigate and audit cheating and fraud; knowledge of laws, regulations, and criteria of contract knowledge; strict, independent and fair decisions made by the board members; and good governance and internal control.

The level of confidence can be enhanced by proper rules; good governance and internal control.

Keywords: assurance, saving, savings & credit cooperative, Assumption University
The Mediating Effect of Customer Knowledge Sharing on Organizational Performance

Khalid Abdul Wahid
Universiti Teknologi MARA
awkhalid@kelantan.uitm.edu.my

Ahmad Suffian Mohd Zahari
Universiti Teknologi MARA
ahmadsuf@tganu.uitm.edu.my

Shahsuzan Zakaraia
Universiti Teknologi MARA
shah81@uitm.edu.my

Hat inah Abu Bakar
Universiti teknologi MARA
hatin463@kelantan.uitm.edu.my

Abstract

Customer knowledge as an external factor which is vital and can affect an organizational performance and survival. Customer knowledge consists of knowledge for customer (KfC), knowledge about customer (KaC) and knowledge from customer (KfrC). Many research regard customer knowledge as a strategic resource for companies to improve innovation, to facilitate the detection of new market opportunities, and to support long-term customer relationship. However, there is still a lack of understanding of the role of knowledge sharing in improving an organizational performance. This study aims to investigate the impact of customer knowledge and innovative customer knowledge sharing on organizational performance. Second is to study a mediating effect of innovative customer knowledge sharing. The findings showed that customer knowledge has positively influenced customer knowledge sharing (CKS) except the factor of knowledge about customer (KAC). The organizational performance (OP) was positively impacted by customer knowledge sharing (CKS). The finding also showed that customer knowledge sharing (CKS) had a mediating effect between customer knowledge (CK) and organizational performance (OP).

Keywords: customer knowledge, knowledge sharing, organizational performance, Partial Least Square (PLS)
Proposal of Business Ecosystem Strategy Construction Method*

Hiroshi Kubo
Chiba Institute of Technology
hiroshi.kubo@kubo-labo.com

Xiaoxia Qu
Chiba Institute of Technology
q848813@gmail.com

Takashi Kakimoto
AnT Labs
ronkkmt@gaia.eonet.ne.jp

Abstract

Currently, globalization and digitalization are highly advanced, and the competition among "platform ecosystem" of platformers represented by "GAFA" (Google, Apple, Facebook, Amazon) is increasingly intense. Since M. Iansiti and R. Levien announced in 2004, the importance of building a business ecosystem, various scholars have announced the ecosystem strategy. However, concrete methods for constructing the strategy have not yet been established. Therefore, in this research, the author proposes a concrete method of constructing a business ecosystem strategy based on the knowledge system of "3 stage model" and "integrated management" of P2M (Project & Program Management). The main procedures are as follows. First, based on Quasi-decomposition potential of system theory, the hierarchical structure of business is clarified. Next, an analysis method of the architecture between each hierarchy is shown. Furthermore, a method of constructing a standardization strategy based on the results is shown. Finally, “Abernathy and Utterback multilayer model” which represents future strategies of each hierarchy is proposed. The effectiveness of the business ecosystem strategy constructed by the above method was confirmed from the viewpoint of three KPIs in case studies of photovoltaic power generation business.

Keywords: business ecosystem strategy, P2M, architecture, system theory, A-U theory

* This work was supported by JSPS KAKENHI Grant Number JP16K00657.
Study on Mandala Matrix Method to Achieve Business Goals
- Business Analysis for Accomplishment and Strategic Drafting Technique -

Masatoshi Mori
Chiba Institute of Technology
masatoshi.mori@it-chiba.ac.jp

Abstract

In recent years, changes in the industrial structure on a global scale have begun to occur in the background of digitization of information. As a result, a business model that reverses the conventional business scheme is emerging. In this research, considering these changes of the business environment, we clarify the merits and problems of conventional business framework and previous research. In addition, it aims to propose a more effective business strategy method by utilizing Mandala matrix method.

*Keywords*: wage inequality, development, emerging economy, developing country
LMX Differentiation and Relationship Conflict: The Moderating Role of Authentic Leadership

Jiayin Ou
Assumption University
jiayinou@foxmail.com

Wanny Oentoro
Assumption University
woentoro@msme.au.edu

Abstract

In the paper, authors propose a conceptual model that provides a better understanding about the relationship between leadership and relationship conflicts, to comprehensively answer the question about whether there are effective ways to reduce team relationship conflicts. The authors identify the basis of Leader–Member Exchange differentiation as an antecedent factor affecting the relationship between LMX differentiation and conflict. From the perspectives of leadership and drawing from the theory of social comparison, it is hypothesized that LMX differentiation at the individual-within-group level affects the quality of intragroup relations which could lead to the team relationship conflict. It is proposed that authentic leadership plays a moderating role in the relationship between LMX differentiation and team relationship conflict. The authors argued that relatively low authentic leadership or higher authentic leadership can alleviate the impact of LMX differentiation on team relationship conflicts. Moreover, this conceptual model will contribute to the extension of leadership theory and relationship conflicts as well as contribute to the authentic leadership literature. In practical implications, the study offers some recommendations for management to reconsider the relationships between employers-employees in order to enhance the effectiveness of these relationships.

Keywords: leader–member exchange differentiation, team relationship conflict, authentic leadership.
Income Inequality of Taiwan’s Households, 1985-2013

Chien-Liang Chen
College of Management
National Chi Nan University

Chung Ming Kuan
National Taiwan University

Abstract

Income inequality is one of the top societal concerns for all countries at various development stages. Most governments have counted inequality as one the central issues of social development and economic policy. The tendency toward worsening income distribution prevails around the world over the past decades (Piketty, 2014). It seems development of capitalism is in line with inequality inevitably. According to the literature, however, rising inequality is associated with various socio-economic and socio-demographic factors along economic growth including internationalization, technological advancement, population ageing, household decomposition, wealth concentration, etc.

Typically, there are two types of inequality measure and the distribution change of income may be induced by different reasons. On the one hand, if the income inequality is defined on per-capita or individual concept, economic factors would be the key to explain the changing patterns of the distribution. On the other hand, if the distributional index is measured by household unit, demographic factors other than economic reasons should not be ignored because economic development will inevitably bring socio-demographic change for both developing and developed countries. Peich et al. (2012) examine Germany’s income inequality across year 1991 to 2007, shedding lights on the effect of changing household structure. It is found that Germany’s inequality worsening is largely attributed to changing employment behavior with the non-negligible effect of shrinking household size to a certain extent.

The inverted-U hypothesis proposed by Kuznets (1955) stresses that income inequality will increase initially then decline along the pace of economic development. Taiwan, on the contrary, has presented the opposite pattern as the inverted-U hypothesis predicted over the past decades. The fast growing period of Taiwan over the 1960s and 1970s has shown equalizing distribution, while the reverse is true for slower growth and increasing inequality since 1980 up to current. The rapid economic growth combining with comprehensive social and demographic transition has made Taiwan an ideal laboratory for income distribution study (Deaton and Paxson, 1994).

Presumably, quantifying income distribution is to measure the relative welfare of various income level’s economic units, thus household income inequality heavily depends on the dynamics of household composition. Of course this problem does not exist in the discussion on individual-based (per-capita) income (earning) inequality. Suppose the household demographic characteristics remain fairly stable over a period of time in an economy, changing inequality index over the time span will be mainly attributed to economic factors. In contrast, if the household demographic structure has gone through considerable changes, such as significant household head ageing or size shrinking that are usually seen in developed
economies, the household-based income distribution measure per se will be influenced by non-economic factors. In general, economic development brings about income growth as well as demographic change. These factors may be positively or negatively correlated with each other. It is needed to disentangle economic from non-economic factors to clarify the causes and effects of income inequality.

Some studies documented the fact that demographic factors play a dominant role to Taiwan’s equalizing distribution prior to 1980s, see Fei et al. (1979), among others. Gini coefficient and Oshima index of Taiwan is at a rising trend from 1980 to around year 2000 and it attracts plenty of studies focusing on the phenomenon; almost all of them conclude that household composition transition explains the worsening inequality. Nevertheless, since year 2000 and onward issues of income distribution lost its attractiveness to researchers only few researches paid attention to the keep rising inequality pattern. In fact there is lack of a comprehensive overview on Taiwan’s long term income distribution and its consequence. Purpose of this study is to examine the long-term changing pattern of Taiwan’s household income inequality along the path of economic development over the past 3 decades, from 1985 to 2013.
Financial Literacy and Financial Behavior of the Young

Rattana Waranyasathid
Assumption University

Abstract

Financial literacy, the competency in making simple financial decisions regarding the basic knowledge about interest compounding, inflation, and diversification of risk (Lusardi & Mitchell, 2014, French & McKillop, 2016), is crucial for the young individuals in making financial decisions. Lack of financial literacy may hinder individuals’ ability to accumulate wealth, increase debt burden, or inefficient retirement planning. The significances of financial literacy are all too apparent. However, results from previous studies have shown that financial literacy levels of many countries are low. Lusardi and Mitchell (2014) indicated that only 30.2% of respondents in the U.S. can answer all of the three financial literacy questions correctly.

Although the research studies of financial literacy in the developed countries are prominent, there is less empirical research that study financial literacy of the young individuals in developing countries, particularly in Thailand. Therefore, the present study attempts to fill this gap by investigating the financial literacy level of the Thai university student. Understanding the level of financial literacy can assist policy makers to design effective program to help improve individuals’ financial decisions and planning.

In addition, previous literatures have examined the relationships between financial literacy and economic outcomes, i.e. credit card behavior (Robb & Sharpe, 2009; Robb, 2011), indebtedness (Gathergood, 2011; Lusardi & Tufano, 2015), and retirement planning (Lusardi & Mitchell, 2007). However, the studies on the relationships between financial literacy and financial behavior are still limited. Therefore, the present study contributes to the existing literature by examining the relationship among financial literacy, money management behavior, and investment experience of the university students. The present study aims to answer whether high level of financial literacy results in better money management behavior and investment decisions or not. Results from this study may provide implication for policy makers and educators to formulate policies and strategies to improve financial literacy level and shape money management behavior in order to assist the young to accumulate wealth since an early year of working life.

Questionnaire survey method is used to measure the three main variables i.e. financial literacy, money management behavior, and investment experience. Respondents are the university students.
Social Capital and Knowledge Management Practices in Indian Information Technology Companies

Aparna K*
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
nayak.aparna@ymail.com

Asish Oommen Mathew
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
asishmathew@gmail.com

Lewlyn L. R. Rodrigues
Department of Humanities and Management
Manipal Institute of Technology
Manipal Academy of Higher Education
rodrigusr@gmail.com

Abstract

This paper investigates the influence of social capital dimensions such as trust, social norms, obligate & expect, identity, on knowledge management practices such as knowledge sharing and knowledge creation. This research analyses data collected from select Indian IT companies using Structural Equation Modeling – Partial Least Square method. The standard questionnaire used for data collection was validated using a pilot survey. Later, a primary data which consisted of 219 responses were collected from around 15 IT companies situated in South India, across four major cities, through online survey. The path analysis was conducted using SEM-PLS approach to test the hypotheses. Social capital was found to have a significant relationship with Knowledge Management Practices – Knowledge Sharing and Creation. When analyzed individually, it was found that all the dimensions of social capital under consideration except ‘Identity’ had a significant relationship with Knowledge Sharing whereas ‘social norms’ was the lone dimension of social capital which had a significant relationship with Knowledge Creation. This study gives clear directions to managers on areas to focus on for developing an effective KM in their organization. Recommendations are provided based on the results that would assist the KM practitioners of IT industry to make strategic decisions.

Keywords: knowledge sharing, knowledge creation, social capital, identity, obligate & expect, trust, social norms.

*Current Affiliation of the Author: Applications Engineer, Oracle India Ltd.
The role of Practical Proficiency to Increase Teaching Effectiveness in the Educational Business

Dewi Diana Lukitasari
Pelita Harapan University
dlukitasari@gmail.com

Innocentius Bernarto
Pelita Harapan University
bernarto227@gmail.com

Niko Sudibjo
Pelita Harapan University
niko.sudibjo@uph.edu

Abstract

This paper aims to introduce the role of practical proficiency in teachers’ teaching effectiveness and their behavioral intention to use information and communication technology (ICT) in their teaching and learning process. The use of different curricula in school recently requires teachers to have additional jobs to create curriculum maps so that the entire material from the curriculum can be completed in one school year and requires each teacher to have sufficient competence and professionalism so that they can carry out his duties in teaching. With this demand, the teacher is expected to be more innovative, flexible and efficient in carrying out their duties. They are expected to be able to deliver students to achieve their higher level educational both in Indonesia or in other countries. The school’s performance in educational business can be measured from the teaching effectiveness and teacher’s behavioral intention. Data were collected from 98 teachers who participated in the survey. Respondents were teachers at a high school in South of Jakarta. The teachers answered the questionnaire given. Structural equation modeling is used to test the hypothesis of the relationship between self-efficacy, social influence, digital competence using practical proficiency intervening variables to behavioral intention and teaching effectiveness using ICT. The practical proficiency is seen to have a positive influenced to the teaching effectiveness.

Keywords: practical proficiency, teaching effectiveness, behavioral intention, ICT, digital competence, social influence, self-efficacy, educational business.
Influences of the Organizational Justice and Self-Efficacy on Employee Work Motivation and Organizational Commitment

Chanita Jiratchot  
Assumption University  
chanitasry@msme.au.edu

Nucharee Supatn  
Assumption University  
nuchareespt@msme.au.edu

Abstract

The influence of perceived fairness in the organization on the employee motivation and organizational consequences has been of interest for decades. Organizational justice is one of the fairness theories that explain employee work motivation. Only procedural justice and distributive justice are popularly mentioned in previous researches. This research studied all four types of organizational justice, i.e., procedural, distributive, interpersonal, and informational justice. The four types of organizational justice were expected to have the influences on employee motivation, intrinsically and extrinsically, and organizational commitment as well. Apart from the perceived fairness, one important employee’s self-perception, “self-efficacy” was proposed as another factor that affects employee motivation and organizational commitment. Thus, the question, “How do perceived organizational justice and self-efficacy affect employee’s work motivation and organizational commitment?” is to be emphasized. Questionnaire survey was conducted. The measurements adopted from the previous researches were modified with the Thai business context obtained from the interviews with the Thai employees. Survey data were collected from 500 employees who were working in finance and banking, FMCG and manufacturing, construction and real estate, computer and information technology, logistics, hospital, and advertising fields. Structural equation modeling was performed to test the research framework and hypotheses. The results indicated that informational justice and self-efficacy affected both intrinsic and extrinsic motivation. Both the direct and indirect influences of the self-efficacy and informational justice on organizational commitment were also shown. The intrinsic work motivation positively influenced organizational commitment while the extrinsic work motivation did not. Surprisingly, the effects of the procedural justice, distributive justice, and interpersonal justice on the intrinsic and extrinsic motivation were not found while the marginal influences of distributive justice and interpersonal justice on organizational commitment was illustrated.

Keywords: organizational justice, self-efficacy, motivation, organizational commitment
Factors Influencing Knowledge Management in Thailand’s Law Industry

Junlawut Knokham  
Assumption University  
junlawut@gmail.com

Nichanan Sakolvieng  
Assumption University  
nichananskl@au.edu

Abstract

This paper aims at examining factors that influence knowledge management (KM) in a Thailand’s law industry by using a technical or system-oriented perspective. Despite some extant research on the implementation of information technology systems in law firms in Thailand, the focus on KM is not evident. This presents a significant gap in the literature that this paper aims to shed useful light on. The objectives of this paper are threefold. First, to examine the role of KM in law firms in Thailand. Second, to identify factors that influence the quality of KM system in law firms in Thailand. Last, to identify factors that influence the quality of KM content in law firms in Thailand. This paper adopts a conceptual model proposed by Kulkarni, Ravindran, and Freeze (2007) to investigate KM in the context of law firms in Thailand. A quantitative questionnaire survey was used in this study. The data was collected from 207 employees working in law firms in Thailand. Descriptive statistics and structural equation modeling (SEM) were used in analyzing the data. The results indicated that the model’s reliability, discriminant and convergent validity were good. The developed model was reasonably well fitted even thought it was not perfect. Although the results confirmed a relationship between the two dimensions of KM systems quality which are system quality and content quality, only user attitude and leadership support (out of five antecedents—i.e. user attitudes, incentives, organizational culture, leadership support, and IT infrastructure—were found to have a significant relationship with knowledge content quality and KM systems quality, respectively. Thus, the study did not successfully confirm the Kulkarni et al. (2007)’s KM systems success model in the context of law firms in Thailand. Further investigation of the model’s applicability in different contexts is worth pursuing.

Keywords: knowledge management, KM, law firm, D&M information systems model, KM system success, KM in Law Firms
An Innovative Entrepreneur Using Digital Marketing Management to Promote: A Makerel Fish Tails Crispy Snack For Health and Wellness Snack Industry

Metta Ongkasuwan, Ph.D.
School of Management and Economics
Assumption University
mettaoks@msme.au.edu

Akechai Judkrue, Ph.D.
School of Management and Economics
Assumption University
akechaidk@msme.au.edu

Maneerat Kor-Udom, Ph.D.
School of Management and Economics
Assumption University
maneeratkrd@msme.au.edu

Abstract

Health and Wellness industry has been growing due to increasing demand for good health and well-being from new health conscious lifestyle generation and growing aging society for decades. Many supplements for their healthy diet use calcium, protein, phosphorus and omega-3 from fish to strengthen bones and muscles. The emerging innovative use of Mackerel fish tails as snack to provide calcium, protein, phosphorus and omega-3 for healthy diet in health and wellness industry becomes the focus of this study. The purpose of this paper is to study an innovative entrepreneur using digital marketing management to promote the customer response toward new innovated Mackerel Fish Tails Crispy Snack in Health and Wellness Snack Industry. The survey conducted in this study used sample size of 306 subjects selected on volunteer basis from office workers in Bangkok areas during February and March 2018. A descriptive analysis used frequency, percentage, average and ranking for consumer responses analysis. The findings suggested that digital marketing promotion provided more promotion information about the new fish tails snack product to customer than television, radio and newspaper. Among digital marketing promotion options, customers rank Facebook, Line, Instagram and Twitter, respectively. Customers want to receive information about the new innovative product with health related concern through digital marketing promotion before making purchasing decision. Finally, they prefer to pick up the new product from convenience stores rather than supermarket and local stores. The findings also suggested the increasing demand for purchasing of new product online and home delivery. The recommendations for further studies included the studies on social medial intelligence, customer preferences on logistics and distribution channels to global cyber market for new innovative entrepreneur.

Keywords: Innovative entrepreneur, health and wellness, digital marketing management, fish tail crispy snack, snack industry
The Feasibility of Decentralized Voting Systems Utilizing Blockchain Technologies and Comparison with Traditional Centralized Voting Systems

Pisal Setthawong  
Assumption University  
pisalstt@msme.au.edu

Chinnapong Angsuchotmetee  
Prince of Songkla University  
chinnapong.a@psu.ac.th

Abstract

Blockchain is a technique for recording transactions between self-auditing ledgers in an open, distributed, permanent, and verifiable manner. Applications of blockchain technology had been mainly focused on financial applications, but there is potential for the adoption of blockchain technology in other domains including the voting process. The election is a mechanism of modern democracy in which a population chooses individuals to hold public office and represent the needs of the public usually through a voting process. As voting is expensive but necessary undertaking in the democratic process, the modification of blockchain technologies to support such a process can provide numerous benefits compared to current approaches that are centralized. This paper explores the feasibility and proposes a framework for applying blockchain technologies for decentralized voting systems. A comparison between centralized election systems and the proposed distributed blockchain approach are provided in which monetary, management, and technological aspects are covered.

Keywords: voting system, blockchain, decentralized system
Choosing between On-Premise and On-Cloud Deployment Model: A New Challenge in ERP

Sumate Perm Wonguswa  
Assumption University  
sumateprm@msme.au.edu

Sakuna Anuvareepong  
Assumption University  
sakunanvr@msme.au.edu

Abstract

A company deciding to implement an ERP system had to make decision on various aspects such as the brand, the vendor, the time line. Due to the trend of cloud computing, a company now needs to make decision on the platform as well. Whether to go with the on-premise or on-cloud ERP poses a new challenge to the decision makers. Our research attempts to explore the aspects of this challenging decision by investigating the company’s perspective on the different deployment models of ERP implementation. The findings are beneficial to both vendors and companies at the later phase of ERP implementation. The insight from this study also provides incremental knowledge to the context of ERP implementation.

*Keywords*: ERP implementation, on-Cloud, on-premise, deployment model
1. Introduction

There is a plethora of scholarly literature investigating and explaining the success factors of ERP implementation, which shed light to better ERP implementation and higher success rate (Fui-Hoon Nah, Lee-Shang Lau, & Kuang, 2001; Motwani, Subramanian, & Gopalakrishna, 2005). However, the technology is moving so rapidly that we need to revisit the factors related to the ERP implementation in order to deal with the ever-changing technology. The rising trend of cloud computing technology has added another layer of complication to the ERP implementation. The firm planning for ERP implementation now has to deal with another question whether to go for the traditional on-premise deployment model or the on-cloud model. This issue is the main motivation of this study and, therefore, this study aims to examine the factors affecting the decision in the later phase of ERP implementation: the decision about which deployment model would fit the firm’s environment.

2. Literature Review

2.1 Cloud Computing

Cloud computing is a new model of digital computing that allows much higher flexibility and scalability to the firms. Cloud computing allows firms to acquire computing resources they need without the need of knowledge and skills in managing those resources (Al-Ghofaili & Al-Mashari, 2014). This is made possible by the cloud service providers who manage and make it available to the firms on demand. In this way, the firms do not need a large initial investment for the hardware and other resources. The firms only pay for what they use, and therefore, cloud computing models allow the firms to scale their computing resources up or down upon their demand (Laudon & Laudon, 2016).

The National Institute of Standards and Technology (NIST) has categorized cloud services into three service models: Software as a Service (SaaS), Infrastructure as a Service (IaaS), and Platform as a Service (PaaS) (Al-Ghofaili & Al-Mashari, 2014; Mell & Grance, 2011; Saini, Saini, Yousif, & Khandage, 2011). For the first service model (SaaS), the provider creates an application and put it on the cloud infrastructure so that the customers can access the application through the browsers. The customers only have the right to use the application normally based on the subscription basis. For the second model (PaaS), the customers can create or acquire an application and deploy or run on the cloud infrastructure provided by the cloud service provider. Yet, the customers do not manage nor have control over the operating system and the server. IaaS as the third model allows the customers to control and manage the operating system. However, the customers may have no or limited control over the networking components.

2.2 ERP System and Deployment Models

Enterprise Resource Planning (ERP) System is an integrated system that supports various business functions in an organization (Laudon & Laudon, 2016; Sousa & Oz, 2014). An ERP system usually requires a large amount of initial investment. Apart from the huge investment, it also takes a lot of time and resources for the ERP implementation. The ERP implementation normally involves the top-level management, and key users from every department. The ERP implementation requires deliberate efforts before, during, and after the implementation process (Motwani et al., 2005).
The traditional deployment model of ERP is on-premise, meaning that the firm buys licenses from the vendor and installs the software on the server located on the firm’s premise (Salleh, Teoh, & Chan, 2012). Recently, as the cloud computing technology has gained more popularity, there are some alternatives to the traditional deployment model.

The first option is the hosted ERP. With this option, the firm still needs to buy the licenses from the ERP vendor just like the traditional deployment model, but the firm does not install the software on the server located on their premise. Instead, the firm will host the software on the third-party server (Al-Ghofaili & Al-Mashari, 2014). There can be two variations of hosted ERP deployment model. The third-party may provide the services on a dedicated hardware or a dedicated virtual instance. However, the users should not be aware of the differences (Castellina, 2011). The hosted ERP option is widely known as on-cloud ERP as called by many vendors. Since this name is in congruent with the on-premise counterpart, we will use the name on-cloud ERP throughout the paper.

Another option is SaaS ERP, also known as on-demand ERP (Lewandowski, Salako, & Garcia-Perez, 2013). This deployment model is based on the concept of SaaS, which means the firm does not need to buy the licenses nor install the software on their server. Instead, the vendors install and host the software on their servers and provide access to the software through the Internet (Johansson & Ruivo, 2013). The firm will access the software by logging in to the system through the browsers and use the system as if the system is located on their premise. Using this option, the firm does not need to maintain the software, the system, and the servers. Hence, even a small or medium firm that does not have IT experts can implement an ERP system fast, easily, and worry-free.

SaaS ERP deployment model is relatively new to the market. As found on major vendors’ web sites and interviewed from one of the vendors, very few vendors in Thailand are currently offering the SaaS ERP option; many vendors will not mention about the option unless being asked. Hence, there are only two prominent alternatives: on-premise and on-cloud ERP (Microsoft, 2018; Oracle, 2018; Sage, 2018; SAP, 2018). Although the SaaS ERP option is available in the U.S., major vendors are still moving slowly toward the SaaS deployment model. Their sales attempts are mainly based on the on-premise and on-cloud ERP while it is apparent that they exhibit more attempt to push the customers toward the on-cloud model (Microsoft, 2018; Oracle, 2018).

Since the SaaS ERP deployment model is still not available in Thailand, this study focuses on the decision between on-premise and on-cloud ERP deployment models. Making decision on the deployment model involves evaluating the risks and benefits inherent to the new alternative. According to the top management of 2 large companies in Thailand, the firms usually defer the deployment model decision to the later phase in their ERP implementation due to the lack of information during the earlier phases. Regardless of the decision time, it is important to understand the factors related to the firm’s decision regarding the ERP deployment model.

To make the decision between on-premise and on-cloud ERP deployment models, the firm needs to consider relevant information regarding risks and benefits of each model. Recent research has identified important factors for SaaS ERP adoption based on vendor’s perception (Johansson & Ruivo, 2013; Lewandowski et al., 2013). Some of these factors can be used as criteria for on-cloud ERP since
2.3 Factors Influencing the Adoption of Cloud Technology

Many companies may be reluctant to use cloud technology, especially when it involves putting important data on the cloud. Plenty of research has attempted to identify the factors related to the adoption of cloud technology. Different studies arrived at different sets of factors. Although there is no consensus on the set of factors influencing the adoption of cloud technology, some common factors can be observed from these research: accessibility, reliability, security, and maintenance skills (Gong, Liu, Zhang, Chen, & Gong, 2010; Johansson & Ruivo, 2013; Lewandowski et al., 2013). Accessibility may be perceived from two aspects: time and place. From the time aspect, the users must be able to access the ERP system whenever they need to. If the users are authorized to use the ERP system, they must be able to access the system any time, whether they need to enter a new transaction into the system or to search for some information on the system. Therefore, it is important that the users must have access to the ERP system even after the business hours. As another aspect, the users must also have access to the system even when they are not in the office. For example, during a day off, if the duty calls, they must be able to access the system from their home. Another instance would be when they are on the journey to visit their customers or when they are out of town for some other reasons, they may need to access the system to get a prompt information for their business deals. Not being able to access the system outside of the premise may cause an opportunity loss to the company (Siau & Tian, 2004), and hence it is also important that the system must be accessible in terms of location of access.

System reliability has been studied in various context. System reliability may be measured from the speed of the response (Au, Ngai, & Cheng, 2008). The internet connection may be perceived as having low reliability if the response time is too slow. Similarly, if the access time or the response time of the ERP system is slow, the system would be perceived as unreliable. From another point of view, regardless of the system response speed, if the system cannot retain accurate and up-to-date data, the system can also be perceived as unreliable. This aspect is known as data integrity. Data integrity comprises data accuracy, currency of the data, and completeness of the data (Hoffer, Venkataraman, & Topi, 2018).

For the perceived security of the system, prior studies indicated the benefit of cloud computing as having strong fault tolerance while security issues were the main concern (Gong et al., 2010). Plenty of research has been conducted regarding security issues in the cloud computing environment (V. Chang, Kuo, & Ramachandran, 2016; Chen & Zhao, 2012; Grobauer, Walloschek, & Stocker, 2011). Although the security of the cloud computing environment has greatly improved and it may be more secure than the traditional environment where the data and systems reside in the servers physically located on the company’s premise (V. Chang et al., 2016; V. Chang & Ramachandran, 2016; Shaikh & Haider, 2011), it is still indicated as one of the main concerns for cloud computing adoption. The reason behind this may be the perception of public towards cloud computing. To be precise, the main concern of cloud computing adoption is the perceived security and not necessarily the actual security.

Lastly, in the traditional environment where data and systems reside in the company’s servers, it requires high technical skills for the IT personnel to maintain the systems, the servers, and the network. A study indicates that the technical related companies are less likely to adopt the cloud solutions while non-technical companies are more likely to adopt the cloud solutions (Wu, Cegielski, Hazen, & Hall, 2013).
3. Research Model

Accessibility of the ERP system directly influences the adoption and the willingness of the users to use the system (Murray & Coffin, 2001). The accessibility of the system covers two aspects, both time and place (M.-K. Chang, Cheung, Cheng, & Yeung, 2008). An accessible system allows users to access the system any time from any places. To evaluate the accessibility of the system, we purposefully measure it separately in terms of time and place. First, we measure whether the users can access the system whenever they need to. This is the aspect of time in the accessibility of the system. Next, we investigate whether the users are able to access the system from wherever they are. This provide the place aspect of accessibility of the system. Therefore, in our model, we break the accessibility construct down into two variables, and we hypothesize that:

H1: Timely accessibility of the on-cloud ERP system directly influences the willingness of choosing the on-cloud over the on-premise deployment model.

H2: Accessibility of the on-cloud ERP system from anywhere directly influences the willingness of choosing the on-cloud over the on-premise deployment model.

Reliability of the system can also be perceived in two aspects: prompt response of the system and data integrity within the system. Again, these two aspects are quite different, and for this reason, we conceptualize as two separate variables in the model. Both timely access to the system and prompt response of the system rely on the speed of the system. In other words, speed of the system can represent the time aspect of system reliability. To adapt to the context of our research, we investigate the user’s perception of the speed of the on-cloud ERP system as compared to the traditional on-premise counterpart. In addition, prior research has measured the system reliability based on the system speed or response time (Au et al., 2008). Some literature also identifies system speed and performance as one of the major concerns for choosing on-cloud ERP system (Lewandowski et al., 2013). As such, we hypothesize that:

H3: Comparable speed of the on-cloud to the on-premise ERP system directly influences the willingness of choosing the on-cloud over the on-premise deployment model.

Another aspect of system reliability is the integrity of the ERP system. This aspect includes the completeness of data retained on the system, the accuracy and the currency of the data (Hoffer et al., 2018; Miller & Doyle, 1987). A system can be perceived as reliable when the users enter the transactional data and can retrieve the complete data in a later time. Furthermore, the data kept on and retrieved from the system must also be accurate and up-to-date. Otherwise, the system is useless. We operationalize this aspect of system reliability as data integrity. This is an issue in cloud services because the data are not stored at the customer’s premise (Dillon, Wu, & Chang, 2010). When the customers have no idea where exactly the data are located, it may raise higher concern for the integrity of the data. On the other hand, if the users believe that the data on the on-cloud ERP system has high integrity, they may be more relieved and may be more willing to choose the on-cloud model. Therefore, our next hypothesis is:

H4: Data integrity directly affects the willingness of choosing the on-cloud over the on-premise model.

Plenty of evidence show that security is the main concern that deters the adoption of cloud computing technology (Chen & Zhao, 2012; Grobauer et al., 2011; Shaikh & Haider, 2011).
Many studies have attempted to alleviate the security issues in cloud computing to accelerate the widespread adoption of cloud computing (V. Chang & Ramachandran, 2016; Chow et al., 2009). Since the security issue is a factor deterring the adoption of cloud computing, it can be inferred that the perceived security may influence the adoption of cloud computing technology. Referred to the context of this study, the companies may be more willing to choose on-cloud ERP model if they perceive that the security of the on-cloud model is not lower than that of the on-premise model. Hence, we hypothesize that:

H5: The comparative security of the on-cloud model directly influences the willingness of choosing the on-cloud over the on-premise model.

As indicated by a prior literature, the non-technical companies are more likely to adopt cloud solutions than the technical related companies (Oliveira, Thomas, & Espadanal, 2014; Wu et al., 2013). The reason could be that the non-technical companies do not possess the required skills to maintain the systems on their premises. Hence, they are more likely to adopt cloud solutions because the burden of the maintenance and other technical issues can then be pushed to the cloud service providers. From this rationale, it is reasonable to infer that when the IT personnel in the company does not possess the required maintenance skills, the company may be more willing to choose the on-cloud option. On the other hand, if the company has a strong IT team with required maintenance skills, on-premise may be preferred. Therefore, we hypothesize that:

H6: The level of maintenance skills of the IT personnel in the company influences the willingness of choosing the on-cloud over the on-premise model.

In addition, we also controlled for three attributes of the company: MNC, MAN, and SCA. MNC represents whether the company is a multi-national company. MAN represents the type of company, whether the company is a manufacturing or non-manufacturing company. SCA is an ordinal variable, representing the scale (size) of the company. Figure 1 depicts our research model. Later in this paper, we will refer to our research model as the ERP DepMo model.

Figure 1. Research Model
4. Research Methodology

We made initial contacts to the ERP vendors to ask for their cooperation in this research, and some vendors agreed to send our online survey link to their clients. We have collected 58 usable responses. All respondents were the employees in the large companies ranging from top management level to the first-line managers. The responses were from different departments in the companies. Some companies are implementing the ERP system; some have been using the ERP system for a while. The responses were solicited both from online and off-line channel. The respondents were not limited to the employees in Thai companies; some of the responses were from the European countries.

The survey questions were derived from the measurement items used in the related literature. Therefore, these measurement items have been proven their internal validity. These measurement items were adapted to fit the context of this study. The data were then analyzed using a component-based structural equation modeling, namely the partial least square method. Several tests have also been conducted to ensure reliability of the measurement items, and various types of validity.

5. Findings

The descriptive statistics are presented in table 1. An independent variable TIME and a control variable MNC have a little issue with the skewness, and hence the data in these two variables may not be normally distributed, which may raise a bit of concern. However, partial least square technique does not require normal distribution (Garson, 2016). The composite reliability and crossloadings have been checked to ensure convergence and discriminant validity. Table 2 presents inter-correlations between latent variables. The inter-correlation between TIME and SPED is higher than the standard threshold of 0.7. There is no other apparent issue for the inter-correlations. Table 3 shows the internal consistency (Cronbach’s Alpha) of 0.92 for the timely accessibility (TIME), 0.98 for the place aspect of system accessibility (PLAC), 0.74 for the response speed (SPED), 0.93 for data integrity (INTG), 0.93 for security (SECU), 0.73 for maintenance skills (MAIN), and 0.98 for the willingness of choosing on-cloud ERP (WILL). All of which are much higher than the suggested threshold of 0.7 (Gefen, Straub, & Boudreau, 2000; Zhu, Kraemer, & Dedrick, 2004). Table 3 also shows that loadings of the indicators on their underlying constructs are higher than the suggested threshold of 0.7 (Goodhue, Lewis, & Thompson, 2006), which demonstrates high internal and convergence validity. Discriminant validity can also be observed from table 3 where the indicators load much higher on their underlying construct than on the others. There are some issues with TIME and SPED, which can be expected since they are a bit correlated. However, previous literature in premier IS journals also demonstrated an alternative method of observing discriminant validity. Discriminant validity can be observed when the average variance extracted (AVE) is higher than 0.5 and the square root of AVE is higher than inter-correlations between the underlying construct and all other constructs (Chin, 1998; Karahanna, Agarwal, & Angst, 2006). This pattern can be observed from table 2, and hence we conclude that discriminant validity can be observed in this study.

The results from partial least square estimation show that the effect of time aspect of system availability (TIME) on willingness of choosing on-cloud ERP (WILL) is -0.27 (significant at p < 0.1), the effect of the response speed (SPED) on willingness of choosing on-cloud ERP (WILL) is 0.64 (significant at p < 0.01), and the effect of perceived security of the on-cloud ERP (SECU) on willingness of choosing on-cloud ERP (WILL) is 0.35 (significant at p < 0.01).
Among the control variables, being a manufacturing or non-manufacturing company (MAN) has a significant effect on the willingness of choosing on-cloud ERP (WILL), -0.19 at \( p < 0.1 \). Figure 2 illustrates the estimated model, showing that H1, H3, and H5 are supported.

Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>5.36</td>
<td>1.52</td>
<td>1.33</td>
<td>7.00</td>
<td>-1.11</td>
</tr>
<tr>
<td>PLAC</td>
<td>4.89</td>
<td>1.93</td>
<td>1.00</td>
<td>7.00</td>
<td>-0.83</td>
</tr>
<tr>
<td>SPED</td>
<td>4.72</td>
<td>1.38</td>
<td>1.00</td>
<td>7.00</td>
<td>-0.41</td>
</tr>
<tr>
<td>MAIN</td>
<td>4.57</td>
<td>1.33</td>
<td>1.67</td>
<td>7.00</td>
<td>-0.19</td>
</tr>
<tr>
<td>INTG</td>
<td>4.75</td>
<td>1.49</td>
<td>1.00</td>
<td>7.00</td>
<td>-0.61</td>
</tr>
<tr>
<td>SECU</td>
<td>4.64</td>
<td>1.49</td>
<td>1.00</td>
<td>7.00</td>
<td>-0.59</td>
</tr>
<tr>
<td>MNC</td>
<td>0.34</td>
<td>0.48</td>
<td>0.00</td>
<td>1.00</td>
<td>0.67</td>
</tr>
<tr>
<td>MAN</td>
<td>0.34</td>
<td>0.48</td>
<td>0.00</td>
<td>1.00</td>
<td>0.67</td>
</tr>
<tr>
<td>SCA</td>
<td>1.90</td>
<td>0.93</td>
<td>1.00</td>
<td>4.00</td>
<td>0.62</td>
</tr>
<tr>
<td>WILL</td>
<td>4.53</td>
<td>1.62</td>
<td>1.00</td>
<td>7.00</td>
<td>-0.48</td>
</tr>
</tbody>
</table>

Remark: Number of observations = 58.

Table 2. Inter-correlations between Latent Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td></td>
<td>0.87</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAC</td>
<td>0.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPED</td>
<td>0.65</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTG</td>
<td>0.88</td>
<td>0.58</td>
<td>0.60</td>
<td>0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECU</td>
<td>0.87</td>
<td>0.48</td>
<td>0.36</td>
<td>0.50</td>
<td>0.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAIN</td>
<td>0.67</td>
<td>0.40</td>
<td>0.29</td>
<td>0.55</td>
<td>0.53</td>
<td>0.42</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC</td>
<td>1.00</td>
<td>-0.13</td>
<td>-0.36</td>
<td>-0.32</td>
<td>-0.32</td>
<td>-0.21</td>
<td>-0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAN</td>
<td>1.00</td>
<td>-0.13</td>
<td>-0.08</td>
<td>-0.24</td>
<td>-0.39</td>
<td>-0.15</td>
<td>-0.34</td>
<td>0.20</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCA</td>
<td>1.00</td>
<td>-0.15</td>
<td>-0.03</td>
<td>-0.18</td>
<td>-0.25</td>
<td>-0.27</td>
<td>-0.28</td>
<td>-0.06</td>
<td>0.04</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>WILL</td>
<td>0.95</td>
<td>0.41</td>
<td>0.40</td>
<td>0.65</td>
<td>0.60</td>
<td>0.57</td>
<td>0.40</td>
<td>-0.14</td>
<td>-0.38</td>
<td>-0.15</td>
<td>0.98</td>
</tr>
</tbody>
</table>

Remark: The elements in the matrix diagonals represent the square root of AVEs.

Table 3. Crossloadings and Internal Consistency

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME1</td>
<td>0.91</td>
<td>0.52</td>
<td>0.71</td>
<td>0.53</td>
<td>0.48</td>
<td>0.47</td>
<td>-0.36</td>
<td>-0.03</td>
<td>-0.14</td>
<td>0.42</td>
</tr>
<tr>
<td>TIME2</td>
<td>0.95</td>
<td>0.67</td>
<td>0.75</td>
<td>0.59</td>
<td>0.43</td>
<td>0.32</td>
<td>-0.39</td>
<td>-0.23</td>
<td>-0.10</td>
<td>0.40</td>
</tr>
<tr>
<td>TIME3</td>
<td>0.94</td>
<td>0.59</td>
<td>0.68</td>
<td>0.47</td>
<td>0.42</td>
<td>0.30</td>
<td>-0.38</td>
<td>-0.11</td>
<td>-0.17</td>
<td>0.29</td>
</tr>
<tr>
<td>PLAC1</td>
<td>0.65</td>
<td>0.98</td>
<td>0.65</td>
<td>0.58</td>
<td>0.33</td>
<td>0.24</td>
<td>-0.35</td>
<td>-0.05</td>
<td>-0.09</td>
<td>0.35</td>
</tr>
<tr>
<td>PLAC2</td>
<td>0.64</td>
<td>0.98</td>
<td>0.70</td>
<td>0.60</td>
<td>0.36</td>
<td>0.34</td>
<td>-0.38</td>
<td>-0.11</td>
<td>0.02</td>
<td>0.43</td>
</tr>
<tr>
<td>PLAC3</td>
<td>0.58</td>
<td>0.98</td>
<td>0.66</td>
<td>0.58</td>
<td>0.35</td>
<td>0.27</td>
<td>-0.34</td>
<td>-0.08</td>
<td>-0.02</td>
<td>0.38</td>
</tr>
<tr>
<td>SPED1</td>
<td>0.77</td>
<td>0.67</td>
<td>0.83</td>
<td>0.55</td>
<td>0.42</td>
<td>0.48</td>
<td>-0.36</td>
<td>-0.21</td>
<td>-0.14</td>
<td>0.52</td>
</tr>
<tr>
<td>SPED2</td>
<td>0.72</td>
<td>0.56</td>
<td>0.77</td>
<td>0.54</td>
<td>0.58</td>
<td>0.56</td>
<td>-0.31</td>
<td>-0.08</td>
<td>-0.08</td>
<td>0.37</td>
</tr>
<tr>
<td>SPED3</td>
<td>0.45</td>
<td>0.46</td>
<td>0.83</td>
<td>0.58</td>
<td>0.30</td>
<td>0.35</td>
<td>-0.14</td>
<td>-0.25</td>
<td>-0.19</td>
<td>0.64</td>
</tr>
<tr>
<td>CURR1</td>
<td>0.54</td>
<td>0.58</td>
<td>0.62</td>
<td>0.94</td>
<td>0.38</td>
<td>0.43</td>
<td>-0.34</td>
<td>-0.41</td>
<td>-0.28</td>
<td>0.52</td>
</tr>
<tr>
<td>ACCU1</td>
<td>0.53</td>
<td>0.58</td>
<td>0.65</td>
<td>0.94</td>
<td>0.46</td>
<td>0.57</td>
<td>-0.32</td>
<td>-0.36</td>
<td>-0.18</td>
<td>0.54</td>
</tr>
<tr>
<td>COMP1</td>
<td>0.55</td>
<td>0.54</td>
<td>0.67</td>
<td>0.94</td>
<td>0.48</td>
<td>0.50</td>
<td>-0.25</td>
<td>-0.34</td>
<td>-0.26</td>
<td>0.61</td>
</tr>
<tr>
<td>SECU1</td>
<td>0.45</td>
<td>0.37</td>
<td>0.51</td>
<td>0.50</td>
<td>0.95</td>
<td>0.45</td>
<td>-0.24</td>
<td>-0.16</td>
<td>-0.22</td>
<td>0.57</td>
</tr>
</tbody>
</table>

α = 0.92

α = 0.98

α = 0.74

α = 0.93

α = 0.93

178
Figure 2. Estimated Model

6. Conclusion and Recommendation

Our study has developed the research model, ERP DepMo, to explore the factors affecting the decision making on the ERP deployment model. The research results indicate that the time availability of the system, the response speed, and the perceived security of the on-cloud ERP system are significant factors in the decision making. Additionally, a non-manufacturing company tends to be more willing to choose the on-cloud over the traditional on-premise model.

The ERP DepMo can help the vendors understand the factors their clients use for making decision on the deployment models. This insight will be beneficial to the vendors in that they can improve their products to meet their clients’ perception of risks and benefits of each deployment model. Not only the ERP DepMo will benefit the vendors, but also they will shed light to other companies that may be considering ERP implementation in the near future. These
prospective companies will have a basic set of criteria (risks/benefits) used by the companies having previously implemented ERP systems.

As a contribution to the academia, this insight will also add to the current understanding of ERP implementation in the perspective of the clients. Firstly, the criteria for choosing the deployment models will be identified and, secondly, the risks and benefits of each deployment model will be elaborated in this paper.

The research is always bound to some limitations, and there is no exception to this study. The sample size is relatively small and may not represent the population well enough. We are still collecting more data and we plan to expand our study to cover more aspects in the decision making, as well as more demographic attributes that may have some influences on the decision.

7. References


Cost and Benefit Analysis of E-Commerce in Different Firm Sizes: Case of Thailand 4.0

Ing-wei Huang
Assumption University
ihuang@msme.au.edu

Songsak Vanichviroon
Assumption University
songsakvnc@msme.au.edu

Abstract

In early January 2017, the Thai government under the National Council for Peace and Order (NCPO) had initiated the policy of Thailand 4.0 to bring Thailand out of the middle income trap. In order to move industries toward Thailand 4.0, several industries started to adopt ICT into their business to improve production and efficiency in sales. This paper analyzes the benefits and costs of E-commerce (EC) from reviewing past literatures and using statistical analysis to identify major factors that influence benefit and cost of EC. The paper found that adoption of EC was due to the perceived benefits from enhanced firm performance, reduction in transaction cost, marketing cost. Moreover, the findings show that post-adoption perspective of the EC is much higher than pre-adoption identifying the benefits over cost of EC. Moreover, the existence of online marketplace and level of EC functions influence the role of small firms in adopting EC. Thus, there is an important role of the government to support successful growth and developments of EC toward Thailand 4.0.

Keywords: e-commerce, e-commerce adoption, cost benefit analysis, SMEs
1. Introduction

In early January 2017, the Thai government under the National Council for Peace and Order (NCPO) had initiated the policy of Thailand 4.0 to bring Thailand out of the middle income trap. (Banchanon, 2017) Thailand 4.0 is an economic model which emphasize on economic prosperity, social well-being, raising human values, and environmental protection. It stems from past economic model which place emphasis on agriculture (representing Thailand 1.0), light industry (Thailand 2.0), and advance industry (Thailand 3.0). The model of Thailand 4.0 identifies the need of quality ICT and Internet infrastructures in order to smoothly connect all sectors effectively and efficiently. (it24hrs, 2017) This model is expected to lead industries towards value creation through inducing innovation, technology and creativity where government expect an increase in Thailand’s research and development expenditure to increase up to 4% of GDP by 2023. (Royal Thai Embassy, Washington D.C., 2018)

To move industries toward Thailand 4.0, several industries started to adopt ICT into their business to improve production, develop faster business processes, foster the efficiency in buying and selling and discover new customers in other countries (Laudon & Traver, 2018). As E-commerce (EC) has been widely utilized and adoption of EC technology is getting simpler with ready-made programs and assistance, increasing number of producers had been adding EC to their sales channel. Observing basic statistics of Internet penetration in the world, ASEAN represents the fourth largest in the number of Internet users but has only 39% Internet penetration as provided in Table 1.

### Table 1: Top 10 Internet Users and Internet Penetration by Country Rank in 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Internet Users</th>
<th>No. of Population</th>
<th>Internet penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>730,723,960</td>
<td>1,384,688,986</td>
<td>53%</td>
</tr>
<tr>
<td>EU</td>
<td>398,100,000</td>
<td>517,111,329</td>
<td>77%</td>
</tr>
<tr>
<td>India</td>
<td>374,328,160</td>
<td>1,296,834,042</td>
<td>29%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>253,598,272</td>
<td>651,899,388</td>
<td>39%</td>
</tr>
<tr>
<td>United States</td>
<td>246,809,221</td>
<td>329,256,465</td>
<td>75%</td>
</tr>
<tr>
<td>Brazil</td>
<td>122,841,218</td>
<td>208,846,892</td>
<td>59%</td>
</tr>
<tr>
<td>Japan</td>
<td>116,565,962</td>
<td>126,168,156</td>
<td>92%</td>
</tr>
<tr>
<td>Russia</td>
<td>108,772,470</td>
<td>142,122,776</td>
<td>77%</td>
</tr>
<tr>
<td>Mexico</td>
<td>73,334,032</td>
<td>125,959,205</td>
<td>58%</td>
</tr>
<tr>
<td>Germany</td>
<td>72,365,643</td>
<td>80,457,737</td>
<td>90%</td>
</tr>
</tbody>
</table>

Note: Internet penetration = Internet Users/Population
Reference: CIA (2016)

If look attentively within the ASEAN member countries, Singapore and Malaysia represent countries in ASEAN with the highest Internet users and penetration. For Thailand, Internet penetration is still low representing the 6th in ASEAN with 47.22% Internet penetration (See Figure 1).
According to NSO survey in 2016, from a total of around 2.2 million companies, medium firms (firms with 51-200 employees) and large firms (firms with more than 200 employees) tend to have a higher EC engagement than small and micro firms where around 90% of medium and large firms have access to computer and Internet; about 85.7% and 65.6% has websites respectively; about 17.2% and 16.4% are engaged in EC activities respectively such as having firm website in providing company information, product information as well as selling products online. However, in micro and small size firms (firms with less than 50 employees), there are still limited utilization of e-commerce with around 18.09% has websites and only 5.03% are engage in EC (National Statistics Office , 2016).

Figure 2 shows the proportion of ICT and EC utilization in Thailand by firm size. Results seems to be consistent with past literatures that found large and medium sized firms to be more engage in EC as a result of benefits in scale economies, improved efficiencies and cost reduction. (Lee, 2001; Cohen & Kallirroi, 2006) On the other hand, according to data from NSO, micro and small firms have limited utilization of EC with less than 10% of the overall enterprises having company web sites. Grandon and Pearson (2004) depicts similarly that very few SMEs utilized fully EC functions. They merely use the Internet and the Web for business information and communication such as e-mail and are reluctant to conduct transaction online. This is supported by earlier studies that found that smaller firms are less likely to engage in EC as such investments tend to absorb a significant part of their constrained resources. Moreover, Rahayu & Day (2015) many firms have to consider the appropriate compatibility of technology infrastructure, culture, value and work practices. Similarly, firms that lack experiences and know-how causing production delays, and are troubled by their technological weakness in solving security and privacy problems of EC systems. (Cohen & Kallirroi, 2006)
This paper will investigate what are the important factors that contribute to the benefits and cost of EC. More specifically, this study will firstly investigate the benefits and costs of EC from past studies. Then will evaluate cost and benefit in adoption of EC by identifying the factors that influence benefit and cost of EC. Thirdly, the study will identify the relationship between cost and benefits of EC on decision to adopt EC in Thailand. Fourthly, study will identify impact of EC benefit from different firm sizes and online market place in Thailand. Finally, the paper will provide policy recommendations for government to effectively support the growth of EC businesses toward Thailand 4.0.

2. Literature review

Past literatures on EC had been focused mainly on the benefits of EC such as in Hoq, Kamal, & Chowdhury (2005), Cohen & Kallirroi (2006), and Marshall & McKay (2002). Chong (2008), Grandon & Pearson (2004), and Kartiwi & MacGregor (2007) has shown that the adoption of EC by SMEs was still small compared to the adoption of EC by large size firms. However, Marshall & McKay (2002), OECD (1999), and Vadwala & Vadwala (2017) argued that only a few has studied and identified the cost of EC in developing countries particularly in Thailand.

Earlier papers had emphasized that EC supported the firm in providing information about firm and firm’s products which can assist firms in identifying product differentiation such as in Laudon & Traver (2018), Turban, Lee, King, Liang, & Turban (2010), Ramayah, Ling, Taghizadeh, and Rahman (2015), Ibrahim, Turyakira, & Katumba (2019). Consumers can use the Internet and Website as a powerful source of information about products and purchasing channels. Other papers emphasized on special features provided by the advancement in information and communication technologies which can portray the benefits in the form of pictures, short video clips, and interactive media that can also store customer and transaction information for further analysis and research. Several past researches found EC to assist firms in cost reduction through reduced paper work, reduced production and procurement cost, transaction cost reduction, and marketing cost reduction (Wigand, 1995; Lee, 2001; Pereira &
Mazón, 2001; Hoq, Kamal, & Chowdhury, 2005; Garg, 2016; Ibrahim, Turyakira & Katumba, 2019). Others had found that EC increases sales revenue than the traditional brick-to-mortar by inducing marketplace benefits through creating information density at larger scale than the normal media such as newspaper ads and advertisement on TV (Huang & Vanichviroon, 2008; Garicano & Kaplan, 2001; Laudon & Traver, 2018).

However, EC can create cost on enterprise as well which can be around $5,000 - $100,000 for starting up EC and another $10,000 – 100,000 yearly for maintenance cost. Marshall & McKay (2002), OECD (1999) and Vadwala & Vadwala (2017) explained that there are technical and non-technical cost of e-commerce which for technical cost include lack of system securities, reliabilities, or standards from poor implementation of the e-commerce as well as the need of special web servers and software required in setting up the system that need to be compatible with the firm’s present database application or operating system. While, the non-technical cost of e-commerce include high initial cost and lack of experiences, user resistance due to mistrust in system, security and privacy problem, as well as inability to touch and feel the product as in brick and mortar stores.

As most past researches focused on the benefit and cost of EC, increasing number of researches had tried to identify the benefits of EC in SMEs. This research analyzes whether the benefit of EC will be the same for firms of different sizes and how SMEs can benefit from EC. Different firm sizes identifies different perception on the benefit and cost of EC. In larger firms, EC cost is not the firm’s major concern as cost of adopting EC can be reduced through economies of scale and scope. However, in micro and SME firms, the cost of EC adoption might be more costly than large firms and come with much less features due to cost limitation. Thus, the investment in EC for SMEs and micro firms might not stem from benefits in cost reduction, but could result from other benefits that firms can achieved through the EC applications such as enhancing competitiveness, inducing domestic and international market penetration, marketing and advertisement of company, product information, and increasing number of buyers than just brick to mortar. This results are found to be similar to past studies of SMEs in developing economies that analyzed the EC by firm sizes. (Marshall & McKay, 2002; Cohen & Kallirroi, 2006) Thus, this paper will analyze the benefit and cost of EC and identify whether different firm sizes generate similar benefits from EC. Finally, this paper will utilize findings to identify appropriate government policies and support needed in enhancing the successful adoption of EC in different firm size.

3. Research Methodology

The empirical evidence of this paper utilizes the snowball sampling through collection of survey questionnaires from customers of two major EC website developers. A total of 52 enterprises utilizing EC in 15 different industries in Thailand of different firm sizes has been collected over the period from Dec 2018 – February 2019. Among these, there are 14 micro firms (1-10 employees), 14 small size firms (11-50 employees), 13 medium size firms (51-200 employees), and 11 large size firms (more than 200 employees).

The framework of the research is compiled from past studies on the benefits and cost of EC that link to the adoption and continuation usage of EC in these firms. For benefits of EC, six major factors are utilized to identify the impact on benefits of EC which include 1) providing company and product information, 2) assisting firms in enhancing firm performances (efficiency and market penetration), 3) cost reduction as compared to brick and mortar, 4) transaction cost reduction, 5) marketing cost reduction and 6) error reduction and elimination.
(Garicano & Kaplan, 2001; Marshall & McKay, 2002; Hoq, Kamal, & Chowdhury, 2005; Cohen & Kallirroi, 2006; Huang & Vanichviroon, 2008; Laudon & Traver, 2017) On the hand, in terms of cost, four major factors are utilized to identify the impact on cost of EC which include 1) technical cost (design, installation, hosting, and maintenance of EC system), 2) non-technical cost (staff experience, privacy and security problems), 3) marketing cost and 4) other drawbacks and limitations of EC. (Marshall & McKay, 2002; OECD, 1999; and Vadwala & Vadwala, 2017). These factors are utilized to identify the relationship with respect to the following framework of this research.

**Figure 3 Research Framework**

<table>
<thead>
<tr>
<th>Information</th>
<th>Benefits of EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td></td>
</tr>
<tr>
<td>Reduce Physical Cost</td>
<td></td>
</tr>
<tr>
<td>Reduce Transaction Cost</td>
<td></td>
</tr>
<tr>
<td>Reduce Marketing Cost</td>
<td></td>
</tr>
<tr>
<td>Error elimination</td>
<td></td>
</tr>
<tr>
<td>Technical Cost</td>
<td></td>
</tr>
<tr>
<td>Non-technical Cost</td>
<td></td>
</tr>
<tr>
<td>Marketing cost</td>
<td></td>
</tr>
<tr>
<td>Drawbacks</td>
<td></td>
</tr>
<tr>
<td>Cost of EC</td>
<td></td>
</tr>
</tbody>
</table>

H1: Company and product information, company sales and performance, physical cost reduction, transaction cost reduction, marketing cost reduction, and error elimination influence benefits of EC.

H2: Technical cost, non-technical cost, marketing cost, and drawbacks of EC influence cost of EC.

H3: Benefits and cost of EC influence firm’s decision to adopt and continue using EC for the business.

H4: The perceived benefits and cost of EC are higher after the adoption of EC than before adoption.

H5: There are differences in continuation use of EC, perceived benefits of EC, and perceived cost of EC among different firm sizes.

H6: There are differences in perceived benefits of EC on firms that use and not use online marketplace by different firm sizes.

H7: There are differences in the benefit and decision to continue utilization of EC among firms that uses different levels of EC function by firm size.

4. Research Finding

From questionnaire survey, among the 52 respondents, 35 respondents are company owners, managers, and directors of the company utilizing EC, 10 respondents are IT staffs and engineers, and the rest are company staffs. Table 2 provides information on respondent’s company and the contribution from EC. The number of firms under each category of firm size are distributed quite evenly with the majority in micro and small size firms. Among these, 67% of firms reported to have increased in sales revenue from EC. Among these 15 firms are pure
click firms which means all its sales came from only EC. While, there are around 11% of the firms that reported not having any increase in sales. However, when asked about cost, all firms found that the use of EC helps them to reduce cost. Most firms reported that they can reduce cost between 10-49% representing 67% of all respondent firms.

In terms the major EC functions utilized by the firms in different firm sizes, Table 3 identified that the major EC functions utilized by all firm size is having EC in providing information on company and products representing 86% of the firms. Mohammed, Almsafir, and Alnaser (2013) argued that companies utilized Internet for manage information and integrated EC in their business processes. Followed by utilization of fund transfer for the payments of goods and services 63%, credit card payment 46%, ordering process and shopping cart function 44%, payment application 38%, and cash upon delivery 25%.

Table 2 Descriptive Information on Respondent Firms

<table>
<thead>
<tr>
<th>Firms Size</th>
<th>No. of firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (1-10 employees)</td>
<td>14</td>
<td>26.92</td>
</tr>
<tr>
<td>Small (11-50 employees)</td>
<td>14</td>
<td>26.92</td>
</tr>
<tr>
<td>Medium (51-200 employees)</td>
<td>13</td>
<td>25.0</td>
</tr>
<tr>
<td>Large (&gt;200 employees)</td>
<td>11</td>
<td>21.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% increase in TR from EC</th>
<th>No. of firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10%</td>
<td>9</td>
<td>17.31</td>
</tr>
<tr>
<td>10 - 29%</td>
<td>10</td>
<td>19.23</td>
</tr>
<tr>
<td>30 - 49%</td>
<td>6</td>
<td>11.54</td>
</tr>
<tr>
<td>50 - 69%</td>
<td>2</td>
<td>3.85</td>
</tr>
<tr>
<td>&gt; 69%</td>
<td>8</td>
<td>15.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EC Contribute on Sales</th>
<th>No. of firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase sales</td>
<td>31</td>
<td>59.61</td>
</tr>
<tr>
<td>Does not increase sales</td>
<td>6</td>
<td>11.54</td>
</tr>
<tr>
<td>Pure click firms</td>
<td>15</td>
<td>28.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reduce Cost by</th>
<th>No. of firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10%</td>
<td>10</td>
<td>19.23</td>
</tr>
<tr>
<td>10 - 29%</td>
<td>19</td>
<td>36.54</td>
</tr>
<tr>
<td>30 - 49%</td>
<td>16</td>
<td>30.77</td>
</tr>
<tr>
<td>50 - 69%</td>
<td>1</td>
<td>1.92</td>
</tr>
<tr>
<td>&gt; 69%</td>
<td>6</td>
<td>11.54</td>
</tr>
</tbody>
</table>

Source: Created by Authors
Table 3 Major Functions of EC Utilized by Respondents’ Firms by Firm Size

<table>
<thead>
<tr>
<th>Firm Size</th>
<th>Info</th>
<th>Order</th>
<th>CreditCd</th>
<th>FundTrans</th>
<th>OnlinePay</th>
<th>COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>20%</td>
<td>17%</td>
<td>17%</td>
<td>27%</td>
<td>25%</td>
<td>23%</td>
</tr>
<tr>
<td>Small</td>
<td>13</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>29%</td>
<td>30%</td>
<td>29%</td>
<td>21%</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Medium</td>
<td>12</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>27%</td>
<td>22%</td>
<td>17%</td>
<td>27%</td>
<td>15%</td>
<td>8%</td>
</tr>
<tr>
<td>Large</td>
<td>11</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>%</td>
<td>24%</td>
<td>30%</td>
<td>38%</td>
<td>24%</td>
<td>25%</td>
<td>46%</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>23</td>
<td>24</td>
<td>33</td>
<td>20</td>
<td>13</td>
</tr>
</tbody>
</table>

Note: % is percent by column
Source: Created by Authors

Table 4 shows the use of marketplace by EC companies. Around half of the EC companies in the survey are utilizing sales on marketplace. If identify among different firm sizes, there are half of the firms in each firm size that use marketplace and those that do not use marketplace. As the issue of marketplace is still new and presents a method of EC but not by the firm, it is also interesting whether the use of marketplace supports EC or replace own company’s EC.

Table 4 Use of Online Marketplace by Different Firm Sizes

<table>
<thead>
<tr>
<th>Use of Online Marketplace</th>
<th>No. of Firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use (Lazada, Shopee, JD, etc.)</td>
<td>24</td>
<td>46.15</td>
</tr>
<tr>
<td>Use Facebook, Line</td>
<td>3</td>
<td>5.77</td>
</tr>
<tr>
<td>Not Use Online Marketplace</td>
<td>25</td>
<td>48.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of Online Marketplace</th>
<th>Micro</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use (Lazada, Shopee, JD, etc.)</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>%</td>
<td>41.86</td>
<td>50.0</td>
<td>38.46</td>
<td>54.54</td>
<td>46.15</td>
</tr>
<tr>
<td>Use Facebook, Line</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>14.29</td>
<td>0.00</td>
<td>7.69</td>
<td>0.00</td>
<td>5.77</td>
</tr>
<tr>
<td>Not Use Online Marketplace</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>%</td>
<td>42.86</td>
<td>50.00</td>
<td>53.85</td>
<td>45.45</td>
<td>48.07</td>
</tr>
</tbody>
</table>

Source: Created by Authors
Following are the test of hypotheses and the analysis of benefit and cost of EC.

5. Test of Hypotheses

H1: Company and product information, company sales and performance, physical cost reduction, transaction cost reduction, marketing cost reduction, and error elimination influence benefits of EC.
Table 5 Regression on Benefits of EC (Pre and Post Utilization of EC)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimate</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
<th>Parameter Estimate</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Use of EC</td>
<td>After Use of EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.06126</td>
<td>0.18</td>
<td>0.8614</td>
<td></td>
<td>1.59848</td>
<td>3.60</td>
<td>0.0008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp Information</td>
<td>-0.24897</td>
<td>-1.57</td>
<td>0.1237</td>
<td></td>
<td>0.16798</td>
<td>0.62</td>
<td>0.5390</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp Performance</td>
<td><strong>0.66034</strong></td>
<td><strong>2.86</strong></td>
<td><strong>0.0064</strong></td>
<td></td>
<td>0.15417</td>
<td>0.55</td>
<td>0.5840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Cost</td>
<td>-0.44219</td>
<td>-1.51</td>
<td>0.1386</td>
<td></td>
<td>-0.27744</td>
<td>-1.16</td>
<td>0.2508</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction Cost</td>
<td><strong>0.74443</strong></td>
<td><strong>2.23</strong></td>
<td><strong>0.0305</strong></td>
<td></td>
<td>0.44940</td>
<td>1.52</td>
<td>0.1363</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce Error</td>
<td>-0.26162</td>
<td>-1.50</td>
<td>0.1410</td>
<td></td>
<td>-0.07541</td>
<td>-0.43</td>
<td>0.6709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce Market Cost</td>
<td><strong>0.53640</strong></td>
<td><strong>3.04</strong></td>
<td><strong>0.0040</strong></td>
<td></td>
<td>0.20021</td>
<td>1.07</td>
<td>0.2912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R-Square</td>
<td>0.7074</td>
<td></td>
<td></td>
<td></td>
<td>0.3818</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Value (Pr)</td>
<td>21.55</td>
<td>(&lt;.0001)</td>
<td></td>
<td></td>
<td>6.25</td>
<td>(&lt;.0001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Created by Authors

It was found that only company performance, transaction cost, and marketing cost are significant factors that influence producer’s decision to adopt EC for the firm. However, post decision shows no significant factors.

H2: Technical cost, non-technical cost, marketing cost, and drawbacks of EC influence cost of EC.

Table 6 Regression on Cost of EC (Pre and Post Utilization of EC)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimate</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
<th>Parameter Estimate</th>
<th>t Value</th>
<th>Pr &gt;</th>
<th>t</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Use of EC</td>
<td>After Use of EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.63710</td>
<td>1.48</td>
<td>0.1455</td>
<td></td>
<td>4.30973</td>
<td>8.88</td>
<td>&lt;.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Cost</td>
<td><strong>0.62963</strong></td>
<td><strong>2.52</strong></td>
<td><strong>0.0151</strong></td>
<td></td>
<td>-0.27624</td>
<td>-1.27</td>
<td>0.2121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Technical Cost</td>
<td>0.10077</td>
<td>0.43</td>
<td>0.6661</td>
<td></td>
<td>-0.20340</td>
<td>-1.09</td>
<td>0.2830</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing Cost</td>
<td>-0.06222</td>
<td>-0.37</td>
<td>0.7162</td>
<td></td>
<td>0.01958</td>
<td>0.14</td>
<td>0.8926</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drawback</td>
<td>0.21449</td>
<td>1.17</td>
<td>0.2465</td>
<td></td>
<td>-0.18507</td>
<td>-1.31</td>
<td>0.1982</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R-square</td>
<td>0.4853</td>
<td></td>
<td></td>
<td></td>
<td>0.3093</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-Value (Pr)</td>
<td>13.02</td>
<td>(&lt;.0001)</td>
<td></td>
<td></td>
<td>6.71</td>
<td>(0.0002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Created by Authors

Results show that only technical cost is the significant factor that influence cost of EC. However, post decision shows no significant factors.

H3: Benefits and cost of EC influence firm’s decision to adopt and continue using EC for the business.

Table 7 Regression on Benefit and cost influence on EC Utilization

| Variable              | Parameter Estimate | t Value | Pr > |t|   |
|-----------------------|--------------------|---------|-------|---|
| Continue Utilization of EC |                   |         |       |   |
| Intercept             | -0.10156           | -0.37   | 0.7166 |   |
| Benefit of EC         | 0.78994            | 9.24    | <.0001|   |
| Cost of EC            | 0.24487            | 2.96    | 0.0047|   |

Source: Created by Authors
Results in Table 7 shows that the decision to continue utilization of EC significantly influenced by perceived benefits and cost of EC where benefits of EC tends to be the major factor in the decision to use EC.

H4: The perceived benefits and cost of EC are higher after the adoption of EC than before adoption.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Before</th>
<th>Mean After</th>
<th>T-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Information</td>
<td>3.77</td>
<td>4.13</td>
<td>-4.06</td>
<td>0.0002</td>
</tr>
<tr>
<td>Company Performance</td>
<td>3.71</td>
<td>4.00</td>
<td>-3.90</td>
<td>0.0003</td>
</tr>
<tr>
<td>Reduction Physical Cost</td>
<td>3.61</td>
<td>3.85</td>
<td>-2.24</td>
<td>0.0293</td>
</tr>
<tr>
<td>Reduction Transaction Cost</td>
<td>3.67</td>
<td>4.01</td>
<td>-2.96</td>
<td>0.0047</td>
</tr>
<tr>
<td>Error elimination</td>
<td>3.57</td>
<td>3.90</td>
<td>-3.11</td>
<td>0.0031</td>
</tr>
<tr>
<td>Reduction Market Cost</td>
<td>3.60</td>
<td>3.90</td>
<td>-3.50</td>
<td>0.0010</td>
</tr>
<tr>
<td>Technical Cost</td>
<td>3.42</td>
<td>3.54</td>
<td>-2.18</td>
<td>0.0343</td>
</tr>
<tr>
<td>Non-Technical Cost</td>
<td>3.31</td>
<td>3.53</td>
<td>-2.66</td>
<td>0.0103</td>
</tr>
<tr>
<td>Marketing Cost</td>
<td>3.49</td>
<td>3.81</td>
<td>-3.29</td>
<td>0.0018</td>
</tr>
<tr>
<td>Drawbacks</td>
<td>3.40</td>
<td>3.51</td>
<td>-1.53</td>
<td>0.1321</td>
</tr>
<tr>
<td>Benefit of EC</td>
<td>3.71</td>
<td>4.13</td>
<td>-3.60</td>
<td>0.0007</td>
</tr>
<tr>
<td>Cost of EC</td>
<td>2.37</td>
<td>2.04</td>
<td>-3.21</td>
<td>0.0023</td>
</tr>
</tbody>
</table>

Source: Created by Authors

Results found that the perceived benefits factors from company information, company performance, physical cost reduction, transaction cost reduction, marketing cost reduction, and error elimination cost are significantly higher than before. For perceived costs factors, only technical cost, non-technical cost and marketing cost are significantly higher than before. The overall perceived benefits of EC was found to be significantly higher than before. While perceived cost was found to be significantly lower than before.

H5: There are differences in continuation use of EC, perceived benefits of EC, and perceived cost of EC among different firm sizes.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Grouping</th>
<th>Mean</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived benefits of EC</td>
<td>Firm Size</td>
<td>3.14 – 4.18</td>
<td>3.71</td>
<td>0.0177</td>
</tr>
<tr>
<td>Perceived costs of EC</td>
<td>Firm Size</td>
<td>3.28 – 4.00</td>
<td>1.67</td>
<td>0.1861</td>
</tr>
<tr>
<td>Continuation use of EC</td>
<td>Firm Size</td>
<td>3.93 – 4.45</td>
<td>2.15</td>
<td>0.1057</td>
</tr>
</tbody>
</table>

Source: Created by Authors

As previous papers mentioned that SMEs utilize EC to compete over the economies of scale in large firms, the results from the one-way ANOVA shows that continuation use of EC and cost of EC have no significant differences among different firm sizes. However, perceived benefits of EC is found to be significantly different among different firm sizes. Small size firms perceived benefits of EC significantly lower than Micro, Medium, and Large firms.

H6: There are differences in perceived benefits of EC on firms that use and not use online marketplace by different firm sizes.
Table 10 Perceived Benefits of EC on use of Online Marketplace by Firm Size

<table>
<thead>
<tr>
<th>Firm Size</th>
<th>Non Marketplace</th>
<th>Marketplace</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>3.5</td>
<td>4.5</td>
<td>8.64</td>
<td>0.0055</td>
</tr>
<tr>
<td>Small</td>
<td>4.28</td>
<td>3.57</td>
<td>3.0</td>
<td>0.1089</td>
</tr>
<tr>
<td>Medium</td>
<td>4.0</td>
<td>4.2</td>
<td>0.13</td>
<td>0.8811</td>
</tr>
<tr>
<td>Large</td>
<td>4.4</td>
<td>4.5</td>
<td>0.09</td>
<td>0.7699</td>
</tr>
</tbody>
</table>

Source: Created by Authors

The results of H6 found that there is no difference in the perceived benefits of EC among firms that uses and not use online market place except in Micro firms. Micro firms are found to have differences in perceived benefits of EC between firms that utilize and not utilize online marketplace where those not utilizing online market place perceive the benefit of EC significantly lower than those utilizing online market place.

H7: There are differences in the decision to continue utilization of EC among firms that uses different levels of EC function by firm size.

Table 11 Decision to Utilize EC by level of EC Function in Different Firm Size

<table>
<thead>
<tr>
<th>Firm Size</th>
<th>Decision to Utilize EC</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>3.0 – 4.55</td>
<td>2.22</td>
<td>0.1547</td>
</tr>
<tr>
<td>Small</td>
<td>3.0 – 5.0</td>
<td>3.87</td>
<td>0.0449</td>
</tr>
<tr>
<td>Medium</td>
<td>4.0 – 4.25</td>
<td>0.18</td>
<td>0.8362</td>
</tr>
<tr>
<td>Large</td>
<td>4.25 – 4.5</td>
<td>0.26</td>
<td>0.7737</td>
</tr>
</tbody>
</table>

Source: Created by Authors

For H7, results found that there are differences in the decision to continue utilization of EC among firms that uses different levels of EC function by firm size. Small firms show significant difference in decision to use EC among firms that utilize higher level of EC functions. This identified that the higher EC function invested by the firm will tend to induce more producer to use EC for their business. The EC functions include company and production information website, ordering process and shopping cart function, different payment systems i.e. Credit card, funds transfer, online payment application, and COD (cash on delivery).

6. Conclusion

This paper found that major factor influencing EC benefits include company performance, transaction cost reduction, and marketing cost reduction. While on the other hand, technical cost had been the major factor that influence cost of EC. When combined, both benefit and cost of EC, it confirms that both has direct relationships on the decision to use EC. Comparing pre and post utilization of EC, post utilization is confirmed higher for all benefit and cost factors which means that firms utilizing EC finds EC more beneficial than when they first adopted them.

In terms of firm sizes, results found that small firms tend to perceive benefits of EC lower than Micro, Medium and Large firms. This could be a result from the higher cost of EC for small firms which past studies mentioned customer preferences, security issue, inadequate infrastructure, costs and lack of competency represents barriers for small firms in adopting EC. (Mohammed, Almsafir, & Alnaser, 2013) While micro firms, their perceived benefits of EC
are found to be higher than small firms especially those firms that utilize online marketplace. As online marketplace is still new, this could be a channel for small firms which might have limitations in cost of EC to utilize online marketplace in getting access to national and global markets. (Chong, 2008) Thus, with higher investment in EC functions, larger firms tend to have higher advantage over smaller size firms. When asked about the sufficiency of government support on EC developments, over 86% express insufficiency of government support. From past studies, government support is found to be an important external environment factor that can influence adoption of EC in SMEs. (Chong, 2008; Mohammed, Almsafir, & Alnaser, 2013; Grandon & Pearson, 2004)

Thus, in order for government to induce enterprises to support government policy of Thailand 4.0, government needs to understand the benefits of different firms size that engage in EC. To assist firms and industries, government can support the creation of EC platform and online marketplace to lower cost for Micro and Small firms. In addition, special training and supports reducing technical and non technical cost in EC will be beneficial in inducing more firms to engage in using EC which will induce the industries to move toward the goal of Thailand 4.0.

7. Further Studies
As online marketplace is still new and creates large impact on economic growth and performances of firms, it is also interesting to further conduct studies on the role of online market place and other factors. Hence, future research can build on the significant factors from this research and introduce new determinants of online market place which influences firm’s performance and economic growth in different firm size.

8. References

it24hrs. (2017, 1 5). *What is Thailand 4.0 (in Thailand).* Retrieved from IT24Hrs-ไทยที่24ชั่วโมง เทคโนโลยีใกล้ตัว เพื่อชีวิตที่ดีขึ้น: www.it24hrs.com/2017/thailand-4-0


Change of Lecturer’s Roles to Encourage Sustainable Learning Outcomes of Aviation-Business Students in the Private University

Sanhakot Vithayaporn
Sripatum University
Sanhakot.vi@spu.ac.th

Abstract

The purpose of this study is to review researches related to the changing role of lecturer in accordance with today’s fast changing in the world education including in Thailand caused by the disruption of internet and technology. Educational institution needs to keep up with the best methods and tools to be used for ensuring the learning effectiveness. Therefore, the role of lecturer in this changing must not to be overlooked. Particularly in the field of Aviation Business Management that needs innovation of teaching method. To respond with this, lecturer is required to think differently, be strategic, be innovative, be creative, and promote learning culture. It is commonly known that teaching and coaching are two different occupational roles. However, the term of coach has been tremendously used in various area thus teaching-coaching can be integrated to improve the student’s learning outcome. This paper presents an analysis these contextual factors via using a literature review and data from practitioner. Upon conclusion, this study found a significant relationship between ability to teach and to coach with such a high skill, it would lead to the sustainability of learning outcomes of aviation-business students. Recommendations about lecturer as taking coach and facilitator roles at School of Business Administration were provided.

Keywords: lecturer, coach, facilitator, innovation and creative
Survival from Disruptive Economy in Higher Education Institute:  
A Case of Aviation Personnel Development Institute

Krit Witthawassamrankul  
Kasem Bundit University  
krit.wit@kbu.ac.th

Abstract

Disruptive economy causes changes to numbers of businesses in term of production and service delivery. Some businesses have been replaced by technology and complicate competition. Higher education institutes are also facing the challenge. They cannot sustain in the business while using the same business model, which rely heavily on the student demand. The business model needed to be revised by analyzing more stakeholders and new income generators. This action research aimed to develop a new business model for a higher education institute to survive from disruptive economy and low birthrate. The research applied Appreciative Inquiry (AI), which is a positive core Organization Development Intervention (ODI) under SOAR framework in the action research framework. The participants or stakeholders, including of 6 management persons, 30 instructors and 5 administrators gathered to develop the new business model, which increased more way of generating income to the institute. The results of the research showed that the stakeholders involved in creating new business model including students and people who use service from the higher education institute. Ten solutions to generate incomes from the new business model are 1) establishing new exam center for Thailand Professional Qualification Institute (TPQI), 2) developing and selling new online course for aviation education, 3) Providing summer camp for the kids who would like to work in aviation industry, 4) Searching the students from the new niche markets, which are the countries opening new airports, such as China, African Countries, etc., 5) offering the course by demand of the students or general persons such as personality, TOEIC, 6) providing aviation training center for business and study, 7) finding mutual agreement and MOU with the aviation college and institutes both domestically and internationally, 8) creating research and development center providing significant and impactful research and learning material for aviation, 9) allowing aviation transportation and logistics company to rent spaces for business and provide internship and cooperative education to the students and 10) being an organizer for aviation knowledge meeting and conferences such as new aviation security law due to the locational strategy. Overall, the study showed that collaborative, location and focus strategy should be much emphasized in order to survive in this disruptive economy.

Keywords: aviation, higher education, action research
1. Introduction

Disruptive economy causes a great change in economy which leads to collapse of traditional business. The major reason of disruptive economy is from innovation and technology, so called “Disruptive Innovation.” The innovation causes changes to traditional business in form of replacement, substitution, connecting, and facilitating. The innovation increases its roles in numbers of utilities such as time, place and ownership. Therefore, the recent competition becomes unpredictable and variable. The idea of analyzing the five forces separated in each factor may have to reconsider since the disruption causes more than the factor change but paradigm or new scenario and the innovation impacts both production and service industry.

Example of disruptive economy in form of production such as the limitation and less significance of suppliers and middleman through new channel of communication via online system. The service industry such as banks and financial institutions are also affected by the disruption. Approaching big data causes unemployment and lower operation of human resource management and development for bank officers; however, it increases more chances for the new entrepreneurs and adaptive bankers who can adapt and use the benefits of the innovation and technology. The traditional business has to rethink; otherwise it cannot survive in the economy. The traditional business model cannot guarantee the success anymore. In addition, potential consumer behavior changes are growing. The disruptive economy and innovation lead less loyalty and therefore this opens to new competitors who enter to the new markets, which can be big or small.

Higher educational institute, which is considered as a valuable and stable institute in the eyes of Thai elites and intellectuals are also challenging. They are not valuable and stable in the eyes of the students in disruptive economy. The students have other choices to upgrade themselves intellectually and socially without join the higher educational institute. Some students have more alternatives in choosing their own study based on their interest, distance learning, lifelong learning and do their own businesses. The higher educational institute, which is once a valuable and stable, gaining the major incomes from the students get less tuition fees, particularly in the bachelor degrees. Thus, higher education institutes have to revise their provision when the disruption causes low numbers of students, students’ behavioral change and less loyalty towards the institutes. They have to develop the new business model and solutions to survive in the disruptive economy.

Aviation Personnel Development Institute (APDI), Kasem Bundit University, which is one of the high education institute, aim to produce the qualified graduates for aviation industry. It offers 5 courses as 1) Bachelor of Arts in Airline Business (B.A. in Airline Business), 2) Bachelor of Business Administration in Aviation Industry Management (B.B.A. in Aviation Industry Management), 3) Master of Arts in Aviation Management (M.A. in Aviation Management), 4) Bachelor of Engineering in Mechanical Engineering of Aircraft Maintenance and 5) Certificate of Pilot. The institute is also facing the problem of disruptive economy like other higher education institutes; even the aviation industry is growing and demanding more labors to serve the tourism and logistics markets. The reasons are also like other higher education institutes which are substituted by disruptive economy and also low birthrate in Thailand since 1997 or Asian Crisis Period which leads to low student population to admit in the higher education institutes. In addition, some educational channels and media which can offer and attract the students to the aviation industry; even though, they may not have to attend the higher education institute provided the aviation courses officially. Therefore, instead of depending on major portion of income from students’ tuition fees, the institute has to seek out
more sources of income. The institute has to develop its new business model and solutions to survive.

Therefore, this action research was conducted in order to help the organization survive in the disruptive economy. The research applied Appreciative Inquiry (AI) as Organization Development Intervention (ODI), which is a positive core under SOAR framework. After ODI, it can create the new business model and solutions to survive in the disruptive economy.

Research Objectives

1. To develop a new business model for the higher education institute (Aviation Personnel Development Institute)
2. To find solutions for the higher education institute (Aviation Personnel Development Institute)

Research Questions

1. What is the new business model for the higher education institute (Aviation Personnel Development Institute)?
2. What are the solutions for the higher education institute (Aviation Personnel Development Institute)?

Significance of the Study

The higher education institute (Aviation Personnel Development Institute) can use the new business model developed to run its business and also apply the solutions in order to help the institute survival. This business model and solution should help the organization stable and valuable for long run.

2. Concept and Theories

In order to do this action research for developing business model and finding solutions for the higher education institute, the researcher applied the concepts and theories for the study as disruptive economy, higher educational institute, business model, organization development, Appreciative Inquiry (AI).

Disruptive economy

Disruptive economy is negatively known as the eruption—the closing of one door and the innovative opening of another; the opportunity to create and proliferate, as well as wither and die. Major disruptive economy today is from digital disruption or disruptive innovation. The disruptive economy are also driven by new innovation, technology and cultural changes, from tangibles metrics to intangible, from physical to virtual and leveraging people analytics (Boss, 2015). Therefore, the business which would like to survive need to adapt itself in term of developing new business model to seek out new values and relationship, for example, Siam Commercial Bank developed the electronic or digital banking which has relationship with online shopping and financial advisor. Therefore, the increase its values by time and place benefits with more networking and relationship. The bank facilitated on more online shopping. It can lower the operation cost by reducing some branches and employees.
Higher Education Institute

Higher education institute is considered as stable and valuable. In the past it centralized the academicians and materials for intellectuals. However, disruptive economy affects the higher education for educational and technological substitution. Technology and innovation become knowledge creators and providers. Approaching to new knowledge and building it could be done by academicians and common people. Both knowledge in form of tangibles, i.e. textbooks, CDs and intangibles, i.e. teaching from lecturers, advising hours for career and education can be substituted and replaced by technology and innovation. This causes students’ behavioral and loyalty change. Therefore, the higher education institute, which mainly relies on the students’ tuition fee and textbook selling, are impacted from the disruptive economy. In addition, this does not include the direct competitors from the other international university and distance learning. The higher education institute has to develop a new business model and solutions to cope with the problems.

Business Model

Business model explains how business operates, find revenue and get profit. A good business model needed to be revised when the situation change since business environment keeps changing, such as a change of customers, suppliers, operation and productivity. The business model is important for business since it shows the business strategy. Therefore, a reliable and effective business model should be from reliable information, good analytical skills and possibility to accomplish the business goals. However, to develop a business model for service business, such as higher education institute is much difficult than product one. The reason is from the service characteristics which are intangible, perishable, measurement of satisfaction based on service operation. Therefore, the ones who develop the service business model have to be in that service industry, get direct experience and understand the service process.

Organization Development

Organization Development Intervention (ODI) is a tool used in changing process of organization development. The intervention aims to change people, working or any obstacles that the organization wishes to change. The successful organization development intervention comes from many factors such as the good planning and processing, the collaboration of participants in the ODI and the organization development agent (French and Bell, 1990). An intervention is a change effort or a change process which was on going; therefore, it should be able to carry the implication that the action is planned, deliberate, and presumably functional (Rothwell, Stavros, et.al, 2010 and Cummings and Worley, 2009). The simple change model is Lewin’s change model.

The intervention for organization development should focus on developing to the individual, group and organization. It can be done in different levels as in individual, group, team and organization as a whole (Palmer, Dunford, Akin, 2006). The intervention can be done by many activities which are selected as the appropriate ways for intervention and participants are willing to join the ODI. Example of activities can be group discussion, meeting, teambuilding, workshop, etc. The successful intervention will show the result of development or change to the individual, group, team or the organization which participate in the intervention activities.
Appreciative Inquiry (AI)

Appreciative Inquiry (AI) is the cooperative co-evolutionary searching for the best in people, their organizations and the surrounding. AI involves the process of asking questions of the strength or best in human or people in the organization. It is the futuristic asking for the potential change (Cooperrider, Whitney, and Stavros, 2003). Theoretically, AI supports the philosophy of humanism, social constructionism and creativity through its processing (Whitney, and Trosen-Bloom, 2010; Cooperrider and Whitney, 2005; Cooperrider, Whitney, & Stavros, 2003). AI consisted of 4 phases as discovery, dream, design and destiny or known as 4D Cycles (Martinetz, 2002). The first 4D Cycle is explained as Discovery—the phase of finding the best in human and organization by asking positive questions. The best can be the strength, values and skills. Then, the D-Dream is the second phase that begins with searching for opportunities in the human and organization towards future. After having dream, the third phase is D-Design, or creating the system or ways to change or improve. And the last is the phase of integrating and combing all inputs to create plan or change from the resources. The AI can be implemented for the strategic planning and developmental change significantly since it is an optimistic, futuristic and holistic approach to create the plan. AI successfully functions with the organization with human assets or human-orientation and potential from the bottom-up process (Stavros, Cooperrider, and Kelley, 2003). Appreciative Inquiry is one of the strength-Based and Strategic Organization Development Interventions (ODI). It uses participation and focuses on positive view by narration and activities, for example, sharing experience and meeting.
3. Research Methods

This action research used Appreciative Inquiry (AI) as an Organization Development Intervention (ODI). The research process can segment into the steps as process as Pre-ODI, ODI and Post-ODI. In the stage of Pre-ODI, the researcher collected the data from the related document and brainstorm to write SOAR framework. Then, in the ODI, the researcher established a meeting and applied Appreciative Inquiry (AI) to draw information by asking about best moment, best assets from working and best experience from the participants 40 participants who included 6 management persons (i.e. director, assistant to academic, assistant to research affair, assistant to administration affair, assistant to student affair and assistant to business affair), 30 instructors and 5 administrators of the higher education institute (Aviation Personnel Development Institute). What participants shared in Appreciative Inquiry Meeting were gathered and used for answering research questions about how to develop the business model and find the solutions in the disruptive economy.

Questions for Appreciative Inquiry (AI)

1. Discover Question
What is your most valuable you could contribute for the institute?

2. Dream Question
What was your most impressive experience since you have worked here?

3. Design Question
What would you do to develop and help the institute’s business?

Figure 3. Action Research Process
4. Findings
Finding provided the result of the study and also provided the answer for the research questions regarding the study. However, it was done under SOAR framework. The SOAR from documentary study and brainstorming was below:

S-Strength
1. Instructors are from the aviation industry and they gain experience long enough to share.
2. The institute locates near Suvarnabhumi Airport, which is convenient for aviation personnel from airports and airlines to come to have activities and study.
3. Connection with the aviation organizations and the related based on the work experience of the instructors.
4. Full and modern equipment by law of the training center

O-Opportunity
1. Government subsidizes more fund on research and development in aviation industry, both pure and social sciences.
2. Increase in demands of international students, particularly students from developing countries, such as China, the Africa.
3. Growing in numbers of aviation personnel who would like to further study after graduating, such as master degrees, certificates, and other training courses.
4. Technological device reach and connect everywhere. This could help online learning and distance learning courses to develop.

A-Aspiration
1. The institute will be one of the top three in Thailand.
2. The institute will increase more courses by demand.
3. The institute will produce qualified students to meet the demand of the industry.
4. The institute will have good connection with aviation college in Thailand and oversea.

R-Result
1. The institute can survive in the disruptive economy.
2. The curriculum which the institute developed could benefit the students who join.
3. The institute has more opportunities to expand in the fields of aviation, such as aviation logistics and transport.
4. The institute becomes well-known in the aviation industry.

After the SOAR framework implemented, the researcher answer used Appreciative Inquiry (AI) and find the results of the research questions as:

1. What is the new business model for the higher education institute (Aviation Personnel Development Institute)?

The business model of the higher education institute (Aviation Personnel Development Institute) explained its combination of key partners, key activities, key incomes and key
resources. In the figure 4, it showed that the institute extends its connection and relationship with partners such as school, aviation colleges, and international and domestic aviation organization. To the activities, it increases more activities focused on aviation industry in full ranges since teaching, training, developing materials and be the centers for exams, tests. Therefore, the key incomes can be more than tuition fees, such as rental fees and other revenue. The key resources utilized include human resource, equipment and facilities and intangible resources like knowledge, connection.

Figure 4. Business Model of the Higher Education Institute

2. What are the solutions for the higher education institute (Aviation Personnel Development Institute)?

Ten solutions to generate incomes from the new business model are

1) Establishing new exam center for Thailand Professional Qualification Institute (TPQI). The exams include Competency Exams for Aviation Personnel, Physical Test, and Proficiency Exam for Aviation Personnel.

2) Developing and selling new online course for aviation education,

3) Providing summer camp for the kids who would like to work in aviation industry. Other sources of income can be from the kids’ activities.

4) Searching the students from the new niche markets, which are the countries opening new airports, such as China, African Countries, etc. The newly open country demands more graduates in this field. Since the countries are developing, the students could afford in the institute in Thailand.

5) Offering the course by demand of the students or general persons such as personality, TOEIC. Some courses related with the industry can be opened up to the small group or special events, such as preparing for the job application.

6) Providing aviation training center for business and study. Aviation training center can be a place for students and airlines which find the place to train their personnel. One of the
best reasons, rather than full equipment, is the convenient location of the institute that is near Suvarnabhumi Airport.

7) Finding mutual agreement and MOU with the aviation college and institutes both domestically and internationally. This will strengthen the knowledge and business. The students then have experience in their home country and in Thailand. They have time to prepare and stay home. The MOU can be further developed for the instructors, such as instructors’ exchange.

8) Creating research and development center providing significant and impactful research and learning material for aviation. While Ministry of Education invests more on research and development, especially in aviation industry which is one of the 10 cores of national development, the research conducted by the center would not only bring knowledge and reputation but also opportunity for granted funds, which are from pure and social sciences.

9) Allowing aviation transportation and Logistics Company to rent spaces for business and provide internship and cooperative education to the students.

10) Being an organizer for aviation knowledge meeting and conferences such as new aviation security law, air traffic controlling, due to the locational strategy and equipment that the institute have (which increase participation).

5. Conclusion and Recommendation

Overall, the study showed that collaborative, location and focus strategy should be much emphasized in order to survive in this disruptive economy. The Appreciative Inquiry (AI) encouraged the participants to provide best assets in themselves and organization. The cores of the organization are human assets which are professional and applicable to the situation and location. The focus strategy is applied to the organization; however, with broader perspective of sources of income. For example, it proposed to increase more income in business model from children, distance learning, adults who work in the aviation industry, rather than depending only on high school students. However, the researcher recommended that the study should be much better if the study included more professionals from aviation personnel since they could see potential and more opportunities. To search the information of Aviation Colleges abroad can be another option to gain more alternative ideas.

6. References


Organic Farming and Naturally Grown Products; Need of Training Intervention for its Growth and Healthy Society

Ram Kumar Gazaresen
Power Grid Corporation of India Ltd

Krishna Nath Pandey
School of Management Sciences,
Lingaya’s University

Abstract

Growing use of pesticides and chemical fertilizers have flooded the market with food products that are not very healthy. Common man is suffering from various diseases which are earlier not even heard of. Organic farming and naturally grown products is one such way to achieve quality of food as well as meeting the demands of the market. In order to have a sustainable and effective growth of organic farming in MSME sector, proper training is required with full marketing support so that the farmers must opt for it. One such initiative in Ranchi, Jharkhand, India is taken up by the “Nature’s Cart” who are successfully able to achieve large scale growth of naturally grown products and competing in the market by creating awareness and encouraging farmers to opt for organic farming. The paper will highlight the need for training interventions in naturally grown product MSME industry along with types of interventions and will evaluate the effectiveness of such interventions in one of such MSME.

Keywords: nature’s cart; organic farming; training intervention
Abstract

Electricity plays an indispensable role in the form of input for the socio-economic development of a nation. It is widely acknowledged that, no developing nation has succeeded in achieving development beyond a subsistence economy without ensuring a minimum supply of electricity in reserve that is accessible to a broad segment of its population, and the emerging economies like Bangladesh is no exception.

Strengthening cross-border electricity trading cooperation within the South Asian region can be a revolutionary step towards ensuring adequate and reliable electricity availability within the nations since there are complementarities in demand for electricity and resource endowments as a result of diversity in primary energy sources and differences in seasonal patterns of electricity requirements and availabilities across these nations.

While each country is sovereign by itself, governed by its own policies and laws, there is a need to harmonize the laws/ rules/ regulations governing trade in electricity in order to facilitate the cross-border energy trade. It is therefore necessary to frame guidelines on cross border trade in electricity across and with the neighboring countries.

The author attempt as a participant observer to carry out an exploratory research with the following research objectives related to India and Bangladesh electricity exchange —

- India and Bangladesh Power Sector Trajectory
- Regulatory framework for Cross Border Energy Exchange
- Power Market development in SAARC Countries.
- Power Trading between India and Bangladesh
- Salient Features of the Existing Power Transmission between the two countries

Keywords: cross border energy trade; HVDC back-to-back station; power market; power exchange
The Study of Employee Engagement of Manufacturing Sector in Thailand

Tanakorn Chalermjirapas
Martin de Tours School of Management and Economics
Assumption University
tanakorn.cha@gmail.com

Hla Theingi
Martin de Tours School of Management and Economics
Assumption University

Mayuree Aryupong
Martin de Tours School of Management and Economics
Assumption University

Abstract

The intention of this research is to construct and test conceptual model to enhance understanding of the interaction between the relationships of personality traits, perceived support and employee engagement in Thailand. Accordingly, the survey was completed by 877 participants, 42% male and 58% female, the majority aged between 21 to 30 and working in factory, graduated at high school level, and earning less than or equal to 15,000 baht. This survey measured attitudes toward employee engagement, personality traits, and perceived support.

The results indicated that the perceived support can moderate the relationship between personality traits and employee engagement. The study was based on employees in manufacturing sector which may have limit in the generalizability of the results but helps for generalization analysis.

This research has three proposals for practitioners. Firstly, this study expands to the impacts of personalities on engaged outcomes, providing areas for investigation in getting appropriate candidates, based on personality assessment results. Secondly, the results may change the mindset of management and encourage organizations to dare to use social support in the workplace as a tool to improve their performance. Thirdly, the findings may make the organization aware of how to use the appropriate support to maximize employee engagement.

The integrated model was proposed as a synopsis of research to researchers and practitioners in encouraging the creation of additional theories and practices of the organization.

Keywords: employee engagement, the big five personality traits, perceived support

Paper type: research paper
Value-at-Risk of Stock and Cryptocurrency Portfolio Diversification

Wanissa Nawapong  
Chulalongkorn Business School  
Chulalongkorn University  
kaewkatom@gmail.com

Peerakarn Chansorn  
Chulalongkorn Business School  
Chulalongkorn University  
maymay.p@hotmail.co.th

Thitivadee Chaityawat  
Chulalongkorn Business School  
Chulalongkorn University  
E-Mail Address: thitivadee@cbs.chula.ac.th

Isariya Sattakulpiboon  
Chulalongkorn Business School  
Chulalongkorn University  
isariya@cbs.chula.ac.th

Abstract

Value-at-Risk (VaR) was widely adopted to measure market risk in a trading portfolio and played a decisive role in risk management. This study takes VaR to capture market risk of daily returns of a diversified portfolio of assets including Bitcoin and Ripple Cryptocurrencies, Japan, US, Vietnam, and India stocks from October 2015 to September 2018. Three VaR measurement approaches i.e. historical simulation approach, delta normal approach, and Monte Carlo simulation approach are used in this study. Clear pattern can be observed as the dependence structure and the dependence measures are not small and mostly positive. We therefore allow for dependency among different assets using a copula function. This paper will compute the portfolio VaR in the context of Gaussian copula and Student’s t-copula. Violation Ratio (VR) test, Basel Traffic Light test, and Kupiec’s (1995) Proportion of Failures (POF)-test are used to verify the accuracy of predicted future risks.

The result shows that all six return series have high peak than normal distribution. Q-Q plot also suggests that all six asset returns deviate from the normal distribution. The result of goodness of fit test indicates that distributions of six financial asset returns exhibit leptokurtic and present fatter tails than normal distribution. By inspecting the Jarque-Bera statistics, the normality for six asset returns is uniformly rejected. In addition, the finding suggests that Student’s t copula gives a better fit for our data as it gives the highest log-likelihood function and the lowest Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Therefore, this finding indicates that copula-based approaches seem preferable. Respectively the optimum portfolio obtained through maximizing Sharpe ratio Student’s t copula provides the lowest VaR estimates. The result shows that, for sample portfolio, the copula models always outperform the traditional VaR model at 99% probability level. The finding shows that at 99% confidence level most of the VaR backtesting techniques accept null hypotheses. This finding
suggests that both Gaussian copula and Student’s t copula well applied to capture the dependency are therefore more suitable for measuring portfolio copula based VaR. This is because they are not only provided with the capability to adapt the level of dependence, but also the strength of tail and overall dependence over time. This finding confirms a use of copula to measure VaR provides a refinement to the traditional VaR methodology.

*Keywords:* stock, cryptocurrency, value-at-risk, copula, backtesting

1. **Introduction**

In recent years with the globalization of financial markets firms and investors are exposed to more financial risks. This provides investors opportunities with increased gains; however, investors also face higher investment risk of the fall in stock prices with a highly correlated move among markets. In addition, advances in information technology provide unprecedented context emergences of various digital currencies such as Cryptocurrency Index, Bitcoin, Ethereum, Ripple, etc. Due to an increase in demand with a limited supply of cryptocurrencies, better and more liable risk measurement is required as the enlargement of financial risks.

During the 1990’s Value-at-Risk (VaR) was widely adopted to measure market risk in trading portfolio and played a decisive role in risk management. VaR is a method which aims to capture market risk of a portfolio of assets. In addition, VaR became a very important measure of risk as recognized by the Basel Committee on banking supervision which declared that banks should be able to cover losses in their portfolios for horizons of 10 days with a 99 percent confidence level (Basel Committee, 1996).

VaR is defined as a potential maximum expected loss on a portfolio for a given confidence level over a certain level of time horizon under normal market condition (Jorion, 2001). That is VaR measures risk of future losses from specific financial assets for a certain holding period. Specifically, the VaR over the holding period is defined as the solution to

\[
VaR_\alpha(L) = \inf \{1 \in R: Pr(1 < L \leq 1 - \alpha)\} = \inf \{1 \in R: F_L(1 > \alpha)\}
\]

where \(\inf(S)\) represents the greatest lower bound of a subset \(S\); the biggest number that is smaller than or equal to every number in \(S\).

In statistical term, VaR can be thought of a quantile of the return distribution (Chamu’ Morales, 2005 and McNeil, et al., 2015). VaR calculation methods are divided in three categories i.e. variance-covariance method, Monte Carlo simulation method, and historical simulation method, and are usually divided into parametric and non-parametric models. Parametric models are based on the statistical parameters of the risk factor distribution, whereas non-parametric models are simulation or historical models. The most widely used is the variance-covariance approach, popularized by the introduction of Risk Metrics by J.P. Morgan (1996).

The objective of this study is to apply VaR to capture the risks of a diversified portfolio of assets comprising of some major Cryptocurrencies, i.e., Bitcoin and Ripple, and stock indices from different countries i.e. Japan, US, Vietnam and India. To estimate VaR, we use three different approaches i.e. historical simulation, delta normal, and Monte Carlo simulation approaches. We construct a meta distribution using Gaussian copula and t-copula to flexibly capture dependent structures among different assets. Violation Ratio (VR) test, Basel Traffic
Light test, and Kupiec’s (1995) Proportion of Failures (POF)-test is used to verify the accuracy of predicted future risks.

2. Data and Methodology

2.1. Data

Daily prices of Bitcoin and Ripple cryptocurrencies, Japan, US, Vietnam, and India stock indices from October 2015 to September 2018 have been used in this research. Ethereum cryptocurrency is ranked in the top three in terms of market capitalization, though this asset does not include in this paper due to data limitation. Bitcoin and Ripple cryptocurrency daily prices are drawn from investing.com website (investing.com, 2018). The log return of cryptocurrency and stock price has been calculated as follows:

\[ r_t = \ln \left( \frac{p_t}{p_{t-1}} \right) \]  

(2)

where \( r_t \) is log daily return of Bitcoin and Ripple cryptocurrencies, Japan, US, Vietnam, and India stock at time \( t \), \( p_t \) is daily price of Bitcoin and Ripple cryptocurrencies, Japan, US, Vietnam, and India stock at time \( t \), and \( p_{t-1} \) is daily price of Bitcoin and Ripple cryptocurrencies, Japan, US, Vietnam, and India stock at previous time.

2.2. Methodology

To measure VaR in this study three approaches including historical simulation method, delta normal method, and Monte Carlo simulation method have been used.

2.2.1. Value-at-Risk (VaR) Measurement

1. Historical Simulation Method

One advantage of historical simulation (HS) is that it does not require parameter and distributional assumption--non-parametric approach--to model VaR. It is also easier to compute and can empirically incorporate correlation among assets. However, HS does assume that returns are identically independent distributed (iid) making VaR a problem of discreteness of extreme returns and slow responsiveness to recent volatility.

Historical VaR uses full valuation directly exploiting historical data of the last n-days. This methodology is based on the premise that the pattern of historical returns is indicative of future returns. The VaR\( _{\alpha} \) can be calculated from the empirical \( \alpha \)-quantile \( (Q_\alpha) \) of the sequence of past returns as shown below:

\[ VaR_{t+1}^{\alpha} = Q_\alpha(\{r_t\}_{t=1}^{n}) \]  

(3)

2. Variance-Covariance Method

Variance-Covariance method is known as linear VaR or delta normal VaR. This methodology is quite simple and widely used to measure risk of portfolios with linear positions and normal distribution. This approach includes parts of modern portfolio theory of Harry Markowitz (1952), by taking account of correlation coefficients between assets.
Historical data is used to calculate main parameters: mean, standard deviation, and correlation. This method is utilized with the assumption that asset daily returns have some theoretical distribution which typically is normally distributed. The assumption allows volatility to be described in terms of standard deviations. In addition, normal distribution assumption gives the advantage that it can be described by its first two moments: mean and standard deviation (Zikovic, 2005). A normal distribution curve is bell-shaped and symmetrical so the skewness is zero and kurtosis is 3. The delta normal VaR can be calculated as follows:

\[ \text{VaR}_\alpha = \mu + Z_\alpha \sigma \]  

(4)

where \( Z \)-score is a standard value, \( \mu \) is mean, and \( \sigma \) denotes as standard deviation. VaR multivariate normal distribution with mean vector \( \mu \) and covariance matrix \( \Sigma \),

\[
\mu = \begin{pmatrix} \mu_1 \\ \mu_2 \\ \vdots \\ \mu_n \end{pmatrix} \quad \text{and} \quad \Sigma = \begin{pmatrix} \sigma^2_1 & \sigma_{12} & \cdots & \sigma_{1n} \\ \sigma_{21} & \sigma^2_2 & \cdots & \sigma_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{n1} & \sigma_{n2} & \cdots & \sigma^2_n \end{pmatrix} \]  

(5)

The mean vector \( \mu \) captures the average level of returns, while the covariance matrix \( \Sigma \) captures the interaction between returns of different assets. Therefore, portfolio value-at-risk (VaR\( _p \)) multivariate normal distribution is as follows:

\[ \text{VaR}_p^\alpha (L) = \mu_p + Z_\alpha \Sigma_p \]  

(6)

where \( \mu_p = w\mu \) and \( \Sigma_p = w\Sigma w' \)

3. Monte Carlo Simulation Method

Monte Carlo simulation is quite flexible and powerful tools to measure VaR. It is able to grasp all non-linearity of the portfolio value with respect to its underlying risk factors. The specific stochastic process need to be tested for goodness of fit--Kolmogorov Smirnov Test, and Anderson Darling Test--which governs the returns of financial assets. Significantly fitted and selected distribution is adopted for simulating as set returns (Dowd, 2005).

2.2.2. Copula

Asset returns of Bitcoin and Ripple Cryptocurrencies, Japan, US, Vietnam, and India stock indices under the multiplication of 10,000 Monte Carlo simulation values would reveal investment losses. Correlation between asset returns is also possible. Therefore, to generate aggregate investment loss, it is needed to conduct mathematical convolution of asset returns by using Monte-Carlo simulation and copula function (Afambo, 2006 and Chavez-Demoulin et.al., 2005). Copula function is a multivariate probability density function for which the marginal probability for each variable is uniform that is copula links univariate marginal distributions to their joint distribution. This paper will compute the portfolio copula based VaR in the context of Gaussian copula and Student’s t copula. This approach is based upon the well-known result of Sklar (1959) that any d-dimensional distribution function \( F \) with marginal \( F_1, \ldots, F_d \) can be expressed as
\[ F(x_1, \ldots, x_d) = C(F(x_1), \ldots, F(x_d)) \text{ for any } (x_1, \ldots, x_d) \in R^d \] 
(7)

and a copula \( C \) is

\[ C(u_1, \ldots, u_n) = C(F_1^{-1}(u_1), \ldots, F_n^{-1}(u_n)) \] 
(8)

where each \( F_i^{-1} \) is the quantile function of the margin, \( u \) is a cumulative distribution function (CDF) and the value falls with \([0,1]\) range with copula density function \( c \) is as follows:

\[ h(x_1, \ldots, x_n) = c(F_1(x_1), \ldots, F_n(x_n)) \] 
(9)

1. **The Gaussian Copula**

Gaussian copula is shown in equation (10) and (11) respectively. The function \( C \) so-called copula, a distribution function on \([0,1]^d\) with uniform marginal.

\[ C(u_1, \ldots, u_n) = \Phi_n^{\Sigma_n} \left( \phi_1^{-1}(u_1), \ldots, \phi_n^{-1}(u_n) \right) \] 
(10)

where \( \Phi_n^{\Sigma_n} \) is the joint cumulative distribution function of a multivariate normal distribution function with mean vector zero and covariance matrix equal to the correlation matrix \( \Sigma_n \). The Gaussian copula density can be written as

\[ c(u_1, \ldots, u_n) = (\sqrt{\det \Sigma_n})^{-1} \cdot \frac{1}{2} \left( \phi_1^{-1}(u_1), \ldots, \phi_n^{-1}(u_n) \right) \cdot \left( \Sigma_n^{-1} - I \right) \cdot \left( \phi_1^{-1}(u_1), \ldots, \phi_n^{-1}(u_n) \right) \] 
(11)

2. **The t-Copula**

Students’ t copula is shown in equation (12) and (13) respectively.

\[ C(u_1, \ldots, u_n) = \int_{-\infty}^{t_{-1}(u_1)} \ldots \int_{-\infty}^{t_{-1}(u_n)} f_{t_1(v)}(x) dx \] 
(12)

where \( t_{-1} \) denotes the inverse quantile function of a standard univariate t distribution and \( f_{t_1(v)}(x) \) is the density of the univariate standard t-distribution with \( v \) degree of freedom. Therefore, the density of t copula is as follows:

\[ c_{t,v,P}(u_1, \ldots, u_n) = \frac{f_{t,v}(t_{-1}(u_1), \ldots, t_{-1}(u_n))}{\prod_{i=1}^{n} f_{t,v}(t_{-1}(u_i))} \] 
(13)

where \( f_{t,v} \) joint density of a \( t_d(v, 0, P) \)-distributed random vector and \( P \) is the correlation matrix.

2.2.3. **Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC)**

This study considers Gaussian and Student’s t copula functions as mentioned above. The most appropriate copula function is selected based on the log-likelihood function and two information metrics (selection criteria). The latter includes the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) provided below:

![Image]

214
\[ AIC = -2 \times LLF + 2 \times Parameters \] (14)
\[ BIC = -2 \times LLF + \log(T) \times Parameters \] (15)

where \( LLF \) is the log-likelihood function, Parameters are the number of parameters, and \( T \) is the number of observations.

2.2.4. Optimal Portfolio Construction

The portfolio optimization problem arises from the decisions investors have to make on how to invest their available budgets given a set of financial assets. Investor is interested in maximizing wealth at the end of the investment horizon. Investor will therefore only accept greater returns if they can tolerate the regret occurring from the greater potential wealth-at-risk. The risk-return ratio \( S(p) \) which is maximized for the optimal portfolio \( p \) is a performance measure Sharpe index that can be used to evaluate the efficiency of portfolio. Sharpe ratio is defined as the ratio of the expected return on the corresponding portfolio to the standard deviation of the return referred to as the risk of the portfolio (Sharpe, 1994). Generally, the greater the value of the Sharpe ratio, the more attractive and efficient the risk-adjusted return. This paper will apply optimization process with a performance index which can be written as follows:

\[ p : \max S(p)_p = \frac{r_p - r_f}{\sigma_p} \] (16)

where \( r_p \) is the return of portfolio, \( r_f \) is risk-free rate, and \( \sigma_p \) is standard deviation of portfolio’s excess return.

2.2.5. Backtesting

Although VaR is widely used and commonly accepted as a risk management tool, the method has frequently been criticized for being incapable to produce reliable risk estimates. This is because VaR attempts to forecast future asset prices using historical data which may not necessarily reflect future prices. Jorion (2003) defines backtesting as a statistical procedure where actual profits and losses are systematically compared with the corresponding VaR estimates. Therefore, appropriate statistical backtesting method is a necessity to verify the accuracy of predicted future risks.

Backtesting is a technique for simulating a model on past data to evaluate the accuracy and effectiveness. The purpose of adopting backtesting in VaR is to compare the predicted values from the calculated VaR with the actual losses at the specified time horizon. This comparison identifies whether the VaR is underestimated or where the portfolio losses are greater than the original expected VaR to avoid the risk of unexpected losses. Therefore, VaR models are useful only if they accurately predict future risks. In order to evaluate the quality of the estimates, the models should always be backtested with appropriate methods. This paper will adopt violation ratio (VR) test, Basel traffic light test, and Kupiec’s (1995) Proportion of Failures (POF)-test to examine the frequency of losses in excess of VaR forecasts. Empirical study on VaR backtesting is conducted with 73 observations from October 3, 2018 to February 1, 2019.

1. Violation Ratio (VR) Test
This paper uses violation ratio (VR) to judge the quality of the VaR forecasts. If the actual return on a particular day exceeds the VaR forecast, it is said that the VaR limit is being violated. The VR is defined by the observed number of violations over the expected number of violations as shown below.

\[
VR = \frac{\text{Observe number of violations}}{\text{Expected number of violations}}
\]  

(17)

where expected number of violation is level of significant \((\alpha) \times \text{number of observations}\)

If the VaR forecast of our model is accurate, the violation ratio is expected to be equal to 1. A useful rule of thumb is that if the VR is between 0.8 and 1.2, the model is considered to be a good forecast. If VR is between 0.5-0.8 means that the model underestimates risk while VR is between 1.2-1.5 means that the model overestimates risk but both ranges as mentioned above indicate that the model is considered to be an acceptable forecast. If VR is between 0.3-0.5 means that the model quite underestimates risk while VR is between 1.2-1.5 means that the model quite overestimates risk and both ranges as mentioned before point out that the model is considered to be a bad forecast. If VR is less than 0.3 or greater than 2, the model is considered to be a useless forecast.

2. **Basel Traffic Light Test**

A variation on the binomial test proposed by the Basel Committee is the traffic light test or three zones test distinguished by colors into a hierarchy of responses (Basel Committee, 1996). The green zone corresponds to backtesting results that do not themselves suggest a problem with the quality or accuracy of a model. The yellow zone encompasses results that do raise questions in this regard, but where such a conclusion is not definitive. The red zone indicates a backtesting result that almost certainly indicates a problem with a risk model.

The true binomial null distribution is used to compute cumulative probabilities for different breaches values under parameters \(\alpha = 1\%\) and 5\% with 250 observations. Table 1 gives the traffic light zones for cumulative probabilities of the number of realized VaR breaches.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Confident Level 95% Breach Value</th>
<th>Confident Level 99% Breach Value</th>
<th>Cumulative Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Zone</td>
<td>0-17</td>
<td>0-4</td>
<td>89.22%</td>
</tr>
<tr>
<td>Yellow Zone</td>
<td>18-26</td>
<td>5-9</td>
<td>99.97%</td>
</tr>
<tr>
<td>Red Zone</td>
<td>27 or more</td>
<td>10 or more</td>
<td>99.99%</td>
</tr>
</tbody>
</table>

3. **Kupiec’s Test (Proportion of Failures (POF) Test)**

This paper will additionally adopt Kupiec’s (1995) Proportion of Failures (POF)-test to examine the frequency of losses in excess of VaR. This so call the failure rate should be in line with the selected confidence level. Under null hypothesis of the model being correct, the number of exceptions follows the binomial distribution. The only information required to implement the POF-test is the number of observations \((N)\), the number of exceptions \((E)\) and the confidence level \(c\) (Dowd, 2005). The null hypothesis for the POF-test as follows:
\[ H_0: p = p_0 \text{ and } p \approx \frac{E}{N} \]  
\[ (18) \]

where \( p_0 \) is the failure rate whether it is different from the observed failure rate \( p \)

\( E \) is the number of exception

\( N \) is the number of observation

According to Kupiec (1995), the POF-test is best conducted as a Likelihood Ratio (LR) test. The test statistic can be written as follows:

\[ LR_{POF} = 2 \log \left[ \frac{(1-E/N)^{N-E}(E/N)^E}{(1-p_0)^{N-E}p_0^E} \right] \]

\[ (19) \]

If the model under the null hypothesis is correct, \( LR_{POF} \) is \( \chi^2 \) (chi-squared) distribution with one degree of freedom. If the value of \( LR_{POF} \) statistic exceeds 3.8415 at 95% confidence level or exceeds 6.6349 at 99% confidence level, the null hypothesis will be rejected and the model is deemed inaccurate.

3. Results

3.1. Descriptive Statistics

Table 2 shows summary statistics of Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) stock indices daily logarithmic returns. For all the six series, skewness of daily logarithmic returns is not equal to zero and kurtosis is greater than three indicating high peaks and fat tails (leptokurtic). This suggests that six asset daily returns do not follow normal distribution. By inspecting the Jarque-Bera statistics, the normality for six asset returns is uniformly rejected.

Table 2: Descriptive Statistics of Daily Logarithmic Returns from Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices from October 2015 to September 2018

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>BTC</th>
<th>XRP</th>
<th>JP</th>
<th>US</th>
<th>VN</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.0051</td>
<td>0.0070</td>
<td>0.0005</td>
<td>0.0006</td>
<td>0.0008</td>
<td>0.0005</td>
</tr>
<tr>
<td>Median</td>
<td>0.0042</td>
<td>-0.0040</td>
<td>0.0007</td>
<td>0.0008</td>
<td>0.0015</td>
<td>0.0007</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.2482</td>
<td>-0.5233</td>
<td>-0.0750</td>
<td>-0.0472</td>
<td>-0.0664</td>
<td>-0.0478</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.2338</td>
<td>1.4492</td>
<td>0.0566</td>
<td>0.0446</td>
<td>0.0791</td>
<td>0.0503</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.0511</td>
<td>0.1106</td>
<td>0.0121</td>
<td>0.0074</td>
<td>0.0122</td>
<td>0.0086</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.2009</td>
<td>4.3195</td>
<td>-0.6040</td>
<td>-0.4476</td>
<td>-0.4042</td>
<td>-0.0977</td>
</tr>
<tr>
<td>Jarque-Bera (JB)</td>
<td>492.3111</td>
<td>63916.2700</td>
<td>1211.7050</td>
<td>1115.5610</td>
<td>1022.8170</td>
<td>468.3858</td>
</tr>
<tr>
<td>P-Value</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>N (Sample Size)</td>
<td>659</td>
<td>659</td>
<td>659</td>
<td>659</td>
<td>659</td>
<td>659</td>
</tr>
</tbody>
</table>

Figure 1 depicts the histogram of daily logarithmic returns for six assets. From these histograms, it appears that all six series have high peak than normal distribution. Generally, Q-Q plot is used to identify the distribution of sample in the study. Therefore, Q-Q plot shown
in Figure 2 compares the distribution for each asset returns with the normal distribution and indicates that all six asset returns deviate from the normal distribution.

Figure 1. Histogram of Daily Logarithmic Returns from Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices from October 2015 to September 2018

Figure 2. Q–Q Plot of Daily Logarithmic Returns from Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices from October 2015 to September 2018

3.2. Test of Goodness of Fit

In order to verify the fitting performance, a Kolmogorov-Smirnov goodness of fit test at the significance level of $\alpha = 0.05$ is used as a procedure for determining the best fitting
distribution(s) for the daily six asset returns. The result of goodness of fit test shown in Table 3 indicates that Cauchy distribution significantly fits Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, and US (US) stock index daily returns and Logistic distribution significantly fits Japan (JP), Vietnam (VN), and India (IN) stock index daily returns. Both Cauchy and Logistic distributions exhibit leptokurtic indicating that distributions of six financial asset returns have heavier tails than normal distribution (Brooks, 2008).

Table 3: Goodness of Fit Test of Daily Logarithmic Returns from Bitcoin (BTC) and Ripple (XRP) Cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices from October 2015 to September 2018

<table>
<thead>
<tr>
<th>Asset</th>
<th>Distribution</th>
<th>Parameters</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Location</td>
<td>Scale</td>
</tr>
<tr>
<td>BTC</td>
<td>Cauchy</td>
<td>0.0044</td>
<td>0.0188</td>
</tr>
<tr>
<td>XRP</td>
<td>Cauchy</td>
<td>-0.0068</td>
<td>0.0337</td>
</tr>
<tr>
<td>JP</td>
<td>Logistic</td>
<td>0.0006</td>
<td>0.0061</td>
</tr>
<tr>
<td>US</td>
<td>Cauchy</td>
<td>0.0009</td>
<td>0.0031</td>
</tr>
<tr>
<td>VN</td>
<td>Logistic</td>
<td>0.0012</td>
<td>0.0062</td>
</tr>
<tr>
<td>IN</td>
<td>Logistic</td>
<td>0.0006</td>
<td>0.0045</td>
</tr>
</tbody>
</table>

3.3. Dependence

The results of Pearson and Kendall dependence measures between cryptocurrencies and stock indices returns are summarized in Table 4 and 5 respectively. Most results are significant at 1-percent level. The dependence measures are not small and mostly positive. The largest linear Pearson dependence coefficient, 0.5454, is reported between US stock and Japanese stock returns, whereas the smallest linear Pearson dependence coefficient, 0.1070, is observed between India stock and Vietnam stock returns.

Table 4: Pearson’s rho Correlation between Bitcoin (BTC) and Ripple (XRP) Cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices Daily Returns from October 2015 to September 2018

<table>
<thead>
<tr>
<th>Asset</th>
<th>BTC</th>
<th>XRP</th>
<th>JP</th>
<th>US</th>
<th>VN</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTC</td>
<td>1***</td>
<td>0.3006***</td>
<td>0.0347</td>
<td>0.0297</td>
<td>0.0489</td>
<td>-0.0180</td>
</tr>
<tr>
<td>XRP</td>
<td></td>
<td>1***</td>
<td>0.0161</td>
<td>0.5454***</td>
<td>0.2573***</td>
<td>0.3915***</td>
</tr>
<tr>
<td>JP</td>
<td></td>
<td></td>
<td>0.1600***</td>
<td>1 ***</td>
<td>0.3390***</td>
<td>0.3915***</td>
</tr>
<tr>
<td>US</td>
<td></td>
<td></td>
<td></td>
<td>0.1070***</td>
<td>1***</td>
<td></td>
</tr>
<tr>
<td>VN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.1070***</td>
</tr>
<tr>
<td>IN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *** significant at 0.01 ** significant at 0.05 * significant at 0.1
Table 5: Kendall’s tau Correlation between Bitcoin (BTC) and Ripple (XRP) Cryptocurrencies, Japan (JP), US (US), Vietnam (VN), and India (IN) Stock Indices Daily Returns from October 2015 to September 2018

<table>
<thead>
<tr>
<th>Asset</th>
<th>BTC</th>
<th>XRP</th>
<th>JP</th>
<th>US</th>
<th>VN</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTC</td>
<td></td>
<td>1***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XRP</td>
<td>0.2221***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JP</td>
<td>0.0237</td>
<td>0.0048</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>0.0225</td>
<td>0.0398</td>
<td>0.3645***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VN</td>
<td>0.0448</td>
<td>0.0110</td>
<td>0.0757***</td>
<td>0.0705***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN</td>
<td>-0.0036</td>
<td>-0.0008</td>
<td>0.2207***</td>
<td>0.2188***</td>
<td>0.0798***</td>
<td>1***</td>
</tr>
</tbody>
</table>

Note: *** significant at 0.01, ** significant at 0.05, * significant at 0.1

3.4. Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC)

This paper uses copula functions which provide greater flexibility in modelling multivariate relationship. They also facilitate the estimation of the general dependence structure. As mentioned above, this study uses LLF, AIC, and BIC methods to rank the copula models. The information criteria (AIC, and BIC) presented in Table 6 results are consistent with the LLF results. According to these criteria, Student’s t copula is found to be the best copula model based on the highest likelihood and smallest values for the AIC and BIC.

Table 6: Selection Criteria for Gaussian Copula and Student’s t Copula Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Log-likelihood Function (LLF)</th>
<th>Akaike Information Criterion (AIC)</th>
<th>Bayesian Information Criterion (BIC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaussian Copula</td>
<td>18.0548</td>
<td>-34.1097</td>
<td>-31.3315</td>
</tr>
<tr>
<td>Student’s t Copula</td>
<td><strong>32.0030</strong></td>
<td><strong>-60.0059</strong></td>
<td><strong>-54.4496</strong></td>
</tr>
</tbody>
</table>

Note: The best results with respect to log-likelihood, AIC and BIC model selection criteria are reported in bold letters.

3.5. Value-at-Risk (VaR) and Expected Shortfall (ES)

Estimated daily and yearly portfolio VaR and ES at 95% confidence level (at 20 days) and 99% confidence level (at 10 days) with an optimized Sharpe ratio of historical, delta normal, and Monte Carlo methods with copula functions are shown in Table 7. As return distributions do not follow normal distribution which are shown above, risk estimates based on assumption of normality will not provide robust risk assessments. In addition, when significant positive excess kurtosis is found in empirical return distribution, the Student’s t distribution is likely to produce VaR estimates that are more close to historical behavior than normal distribution (Elliott & Miao, 2009; Lin & Shen, 2006). The Student’s t distribution is more adequate to deal with the fat-tailed and leptokurtic features. As our stock and cryptocurrency returns are having leptokurtic feature, the VaR estimates based on Student’s t copula appear to be more appropriate. The Student’s t copula shows the highest VaR at 95% confidence level. However, investor faces highest risk at 99% confidence level.
Table 7: Estimated Daily and Yearly Portfolio VaR and ES at 95% and 99% Confidence Level of Historical Simulation, Delta Normal, and Monte Carlo Simulation with Gaussian Copula and Student’s t Copula Functions

<table>
<thead>
<tr>
<th>Approach</th>
<th>Confident Level 95%</th>
<th>Confident Level 99%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Simulation</td>
<td>-2.83%</td>
<td>-44.71%</td>
</tr>
<tr>
<td>Delta Normal</td>
<td>-3.26%</td>
<td>-51.47%</td>
</tr>
<tr>
<td>Gaussian Copula</td>
<td>-2.63%</td>
<td>-41.56%</td>
</tr>
<tr>
<td>Student’s t Copula</td>
<td>-2.518%</td>
<td>-39.82%</td>
</tr>
</tbody>
</table>

3.6. Backtesting

Rossignol et al. (2012) mentioned that ‘backtesting constitutes a statistical technique to assess the quality of the risk measurement specifications which involves the comparison between the daily VaR forecast with the actual losses’. Backtesting involves comparing the number of times actual losses exceed VaR estimates in approximately 250 trading days (Rossignolo et al., 2012).

This paper shows the backtesting performance of four simulation approaches (historical, delta normal, Gaussian Copula, and Student’s t Copula) with the significance level equal 0.95 and 0.99. The test results are in Table 8, 9 and 10 with $\alpha$ equal 1% and 5%.

1. **Violation Ratio (VR) Test Result of VaR**

Table 8 shows the results of violation ratio (VR) at 95% and 99% confidence level.

Table 8: Violation Ratio Test Result of Value-at-Risk for Historical Simulation, Delta Normal, and Monte Carlo Simulation with Gaussian Copula and Student’s t Copula Functions at $\alpha$ equal 1% and 5%

<table>
<thead>
<tr>
<th>Approach</th>
<th>Confidence Level</th>
<th>Observed Number of Violations</th>
<th>N</th>
<th>Alpha</th>
<th>Violation Ratio</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Simulation</td>
<td>95%</td>
<td>8</td>
<td>73</td>
<td>0.05</td>
<td>2.1918</td>
<td>Useless</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>2</td>
<td>73</td>
<td>0.01</td>
<td>2.7397</td>
<td>Useless</td>
</tr>
<tr>
<td>Delta Normal</td>
<td>95%</td>
<td>8</td>
<td>73</td>
<td>0.05</td>
<td>2.1918</td>
<td>Useless</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>3</td>
<td>73</td>
<td>0.01</td>
<td>4.1096</td>
<td>Useless</td>
</tr>
<tr>
<td>Gaussian Copula</td>
<td>95%</td>
<td>9</td>
<td>73</td>
<td>0.05</td>
<td>2.4658</td>
<td>Useless</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>0</td>
<td>73</td>
<td>0.01</td>
<td>Zero</td>
<td>Useless</td>
</tr>
<tr>
<td>Student’s t Copula</td>
<td>95%</td>
<td>9</td>
<td>73</td>
<td>0.05</td>
<td>2.4658</td>
<td>Useless</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>0</td>
<td>73</td>
<td>0.01</td>
<td>Zero</td>
<td>Useless</td>
</tr>
</tbody>
</table>

Note: N is the number of observations.

The result shows that VR is greater than 2 for all models at 95% confidence level. At 99% confidence level VR values of both Gaussian and Student’s t Copula simulation approaches are equal to zero. This can be considered that Gaussian copula and Student’s t copula do not do so well to forecast VaR. It would therefore be of interest to further investigate the results of alternative backtesting techniques.
2. **Basel Traffic Light Test Result of VaR**

Table 9 shows the results of traffic light coverage test at 95% and 99% confidence level. The result suggests that beyond confidence level 99% Gaussian copula and Student’s t copula are in the green zone. The Gaussian copula and Student’s t copula approaches therefore seem to be accurate to measure VaR.

The result shows that the copula model is the best candidate among all in the extreme case. The traffic light is in green zone at 99% confidence level considered to be a good forecast for both Gaussian and Student’s t copula simulation approaches. Copulas are a very flexible tool to model patterns of dependence between variables separately from the marginal distributions, and may be used to model the observed dependence between financial returns. The results in Table 4 and 5 show statistically significant dependence at 99% confidence level between cryptocurrencies and stock indices returns. The Gaussian copula and Student’s t copula are therefore more suitable for measuring VaR since it is not only provided with the capability to adapt the level of dependence, but also the strength of tail and overall dependence over time.

Table 9: Traffic Light Test Result of Value-at-Risk for Historical Simulation, Delta Normal, and Monte Carlo Simulation with Gaussian Copula and Student’s t Copula Functions at α equal 1% and 5%

<table>
<thead>
<tr>
<th>Approach</th>
<th>Confidence Level</th>
<th>N</th>
<th>E</th>
<th>Zone</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Simulation</td>
<td>95%</td>
<td>73</td>
<td>8</td>
<td>Red</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>73</td>
<td>2</td>
<td>Yellow</td>
<td>Accept</td>
</tr>
<tr>
<td>Delta Normal</td>
<td>95%</td>
<td>73</td>
<td>8</td>
<td>Red</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>73</td>
<td>3</td>
<td>Red</td>
<td>Reject</td>
</tr>
<tr>
<td>Gaussian Copula</td>
<td>95%</td>
<td>73</td>
<td>9</td>
<td>Red</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>73</td>
<td>0</td>
<td>Green</td>
<td>Accept</td>
</tr>
<tr>
<td>Student’s t Copula</td>
<td>95%</td>
<td>73</td>
<td>9</td>
<td>Red</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>73</td>
<td>0</td>
<td>Green</td>
<td>Accept</td>
</tr>
</tbody>
</table>

3. **Kupiec’s POF Test Result of VaR**

Kupiec’s POF-Test in this study is used to test the accuracy in estimating the proportion of exceptions (failures). The POF-test statistic is computed by using equation 18 and compared to critical value $\chi^2$ at confidence level of 95% and 99% with one degree of freedom. When the value of test statistic is higher than $\chi^2_{1}(0.95) = 3.8415$ or $\chi^2_{1}(0.99) = 6.6349$, the null hypothesis is rejected, and thus the model is inaccurate. Table 10 shows the result of Kupiec’s POF-Test at 95% and 99% confidence level. The result suggests that beyond confidence level 99% null hypotheses of four models (historical simulation, delta normal, Gaussian copula, and Student’s t copula) are all accepted. That is the models are accurate for measuring the risk of portfolio mix.
<table>
<thead>
<tr>
<th>Approach</th>
<th>Confidence Level</th>
<th>POF Test</th>
<th>$\chi^2_{1} (0.95)$</th>
<th>$\chi^2_{1} (0.99)$</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Simulation</td>
<td>95%</td>
<td>4.1342</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>1.5139</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Accept</td>
</tr>
<tr>
<td>Delta Normal</td>
<td>95%</td>
<td>4.1342</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>4.0120</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Accept</td>
</tr>
<tr>
<td>Gaussian Copula</td>
<td>95%</td>
<td>5.9687</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>1.4674</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Accept</td>
</tr>
<tr>
<td>Student’s t Copula</td>
<td>95%</td>
<td>5.9687</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Reject</td>
</tr>
<tr>
<td></td>
<td>99%</td>
<td>1.4674</td>
<td>3.8415</td>
<td>6.6349</td>
<td>Accept</td>
</tr>
</tbody>
</table>

4. Conclusion

This study takes Value-at-Risk (VaR) and Expected Shortfall (ES) to capture market risk of daily returns of a diversified portfolio of six assets including Bitcoin and Ripple cryptocurrencies, Japan, US, Vietnam, and India stocks from October 2015 to September 2018. From the return histograms, it appears that all six return series have high peak than normal distribution. Q–Q plot also shows that all six asset returns deviate from the normal distribution. In addition, the result of goodness of fit test indicates that Cauchy distribution significantly fits Bitcoin (BTC) and Ripple (XRP) cryptocurrencies, and US (US) stock index daily returns and Logistic distribution significantly fits Japan (JP), Vietnam (VN), and India (IN) stock index daily returns. Both Cauchy and Logistic distributions exhibit leptokurtic indicating that distributions of six financial asset returns present fatter tails than normal distribution.

Three VaR measurement approaches i.e. historical simulation approach, delta normal approach, and Monte Carlo simulation approach are used in this study to estimate portfolio VaR. This paper also tests the dependence between cryptocurrencies and stock indices returns by using Pearson’s rho and Kendall’s tau correlation test. Clear pattern can be observed as the dependence structure and the dependence measures are not small and mostly positive. Therefore, for overcoming the drawbacks of the traditional VaR models, this study presents a technique from multivariate distribution with dependence structure among different assets described by a Gaussian and a Student’s t copula. This paper will compute the portfolio copula based VaR in the context of Gaussian copula and Student’s t copula. This study uses LLF, AIC, and BIC methods to rank the copula models. The result indicates that Student’s t copula gives a better fit for our data as it gives the highest log-likelihood function and the lowest AIC and BIC. Therefore, this finding suggests that copula-based approaches seem preferable. Respectively the optimum portfolio obtained through maximizing Sharpe ratio Student’s t copula provides lowest VaR estimates. It is probably due to the tail dependence property of the t-copula which is particularly important for very high quantiles estimates.

This paper adopts multiple VaR backtesting tools to assess the performance of VaR model. Three Backtesting techniques which are Violation Ratio (VR) test, Basel Traffic Light test, and Kupiec’s (1995) Proportion of Failures (POF)-test are used to verify the accuracy of predicted future risks. The evidence indicates that, for sample portfolio, the copula models always outperform the traditional VaR model at 99% probability level. The result shows that at 99% confidence level most of the tests accept null hypothesis. This finding suggests that both
Gaussian copula and Student’s t copula are well applied to capture the dependency and properly estimate portfolio copula based VaR. This is because they are not only provided with the capability to adapt the level of dependence, but also the strength of tail dependence over time. This finding confirms a use of copula to measure VaR provides a refinement to the traditional VaR methodology.

5. References


Return and Volatility Spillovers between Cyclical Sector Indices and Market Indices in the Stock Exchange of Thailand during 2014-2017

Nonthadej Predawut
Assumption University
nonthadej_predawut@hotmail.com

Abstract

The objective of this study is to investigate the relationship between cyclical sector indices and the market indices to assist investors in guiding their portfolio investment through analysis of index returns and volatilities. Past studies on impacts of cyclical sector indices in Thai stock market are quite limited. This paper aims to identify the cyclical sectors in Thai stock market and investigate whether the return and volatility relationship between cyclical sector indices and market indices exist. This will provide more information to investors in portfolio management and investment strategies, as well as observe performance of specific sectors in the stock market.

In order to analyse the return and volatility relationship between market indices and cyclical sector indices, daily closing prices (976 observations) from January 2014 to December 2017 of market indices which are SET and SET50 and all of the 28 sectors listed in the main Stock Exchange Market of Thailand (SET) were retrieved from Thomson Reuters Datastream and transformed into return form for analysis. Among the 28 sectors, 8 sector indices namely, Professional Services (PROF), Construction Services (CONS), Petrochemicals & Chemicals (PETO), Energy & Utilities (ENERG), Information & Communication Technology (ICT), Banking (BANK), Paper & Printing Materials (PAPER), and Property Development (PROP) were classified as cyclical sectors by Beta (CAPM) criteria; and were chosen into the analysis in addition to the 2 market indices. Granger Causality tests of 1 to 5 lags were applied on the returns of market indices and the returns of cyclical indices in order to study return spillover. Subsequently, GARCH-type models (ARCH, GARCH, or EGARCH) of the return of cyclical sector indices were utilised to test the volatility spillover on pairwise basis.

The study found that, on return perspective, not all cyclical sector returns such as Construction Services, Energy & Utilities, ICT, and Petrochemicals & Chemicals sectors were influenced by market indices; Banking, Petrochemicals & Chemicals and Professional Services sectors, meanwhile, influence the market indices (SET and SET50). While on the perspective of volatilities, the results found that most cyclical sectors influence the SET50 but not SET Index whereas volatilities from market indices influence only Banking, Paper & Printing Materials, Petrochemical, and Professional Services sectors. Findings are in line with past studies which identified the relationship between Banking sector and the market indices.

As there are some sectors that are influenced by markets and some not, investors or portfolio managers may consider adjusting their portfolios to suit their particular needs; for example, holding less investment in Banking sector to decrease market influence on the portfolio. Another implication obtained from the result was that ICT sector was not influenced by the market in terms of both return and volatility. However, an individual stock in a particular sector
may not behave in the same way as the sector index. Investors should keep track of the market because time may alter the situation of the investment. The findings may not apply to another market as there are some differences in fundamentals of each market.

This paper provides additional information for those who are interested in the relationship between sector indices and market indices for their portfolio management or investment strategy. Investors or portfolio managers may also find more information to benefit their own investments, to seek new investment opportunities, or even to manage own investment risk. Researchers who are interested in sector indices may conduct further studies on how the sector indices are linked to economic situation of a particular sector as industrial sector indices may be treated as a slice of real sector in financial sector.

*keywords:* volatility spillover, sector index, market index
1. Introduction

Movements of stock market indices can be meaningful when interpreted and can send some signals about the economy. For example, if the economy is in a bad shape, such as during the time of flood in the central part of Thailand in 2011, the stock index tends to have a downtrend due to the expected drop in production capacity and increased uncertainty. The stock exchange indices and economic activity tend to move in the same direction in which the stock market tends to lead the economy (Yuksel & Bayrak, 2009). From the statements above, it implies that there can be some kind of interrelatedness between indices in the market.

There are many literatures related to causality and volatility spillovers between stock markets indices and various macroeconomic variables. Granger Causality test are widely used to study the impact of one variable on another. Additionally, various types of autoregressive conditional heteroskedasticity (ARCH) models are utilised to study volatility transmission of different variables. Market indices are also frequently used as variables in many economically related studies. Having focused on stock market indices, the researcher found that there are some interesting themes that market indices can get involved such as Jawaid (2013) who conducted a study on spillover effects of returns and volatility between the banking sector and other various sectors. Another work is by Hussain and Ul Islam (2018) which modeled the spillover effect of stock market volatility in Indian and Chinese stock markets by using GARCH. This study was also conducted in similar theme of those previous works by examining the impact between sector indices and market indices in terms of both return and volatility.

The objective of this paper is to study the return and volatility spillovers between cyclical sector indices and the Thai market indices which are SET and SET50. The researcher applied CAPM’s beta criteria to classify and select the sector indices. The selected sectors are Professional Services (PROF), Construction Services (CONS), Petrochemicals & Chemicals (PETRO), Energy & Utilities (ENERG), Information & Communication Technology (ICT), Banking (BANK), Paper & Printing Materials (PAPER), and Property Development (PROP). The market indices are SET and SET50. Granger Causality technique was utilised to study the return spillover whereas GARCH-type models were utilised to study volatility spillover between the cyclical indices and the market indices.

This study differs from other studies because it involves the return and volatility impacts between market indices and cyclical sector indices (sectors which are riskier than the market) in Thai stock market. Although there were some studies related to foreign market indices or sector indices in foreign markets, only a few studies directly conducted on this theme have examined the relationship among sector indices in the Thai stock market. Therefore, it can be informative for investors or those who are interested in the co-movement of market indices and business sectors in Thai stock market.

2. Literature Review

There are various works which studied impact of stock market indices, some of which focuses on the returns and some of which on the volatility. Granger Causality and GARCH-type models are quite widely used in past studies to examine those impacts. Some of the literatures focus on stock markets where stock market indices are used as representatives of whole markets, and some other literatures examine some specific sectors and use sector indices as variables.
Jawaid (2013) conducted a study on the spillover effects of returns and volatility between the banking sector and other various sectors (oil and gas, food producers, chemicals, textiles, cement, electricity, and fixed line telecommunication) in Pakistan by using Granger Causality test. The findings showed that the banking sector was impacting various sectors such as oil and gas, but few sectors had an impact on the banking sector. Similar findings are found in Chiu, Peña and Wang (2013) studied the volatility spillover between the equity index return of the U.S. financial sector and of 73 non-financial industrial sectors by using GARCH related technique and found evidence of volatility spillover from the financial sector onto various non-financial sectors in the U.S. Likewise, Kang, Maysami, Mensah and Pham (2015) studied how stocks of 5 real estate companies were related to the Vietnamese stock market in terms of returns and volatilities by using CAPM and GARCH and found that 3 out of the 5 stocks of the real estate industry were slightly riskier than the Vietnamese stock market.

Not only sector indices, but also market indices have been examined. Hussain and Ul Islam (2018) modeled spillover effect of stock market volatility in Indian and Chinese stock markets by using GARCH. The data were daily closing prices of S&P, BSE, SENSEX (India), and SSE Composite Index (China). The study found that there is uni-directional volatility spillover from Chinese stock market to Indian stock market. Allen, Amram, and McAleer (2011) examined whether there was small evidence of volatility spillovers from the Chinese stock market to its neighbours and trading partners by using ARMA and GARCH related models. They found that there is little evidence of spillover effects from Chinese market to the other studied markets during the Global Financial Crisis. Singh (2016) investigated the relationship between NIFTY Index returns and major Asian stock index returns by using Granger Causality. The data of market indices were, NIFTY (India), Nikkei 225 (Japan), Straits Times (Singapore), Hang Seng (Hong Kong), Taiwan Weighted Index (Taiwan), KOSPI Composite (South Korea), SET (Thailand), JSX Composite (Indonesia), Shanghai Composite (China), from 2000 to 2014. The finding was that Nikkei 225 Index, Hang Seng Index, and Taiwan Weighted Index Granger cause NIFTY Index uni-directionally.

Introduced by Granger (1969), Granger Causality technique was utilised for some previous studies such as Kapil and Singh (2016) who investigated relationships among crude oil price, exchange rate and Indian stock market by using Granger Causality approach and found that there were unidirectional causalities from nifty returns to the exchange rates and from the crude oil price to the nifty returns. Chakrabarti, Sarkar and Sen (2008) looked for the possible volatility transmission for Indian stock market from the Indian domestic sectors. Granger causality test was applied. The study found that Capital Goods and Consumer Durables sectors contributed to SENSEX volatility. Comincioli (1996) performed Granger-Causality test to explore causal relationships between stock prices and the economy and found that stock prices Granger-caused economic activity but no reverse causality was observed.

A popular method to study volatility spillover is GARCH-type models including, ARCH (introduced by Engel in 1982), GARCH (introduced by Bollerslev in 1986) and EGARCH (introduced by Nelson in 1991). Wisudtitham (2013) studied the effect of the market, exchange rate, and interest rate risks on the returns of sector indices. The technique used was GARCH-M. The study found statistically significant impacts of the market risk and the foreign exchange rate risk on the index of the property and construction industry. Arouri and Nguyen (2010) studied oil prices and stock market linkage by employing various econometric techniques such as ARCH and Granger causality test on oil price and various sector indices in European countries. The study found that oil price positively affected Oil and Gas sector returns. Additionally, oil price and stock markets are strongly correlated for Oil and Gas industries.
Nishad and Tomachan (2015) examined the nature of volatility of selected sector indices of stocks traded in the National Stock Exchange (NSE) of India, using the daily data from 3 January 2011 to 30 October 2015 and utilised EGARCH model in the analysis. The study revealed that Realty, Metal, IT and Energy sectors are highly sensitive to market events when compared with other indices.

3. Data

The data used are daily closing prices of indices in SET covering period from January 2014 to December 2017. Total data are 976 observations at level form and 975 observations at return form. The data of 28 sector indices; namely, Professional Services (PROF), Construction Services (CONS), Petrochemicals & Chemicals (PETRO), Energy & Utilities (ENERG), Information & Communication Technology (ICT), Banking (BANK), Paper & Printing Materials (PAPER), Property Development (PROP), Mining (MINE), Finance & Securities (FIN), Transportation & Logistics (TRANS), Media & Publishing (MEDIA), Industrial Materials & Machinery (IMM), Construction Materials (CONMAT), Food & Beverage (FOOD), Home & Office Products (HOME), Steel (STEEL), Agribusiness (AGRI), Commerce (COMM), Tourism & Leisure (TOURISM), Packaging (PKG), Electronic Components (ETRON), Health Care Services (HEALTH), Automotive (AUTO), Personal Products & Pharmaceuticals (PERSON), Insurance (INSUR), Fashion (FASHION), Property Fund & REITs (PF&REIT), and 2 market indices (SET and SET50) were obtained from Thomson Reuters Datastream. Each sector index comprised stocks of its respective business. SET Index is the index for stocks of companies listed in SET (not including companies traded in mai index). SET50 Index is an index for the stocks whose prices are at top 50 in the SET in terms of market capitalisation.

4. Methodology

In conducting the study, the first step was to gather the related data. Daily closing prices of 28 sector indices in SET and the market indices (SET and SET50) during Jan 2014 to Dec 2017 were obtained from Thomson Reuters Data Stream. Then they were transformed into return form by using the following formula.

$$R_t = \frac{P_{t+1} - P_t}{P_t}$$  (1)

Rt is the return of each index
P_{t+1} and P_t are the closing values of each index in two consecutive trading days.

The next step was to select the candidate for cyclical sector indices. The following formula was used.

$$R_{si} = a + bR_m$$  (2)

R_{si} is the return of sector index series
R_m is the return of SET (market) index series
a is an intercept of the regression
b is a slope of the regression or the beta

After having obtained the beta, the beta of each sector was ranked in descending order. Sector indices whose beta was more than 1, which implied more return in the same direction as the market, were classified as cyclical indices and would be used for further analysis. SET and SET50 indices were treated as market indices.
It is necessary for the selected index series to be stationary for the later statistical tests, an ADF (Augmented Dickey-Fuller) test was performed on all of the indices to ensure that the data are stationary (mean and variance are not time-decaying).

In this study, the Granger Causality test (1-5 lags) was then conducted to test whether or not the return series of cyclical sector index series could help in explaining the return series of the market and vice versa.

The models to be used in this research for the Granger causality test are:

\[ \text{SET}_t = \alpha_0 + \alpha_1 \cdot \text{SET}_{t-1} + \beta_1 \cdot \text{Sector Index}_{t-1} + \ldots + \epsilon_t \] (3)

\[ \text{Sector Index}_t = \alpha_0 + \alpha_1 \cdot \text{Sector Index}_{t-1} + \beta_1 \cdot \text{SET}_{t-1} + \ldots + \epsilon_t \] (4)

\[ \text{SET50}_t = \alpha_0 + \alpha_1 \cdot \text{SET50}_{t-1} + \beta_1 \cdot \text{Sector Index}_{t-1} + \ldots + \epsilon_t \] (5)

\[ \text{Sector Index}_t = \alpha_0 + \alpha_1 \cdot \text{Sector Index}_{t-1} + \beta_1 \cdot \text{SET}_{t-1} + \ldots + \epsilon_t \] (6)

GARCH-type models such as ARCH, GARCH or EGARCH are tools used to model the volatility. They were applied in this study to study the volatility spillover. The first step to build the model is to find the best ARMA model for each selected index series, by trial and error, with no serial correlation and heteroskedasticity problem. Then, the best ARMA models were used to find the best GARCH-type models, also on trial and error, with the lowest SIC. After that, the best GARCH-type models were used to forecast volatility series for each index series. Then, the volatility series were assigned as an exogenous variable in the variance equation of the best GARCH-type models to test the volatility spillover effect.

To find the best ARMA model for the mean equations of GARCH-type models for the return series of each sector index, the author identified the models by noticing significant spikes from correlogram. In this research paper, the models to be used to find best ARMAs are:

\[ \text{SET}_t = \beta_1 \text{SET}_{t-1} + \beta_2 \text{SET}_{t-2} + \ldots + \beta_p \text{SET}_{t-p} + \epsilon_t + \theta_1 \epsilon_{t-1} + \theta_2 \epsilon_{t-2} + \ldots + \theta_q \epsilon_{t-q} \] (7)

\[ \text{SET50}_t = \beta_1 \text{SET50}_{t-1} + \beta_2 \text{SET50}_{t-2} + \ldots + \beta_p \text{SET50}_{t-p} + \epsilon_t + \theta_1 \epsilon_{t-1} + \theta_2 \epsilon_{t-2} + \ldots + \theta_q \epsilon_{t-q} \] (8)

\[ \text{Sector Index}_t = \beta_1 \text{Sector Index}_{t-1} + \beta_2 \text{Sector Index}_{t-2} + \ldots + \beta_p \text{Sector Index}_{t-p} + \epsilon_t + \theta_1 \epsilon_{t-1} + \theta_2 \epsilon_{t-2} + \ldots + \theta_q \epsilon_{t-q} \] (9)

After the best ARMA models were obtained, they were used as a mean equation in order to estimate the best ARCH, GARCH or EGARCH models to be used to forecast volatility series. The best equations, according to the SIC criterion, used to forecast volatility series.

The volatility series of the cyclical stock index series and the market indices will then be used as exogenous variables for the variance equations where there are (E)(G)ARCH components. The tests were conducted on pairwise basis. Equation 10 is an example of mean equation and 11 is an example of variance equation. If the probability of the test is less than 0.05, volatility spillover exists between the tested index series.

\[ \text{RBANK} = C(1) \cdot \text{AR}(2) + C(2) \cdot \text{MA}(2) \] (10)

\[ \text{GARCH} = C(3) + C(4) \cdot \text{RESID}(-1)^2 + C(5) \cdot \text{GARCH}(-1) + C(6) \cdot \text{VOL\_RSET} \] (11)
5. Empirical Results and Discussion

From the data collected, the Betas of each index are ranked as shown in table 1. The indices whose Beta was more than 1 was classified as cyclical sectors in this study. The indices are Professional Services (PROF), Construction Services (CONS), Petrochemicals & Chemicals (PETRO), Energy & Utilities (ENERG), Information & Communication Technology (ICT), Banking (BANK), Paper & Printing Materials (PAPER), and Property Development (PROP). SET and SET50 are treated as market indices and will be used for the study.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Index</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Services</td>
<td>PROF</td>
<td>1.36</td>
</tr>
<tr>
<td>Construction Services</td>
<td>CONS</td>
<td>1.35</td>
</tr>
<tr>
<td>Petrochemicals &amp; Chemicals</td>
<td>PETRO</td>
<td>1.29</td>
</tr>
<tr>
<td>Energy &amp; Utilities</td>
<td>ENERG</td>
<td>1.26</td>
</tr>
<tr>
<td>Information &amp; Communication Technology</td>
<td>ICT</td>
<td>1.17</td>
</tr>
<tr>
<td>Banking</td>
<td>BANK</td>
<td>1.14</td>
</tr>
<tr>
<td>SET50</td>
<td>SET50</td>
<td>1.13</td>
</tr>
<tr>
<td>Paper &amp; Printing Materials</td>
<td>PAPER</td>
<td>1.07</td>
</tr>
<tr>
<td>Property Development</td>
<td>PROP</td>
<td>1.04</td>
</tr>
<tr>
<td>SET</td>
<td>SET</td>
<td>1</td>
</tr>
<tr>
<td>Mining</td>
<td>MINE</td>
<td>0.95</td>
</tr>
<tr>
<td>Finance &amp; Securities</td>
<td>FIN</td>
<td>0.94</td>
</tr>
<tr>
<td>Transportation &amp; Logistics</td>
<td>TRANS</td>
<td>0.93</td>
</tr>
<tr>
<td>Media &amp; Publishing</td>
<td>MEDIA</td>
<td>0.92</td>
</tr>
<tr>
<td>Industrial Materials &amp; Machinery</td>
<td>IMM</td>
<td>0.92</td>
</tr>
<tr>
<td>Construction Materials</td>
<td>CONMAT</td>
<td>0.89</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>FOOD</td>
<td>0.85</td>
</tr>
<tr>
<td>Home &amp; Office Products</td>
<td>HOME</td>
<td>0.84</td>
</tr>
<tr>
<td>Steel</td>
<td>STEEL</td>
<td>0.84</td>
</tr>
<tr>
<td>Agribusiness</td>
<td>AGRI</td>
<td>0.82</td>
</tr>
<tr>
<td>Commerce</td>
<td>COMM</td>
<td>0.79</td>
</tr>
<tr>
<td>Tourism &amp; Leisure</td>
<td>TOURISM</td>
<td>0.78</td>
</tr>
<tr>
<td>Packaging</td>
<td>PKG</td>
<td>0.78</td>
</tr>
<tr>
<td>Electronic Components</td>
<td>ETRON</td>
<td>0.77</td>
</tr>
<tr>
<td>Health Care Services</td>
<td>HELTH</td>
<td>0.73</td>
</tr>
<tr>
<td>Automotive</td>
<td>AUTO</td>
<td>0.49</td>
</tr>
<tr>
<td>Personal Products &amp; Pharmaceuticals</td>
<td>PERSON</td>
<td>0.48</td>
</tr>
<tr>
<td>Insurance</td>
<td>INSUR</td>
<td>0.48</td>
</tr>
<tr>
<td>Fashion</td>
<td>FASHION</td>
<td>0.37</td>
</tr>
<tr>
<td>Property Fund &amp; REITs</td>
<td>PF&amp;REIT</td>
<td>0.10</td>
</tr>
</tbody>
</table>

As the index series must be stationary before further use, the unit root test was performed on the selected index series. The result showed that all the series were stationary as shown in table 2.
Table 2: Result of stationarity test of the return form of the indices

<table>
<thead>
<tr>
<th>Series at return</th>
<th>t-Statistic</th>
<th>1% level</th>
<th>5% level</th>
<th>10% level</th>
<th>Prob.*</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBANK</td>
<td>-28.9552</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RCONS</td>
<td>-31.0694</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RENERG</td>
<td>-30.4331</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RICT</td>
<td>-17.3637</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RPAPER</td>
<td>-30.6302</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RPETRO</td>
<td>-32.0081</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RPROF</td>
<td>-28.6519</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RPROP</td>
<td>-29.6298</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RSET</td>
<td>-29.8385</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
<tr>
<td>RSET50</td>
<td>-30.7124</td>
<td>-2.5673</td>
<td>-1.9411</td>
<td>-1.6165</td>
<td>0.0000</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

Note: RSECTOR/RMARKET is a return series of a particular sector/market index

The stationary index series would then be used for further analyses. Granger causality tests of 1-5 lags were performed on those selected series to examine the spillover effect in terms of return. For the analysis of the Granger Causality test, the results was considered significant if there was any lag in the test made the results significant. The summary of the results are in table 3 and table 4.

Table 3: Summary of the results of the Granger causality test from returns of cyclical sector indices to returns of market indices

<table>
<thead>
<tr>
<th>Fr.\To.</th>
<th>RSET</th>
<th>RSET50</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBANK</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>RCONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RENERG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RICT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPAPER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPETRO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPROF</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>RPROP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*At least 1 out of 5 lag is significant at 95% confidence interval

From table 3 (p-values are shown in table A1 in the appendix), the results show that there is a causal effect from Banking, Petrochemical, and Professional services sector indices to SET and SET50 market indices.

Table 4: Summary of the results of the Granger causality test 1 to 5 lag from returns of market indices to returns of cyclical sector indices

<table>
<thead>
<tr>
<th>Fr.\To.</th>
<th>RBANK</th>
<th>RCONS</th>
<th>RENERG</th>
<th>RICT</th>
<th>RPAPER</th>
<th>RPETRO</th>
<th>RPROF</th>
<th>RPROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSET</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSET50</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

*At least 1 out of 5 lag is significant at 95% confidence interval

From table 4 (p-values are shown in table A2 in the appendix), the results show that there are causal relationships from SET and SET50 (market indices) to Banking, Paper, Professional services, and Property Development sector indices.
The first cyclical sector in the analysis is Banking sector. The results of the Granger causality test shows that the return of Banking sector index Granger causes the return of both SET and SET50 indices. It is not uncommon that there is some kind of relationship between Banking sector and the markets because various pieces of research also find out the influence of Banking or financial sector to other sectors or industries. This result is similar to the findings of Jawaid (2013) who conducted a study on spillover effects of returns and volatility between the banking sector and other various sectors (oil and gas, food producers, chemicals, textiles, cement, electricity, and fixed line telecommunication) in Pakistan. The findings were that the banking sector was impacting various sectors.

On the other hand, the analysis of the Granger causality test between Banking sector index and the market indices shows that both SET and SET50 market indices also influence Banking sector index. Another similar research about the influence of the market on the Banking stock prices is the paper by Yao, Luo and Stephen (n.d.) which analysed the relationship between SSE Composite Stock Index and 10 listed banking stocks by using Granger causality test and the result was that that the growth of SSE stock index could affect almost all the stock prices. Therefore, the results of the study for the causal relationship between Banking sector and the market are in conformity with the results of other related piece of research. The cause of the bidirectional causation may be due to the fact that stock market, banking, and economic activities usually go in the same direction.

As for Paper sector, it received the return spillover from both of the market indices unidirectionally. A study by Özlen (2014) which examined the influence of global macroeconomic factors such as crude oil price, gold price, and major stock market indices on the stock returns of companies in various sectors including the paper sector, found that crude oil price was a significant factors for many stocks of the selected stocks of Paper sector. As known, the oil price and the stock market should go into the same direction; therefore, it is understandable that the market indices SET and SET50 can influence the Paper sector index. Additionally, in the Paper sector index, there is only one constituent (stock) whose market capitalisation is less than many of the companies in SET50.

For Petrochemical sector, the results of the Granger causality test show a unidirectional causal relationship from the returns of the Petrochemical sectors to both of the market indices. A research paper by Bakhsha, Mehran, and Gholamnejad (2015), which applied a neural network to predict the Tehran Stock Exchange Index by using industry indices and some other economic factors, showed that the petrochemical industry index has the highest influence in predicting the Tehran stock exchange general index. A possible explanation is that the price of the stock of the petrochemical is more sensitive to the oil price than the whole market and therefore, the Petrochemical index can move before the whole market as the market has many industries as constituents.

For the Professional Services index (in Thai stock market or SET, it consists of waste management companies), the results of the Granger causality test show a bi-directional causal relationship between the Professional Services sector index and both of the market indices. The finding is relevant to results found by Aromolaran, Taiwo, Adekoya, and Malomo (2016) which was about identifying macroeconomic variables, including Index of Industrial Production (IIP), that influence All Share Index of Nigeria Stock Exchange as its result showed that Index of Industrial Production (IIP) positively affected on All Share Index (ASI) of Nigeria Stock Exchange significantly. The possible explanation can be as the manufacturing increases,
the waste from the production increases, the revenue of the waste management companies should increase, and so are their share prices.

For Property Development sector, the results of the Granger causality test show uni-directional causal relationship from both of the market indices to the Property Development sector. From the study by Kang, Maysami, Mensah and Pham (2015), which studied how stocks of 5 real estate companies are related to the Vietnamese stock market in terms of returns and volatilities, found that all of the 5 selected stocks moved in the same direction as the Vietnamese stock market, there can be some kind of relationship between the return of the Property Development sector index and the market indices.

On the other hand, for the other sectors whose results of the Granger causality test do not show significant relationship, the lagged values of the returns of those cyclical sectors are not statistically significant in improving the prediction of the market indices and so is the vice versa for the causal relationship from market indices to those cyclical sector indices.

Having examined the spillover of the indices for returns perspectives, the researcher also examined the indices for volatility perspective by utilising GARCH-type models. Before doing the test, finding the best ARMA models (lowest SIC on trial and error basis) without serial correlation problem is necessary. Additionally, if heteroskedasticity problem arises, appropriate treatment should be done. The summary is in table 5.

<table>
<thead>
<tr>
<th>Series</th>
<th>Best ARMA</th>
<th>Serial Correlation</th>
<th>Heteroskedasticity and White’s option treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBANK</td>
<td>AR(2) MA(2)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RCONS</td>
<td>AR(6) MA(6)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RENERG</td>
<td>AR(12) MA(12)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RICT</td>
<td>AR(4) MA(4)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RPIPER</td>
<td>AR(11) MA(11)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RPETRO</td>
<td>AR(5)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RPROP</td>
<td>MA(1)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RPROP</td>
<td>AR(5) MA(5)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RSET</td>
<td>AR(1) AR(5)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RSET</td>
<td>MA(1) MA(5)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RSET50</td>
<td>AR(5)</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Then the best ARMA models were utilised to find the best GARCH-type models (lowest SIC on trial and error basis). The selected models were ARCH(1), ARCH(2), GARCH(1,0), GARCH(1,1), GARCH(1,2), GARCH(2,0), GARCH(2,1), GARCH(2,2) and the exponential version of the GARCH-type models (EGARCH) whose p and q ranged from 0 to 2 were also selected. The best GARCH-type models are models whose SIC are the lowest among candidates of its own series and whose variables in the models are significant at 95% confidence interval. The best GARCH-type models are shown in table 6.

The best GARCH-type models were used to forecast volatility series. There were 10 volatility series in total. The forecast was static which means actual values were used in forecasting unlike the dynamic forecasting where forecasted values were also used in forecasting. Each volatility series represents volatility for each sector or market.
The volatility series will be put as an exogenous variable in a variance equation in the best GARCH-type models to test the spillover of volatility. The results at 95% confidence interval (significance level = 0.05) of the test are shown in table 7 and 8.

<table>
<thead>
<tr>
<th>Series</th>
<th>Model (p, q) – p – GARCH, q - ARCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBANK</td>
<td>GARCH(1,1)</td>
</tr>
<tr>
<td>RCONS</td>
<td>EGARCH(1,1)</td>
</tr>
<tr>
<td>RENERG</td>
<td>EGARCH(1,1)</td>
</tr>
<tr>
<td>RICT</td>
<td>GARCH(1,1)</td>
</tr>
<tr>
<td>RPAAPER</td>
<td>GARCH(2,2)</td>
</tr>
<tr>
<td>RPETRO</td>
<td>GARCH(0,1)</td>
</tr>
<tr>
<td>RPROF</td>
<td>EGARCH(1,0)</td>
</tr>
<tr>
<td>RPROP</td>
<td>EGARCH(1,1)</td>
</tr>
<tr>
<td>RSET</td>
<td>EGARCH(1,1)</td>
</tr>
<tr>
<td>RSET50</td>
<td>GARCH(0,2)</td>
</tr>
</tbody>
</table>

Table 7: Summary of volatility spillover from cyclical sector indices to market indices conducted by GARCH-type models.

| Fr.
<table>
<thead>
<tr>
<th>To.</th>
<th>GRSET</th>
<th>GRSET50</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL_RBANK</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>VOL_RCONS</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>VOL_RENERG</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>VOL_RICT</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>VOL_RPAAPER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOL_RPETRO</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>VOL_RPROF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOL_RPROP</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 95% confidence interval

Note: VOL_RSECTOR/VOL_RMARKET is a volatility series of a return series of a particular sector/market index

Note: GRSECTOR/GRMARKET is a variance of a return series of a particular sector/market index

Referring to the table 7 (p-values are shown in table A3 in the appendix), none of the volatility series of the return of cyclical sector indices has significant relationship with the volatility of the return of SET index whereas all of the volatility series of the return of cyclical sector indices have significant relationship to the volatility of the return of SET50 index except Paper and Professional services sector.

Table 8: Summary of volatility spillover from market indices to cyclical sector indices conducted by GARCH-type models.

| Fr.
<table>
<thead>
<tr>
<th>To.</th>
<th>GRBANK</th>
<th>GRCONS</th>
<th>GRENERG</th>
<th>GRICT</th>
<th>GRPAAPER</th>
<th>GRPETRO</th>
<th>GRPROF</th>
<th>GRPROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL_RSET</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOL_RSET50</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 95% confidence interval
Referring to the table 8 (p-values are shown in table A4 in the appendix), there is a significant relationship between the volatility of the return of SET and the volatility of the return of Banking, Petrochemical, and Professional services sector indices. Additionally, there is a significant relationship between the volatility of the return of SET50 and the volatility of the return of Banking, Paper, Petrochemical, and Professional services sector indices.

For the volatility spillover perspective, the results of the GARCH-type models show that almost all of the selected cyclical sector indices have volatility influence on SET50 index. The 2 sectors which have no volatility spillover to SET50 index are Paper and Professional Services sector. The results also show that none of the cyclical sector indices has volatility spillover on SET index. Possible explanation is that SET50 index is more volatile than SET.

A close look at the results of the GARCH-type models for the volatility from market indices to the cyclical sector indices reveals that both volatilities of SET Index and SET50 Index have impact on volatility of Banking sector index. Hence, it can be concluded that not only for the returns perspective but also the volatility perspective that the market has impacts on Banking sector. The explanation is similar to the one mentioned earlier about the impact between Banking sector and market indices. (Stock market, banking, and economic activities usually go in the same direction.)

Paper sector index receives volatility spillover only from SET50 index but not SET index. Possible explanation is that SET50 is more volatile than SET, and Paper sector index consist of only one stock. Petrochemical sector index receives volatility spillover from both SET and SET50 index. Similar to Banking sector index, Professional services receives volatility spillover from both SET index and SET50 index. All the 3 indices, Paper, Petrochemical, and Professional services are related to industrial products. Therefore, it is possible that their fluctuations are in tandem with the stock market. The findings can be related to the work by Kaddumi (2004) which studied impact of sector specific index on Amman stock market Index and found that industrial sector is positively correlated with the market index which means that it can increase the portfolio’s risk level.

6. Conclusion

The main purpose of this study is to find impact of cyclical sector indices to market indices and vice versa for both return and volatility perspectives.


The data used were the daily data from January 2014 to December 2017. Total data are 976 at level form and 975 at return form. The return data were calculated from the data at level form.

The techniques used are CAPM to find the candidates for cyclical sector indices, Granger Causality test to find the impact between the selected cyclical sector indices and the market indices for return perspective, and GARCH-type models to find the impact between the selected cyclical sector indices and the market indices for volatility perspective.

The results of the tests show that on return perspective, there was a causal effect from Banking, Petrochemical, and Professional services sector indices to SET and SET50 market indices; and
there are causal relationships from SET and SET50 (market indices) to Banking, Paper, Professional services, and Property Development sector indices. On the volatility perspective, none of the volatility series of the return of cyclical sector indices had a significant impact on the volatility of the return of SET index whereas all of the volatility series of the return of cyclical sector indices had a significant impact on the volatility of the return of SET50 index except Paper and Professional services sector; and there is a significant impact of the volatility of the return of SET on the volatility of the return of Banking, Petrochemical, and Professional services sector indices. Additionally, there was a significant impact of the volatility of the return of SET50 on the volatility of the return of Banking, Paper, Petrochemical, and Professional services sector indices.

The test results showed that there were some cyclical sector indices impacted by the market but some did not, on returns perspective. On the other hand, some cyclical sectors could pass their volatility on to market indices. The highlight of the results of tests was that Banking sector index is the only index that impacted a market index for both return and volatility perspectives, and it is also impacted by a market index for both return and volatility.

7. Reference


## Appendix

Table A1 Summary of the results of the Granger causality test from returns of cyclical sector indices to returns of market indices with p-values

<table>
<thead>
<tr>
<th>Fr./To.</th>
<th>RSET</th>
<th>RSET50</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RBANK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.0233**</td>
<td>0.0245**</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.0175**</td>
<td>0.0077***</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.0517*</td>
<td>0.0253***</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.1106</td>
<td>0.0547*</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0520*</td>
<td>0.0219**</td>
</tr>
<tr>
<td><strong>RCONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.9795</td>
<td>0.5518</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.8971</td>
<td>0.8379</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.7930</td>
<td>0.6916</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.8661</td>
<td>0.7652</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.6175</td>
<td>0.6727</td>
</tr>
<tr>
<td><strong>RENERG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.9716</td>
<td>0.9066</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.7088</td>
<td>0.7453</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.3341</td>
<td>0.4514</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.3835</td>
<td>0.4740</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0667*</td>
<td>0.1145</td>
</tr>
<tr>
<td><strong>RICT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.5156</td>
<td>0.3835</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.2864</td>
<td>0.1322</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.3469</td>
<td>0.1791</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.4406</td>
<td>0.2481</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.3263</td>
<td>0.1411</td>
</tr>
<tr>
<td><strong>RPAPER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.3041</td>
<td>0.5559</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.5987</td>
<td>0.8403</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.6742</td>
<td>0.8448</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.8280</td>
<td>0.9339</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.9244</td>
<td>0.9816</td>
</tr>
<tr>
<td><strong>RPETRO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.4490</td>
<td>0.6795</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.0478**</td>
<td>0.0782*</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.0483**</td>
<td>0.0848*</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.1115</td>
<td>0.1680</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0170**</td>
<td>0.0221**</td>
</tr>
<tr>
<td><strong>RPROF</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.0554*</td>
<td>0.1283</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.0750*</td>
<td>0.1541</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.0013***</td>
<td>0.0014***</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.0024***</td>
<td>0.0024***</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0075***</td>
<td>0.0072***</td>
</tr>
<tr>
<td><strong>RPROP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.4290</td>
<td>0.2155</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.2660</td>
<td>0.1460</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.4507</td>
<td>0.3941</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.4495</td>
<td>0.5205</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.4083</td>
<td>0.5330</td>
</tr>
</tbody>
</table>

*Significant at 90% confidence interval
**Significant at 95% confidence interval
***Significant at 99% confidence interval
Table A2 Summary of the results of the Granger causality test 1 to 5 lag from returns of market indices to returns of cyclical sector indices with p-values

<table>
<thead>
<tr>
<th>Fr./To.</th>
<th>RBANK</th>
<th>RCONS</th>
<th>RENERG</th>
<th>RICT</th>
<th>RPAPER</th>
<th>RPETRO</th>
<th>RPROF</th>
<th>RPROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.0366**</td>
<td>0.9075</td>
<td>0.9936</td>
<td>0.9142</td>
<td>0.0107**</td>
<td>0.6946</td>
<td>0.0028***</td>
<td>0.0031***</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.0487**</td>
<td>0.5884</td>
<td>0.9914</td>
<td>0.5792</td>
<td>0.0135**</td>
<td>0.5582</td>
<td>0.0031***</td>
<td>0.0082***</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.0939*</td>
<td>0.7395</td>
<td>0.3800</td>
<td>0.6731</td>
<td>0.0188**</td>
<td>0.5056</td>
<td>0.0011***</td>
<td>0.0211**</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.1097</td>
<td>0.8713</td>
<td>0.4778</td>
<td>0.2881</td>
<td>0.0411**</td>
<td>0.6777</td>
<td>0.0000***</td>
<td>0.0338**</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0505*</td>
<td>0.7134</td>
<td>0.6604</td>
<td>0.3965</td>
<td>0.0729*</td>
<td>0.9466</td>
<td>0.0000***</td>
<td>0.0519*</td>
</tr>
<tr>
<td>RSET50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 lag</td>
<td>0.1120</td>
<td>0.8768</td>
<td>0.8464</td>
<td>0.4728</td>
<td>0.0207**</td>
<td>0.6611</td>
<td>0.0063***</td>
<td>0.0088***</td>
</tr>
<tr>
<td>2 lags</td>
<td>0.0776*</td>
<td>0.6622</td>
<td>0.9827</td>
<td>0.5515</td>
<td>0.0263**</td>
<td>0.6276</td>
<td>0.0076***</td>
<td>0.0233**</td>
</tr>
<tr>
<td>3 lags</td>
<td>0.1453</td>
<td>0.8121</td>
<td>0.5611</td>
<td>0.7229</td>
<td>0.0348**</td>
<td>0.5937</td>
<td>0.0029***</td>
<td>0.0729*</td>
</tr>
<tr>
<td>4 lags</td>
<td>0.1798</td>
<td>0.9046</td>
<td>0.6757</td>
<td>0.3148</td>
<td>0.0703*</td>
<td>0.7623</td>
<td>0.0000***</td>
<td>0.0869*</td>
</tr>
<tr>
<td>5 lags</td>
<td>0.0435**</td>
<td>0.7264</td>
<td>0.8463</td>
<td>0.4322</td>
<td>0.1121</td>
<td>0.9451</td>
<td>0.0001***</td>
<td>0.1462</td>
</tr>
</tbody>
</table>

*Significant at 90% confidence interval
**Significant at 95% confidence interval
***Significant at 99% confidence interval

Table A3 Summary of volatility spillover from cyclical sector indices to market indices conducted by GARCH-type models with p-values

<table>
<thead>
<tr>
<th>Fr./To.</th>
<th>VOL_RBANK</th>
<th>VOL_RCONS</th>
<th>VOL_RENERG</th>
<th>VOL_RICT</th>
<th>VOL_RPAAPER</th>
<th>VOL_RPETRO</th>
<th>VOL_RPROF</th>
<th>VOL_RPROP</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRBANK</td>
<td>0.1555</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRCONS</td>
<td>0.2670</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRENERG</td>
<td>0.1893</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRICT</td>
<td>0.2489</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRPAPER</td>
<td>0.9443</td>
<td>0.1467</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRPETRO</td>
<td>0.5648</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRRPROF</td>
<td>0.5715</td>
<td>0.8467</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRPROP</td>
<td>0.9484</td>
<td>0.0000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 90% confidence interval
**Significant at 95% confidence interval
***Significant at 99% confidence interval

Table A4 Summary of volatility spillover from market indices to cyclical sector indices conducted by GARCH-type models with p-values

<table>
<thead>
<tr>
<th>Fr./To.</th>
<th>VOL_RSET</th>
<th>VOL_RSET50</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBANK</td>
<td>0.0229**</td>
<td></td>
</tr>
<tr>
<td>RCONS</td>
<td>0.3244</td>
<td>0.0006***</td>
</tr>
<tr>
<td>RENERG</td>
<td>0.5088</td>
<td>0.1820</td>
</tr>
<tr>
<td>RICT</td>
<td>0.2753</td>
<td>0.0000***</td>
</tr>
<tr>
<td>RPAPER</td>
<td>0.2970</td>
<td>0.0000***</td>
</tr>
<tr>
<td>RPETRO</td>
<td>0.0000***</td>
<td>0.0000***</td>
</tr>
<tr>
<td>RPROF</td>
<td>0.8195</td>
<td></td>
</tr>
<tr>
<td>RPROP</td>
<td>0.5575</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 90% confidence interval
**Significant at 95% confidence interval
***Significant at 99% confidence interval

Remark: All the p-values are rounded to 4 decimal places.
The Macroeconomic Determinants of Malaysian Stock Market Return

Shahsuzan Zakaria  
Universiti Teknologi MARA, Kelantan, Malaysia  
shah81@kelantan.uitm.edu.my

Mohamad Sayuti Md Saleh  
Universiti Teknologi MARA, Kelantan, Malaysia  
sayuti16@kelantan.uitm.edu.my

Khalid Abdul Wahid  
Universiti Teknologi MARA, Kelantan, Malaysia  
awkhalid@kelantan.uitm.edu.my

Hatinah Abu Bakar  
Universiti Teknologi MARA, Kelantan, Malaysia  
hatin463@kelantan.uitm.edu.my

Abstract

This present study seeks to examine the interactions between selected macroeconomic determinants and stock market return in Malaysia. The study tries to answer the aims of the Central Bank of Malaysia (Bank Negara Malaysia) which has recently announced for Malaysians to invest in securities or any other form of financial instruments. This is a good indicator which determines that Malaysians especially young age now are more aware about investing activities and its benefits. Basing on this statement, this study seeks to examine the important indicators that may influence the Malaysian stock market return which indicates by Kuala Lumpur Composite Index (KLCI). Four indicators namely: (i) Interest Rate; (ii) Exchange Rate; Oil Price (OP) and Gold Price have been retrieved as the independent variables that affect the Stock Market Return. Applying an Ordinary Least Square technique, the results show that the Malaysian stock market return is sensitive to changes in the macroeconomic variables. This study also highlights that Malaysian stock market return has stronger interaction with exchange rate, oil price and gold price compared to interest rate. In this case, there is a need for amendment in monetary policy to ensure that interest rate able to stimulate and to bring a positive impact to boost the stock market return in Malaysia.

Keywords: macroeconomic determinants, stock market return, malaysia
1. Introduction

Stock market is an important component in the economy development, and plays a key role in determine the growth in industry in every country. Stock market becomes trading platform that allows the investor buy and sells the share publicly. Theoretically, the stock market index is influence by the investor’s forecast on the company future performance. The return that the investors generate out of the stock market is call as Stock Market Returns. The country level economic activity is influence by the company’s profit and it will reflect the movement of the stock market index. Hence, the stock market return will be the determinants for the economic activities of the country. The economist believed that having a good stock market return will boost some economic factor of the country. As according to Kutty (2010) the stock market return will influence the policy maker, economies concern and investors for a long time period.

Stock Market in Malaysia or known as FTSE Bursa Malaysia KLCI Index possesses the special feature and is able to trigger the stock price movement of pattern from the economies. The information that obtained from the stock market will enable investor to analyze and forecast the future prices of stock market. It also enables them to identify underestimated shares to earn returns and studying past stock index. However, the underlying factors leading to stock market return remain speculative. The investor cannot predict the abnormal returns if they are holding the stocks without taking additional risks in efficient market. This is because the additional risks which are the macroeconomic variable factor will help the investor to analyst and predict the trend of stock market index accurately.

FTSE Bursa Malaysia KLCI Index comprises of the 30 largest companies by full market capitalization on Bursa Malaysia. Historically, the Malaysia Stock Market (KLCI) reached an all-time high of 1887.07 in May of 2014 and a record low of 89.04 in April of 1977. By looking at this trend, this study believed that KLCI index is influence by the several macroeconomic factors including Industrial Production Index, money supply, Crude Oil Price, real exchange rate, exchange rate, interest rate, etc. (e.g. Mavrides, 2000; Maysami and Koh, 2000; Sadorsky, 2003; Chen, 2003; Rahman et al., 2009). Basing on the listed macroeconomic determinants, we employ different macroeconomic variables that are considered as most relevant in the Malaysian context. Along with the typical economic variables (Interest Rate and Exchange Rate), and gold price variables are incorporated.

Even though, Khong, Lee and Chelliah (2017) show that there is no relationship between gold price and the KLCI stock return in the long run, the use of a MGARCH model indicates that gold price and stock exchange yields have been affected both by their own shocks and by shocks of each other. The result clearly clarifies that gold price will influence the Malaysian reserve, in this manner will effect on Malaysian economy. Decrease in Malaysian economy will influence the KLCI to be downtrend in its performance which could directly affect the policy changes, political and economic developments in Malaysia.

Thus, we therefore aim to examine the relationship of the macroeconomic factors that can affect stock market return (KLCI) in Malaysia including (i) interest rate exchange rate; (ii) crude oil price; and (iii) gold price volatility. By employing a time series data as sequence of numerical data point in successive order in Malaysian KLCI during the period of 2007–2016 using Ordinary Least Square (OLS) method, this study contributes to the existing literature by providing new empirical evidence on the relationship of macroeconomic determinants on the Malaysian KLCI stock return. Given that KLCI stock performances are the dominant indicator
to Malaysian economic growth and efficiency, their health is very critical to the health of the
general economy at large.

The following section identifies those determinants that lead to the macroeconomic
determinants used in the study. Section 3 describes the data, sources and model specifications,
which are employed in the study. Section 4 presents the results of the analysis of KLCI stock
market return. Finally, we conclude in Section 5.

2. Previous Studies

2.1 Stock Market Returns (KLCI)

There are relatively few historical studies in the area of Stock Market Returns. According to
Asaolu and Ogunmuyiwa (2011) the stock market plays a major role in controlling surplus
resources to deficit units in the economy in both developed and developing countries. Stock
market allows companies to gain capital while investors can get certain ownership of the
company from the trading transactions. The returns that the investors generate out of the stock
market are called stock market returns.

According to Bursa Malaysia, it stated that KLCI contains the selected 30 largest companies
which are main board by full market capitalization from Bursa Malaysia and comprise multi-
sectors companies. KLCI is the primary index and market indicator in Malaysia. KLCI gives
the investor a general idea about the stock return performance in Malaysia stock market as it
provides information regarding the stock market as well as its trend and performance.

There are several existing research recognize the critical role played macroeconomic factor
towards stock market return. Sayim and Rahman (2015) found that stock market volatility and
returns is affected by non-fundamental factors such as investor’s belief. In an analysis of stock
market tends, Baker et al. (2019) found that investors are able to gain profit by buying losers
and sell them later as to overreact to economic crisis which is inconsistent with the weak form
of Efficient Market Theory. In this study he claimed that Bursa Malaysia tends to overreact to
unexpected political events such as removal of Deputy Prime Minister and resignation of Prime
Minister. This is agreed by the studies done by Das et al. (2019) which demonstrated the
significant relationship between political cycles in Malaysia stock market volatility due to
portfolio adjustment by the investors to reflect their opinions towards political factors. Despite
that, the past researches may not be able to fully reflect the impact of different factors on Bursa
Malaysia due to occurrence of significant events in local politics, economy and international
trades recently.

2.2 Interest Rate

Over the past decade, most research in stock market return has emphasized the use of interest
rate in their study. Interest rate is determined by the supply and demand in the country. It is
also determined by the monetary policy of a country as depends on its economic situation. In
an analysis of interest rate, Wong et al. (2019) found that a higher interest rate in saving will
be attracted the investors to keep their money in the bank rather than invest in the risky stock
market. On the other hand, investors will be involved in the stock market rather than bank
account if the risk free return is having in downturn.
Besides that, previous study made by Maysami, Howe and Rahmat (2005) also shows that there is a positive effect on future expected return for the firm. This study found that when the interest rates decrease, demand on deposit will increase rather than going for investment because the cost of borrowing is costly. Therefore, the return on the deposit may increase. This study also show that they have short term and long term interest rates severely have significant mixed result with the Singapore’s stock market. Furthermore, the next article is examining relationship between stock market and interest rate in Pakistan. According to Ali (2014), he concludes that there is a significant negative relationship between stock market and interest rate. The study is using correlation, regression analysis and descriptive analysis in determining the result. This view is supported by Banerjee and Adhikary (2009) which they argue that interest rate is negatively correlated with the stock market return. From the lessening monetary policy, interest rate will be adjusted to be higher than original rate that is usually negatively affects stock market return.

Overall, the theoretical argument of negative relationship between stock market return and interest rate is not rejected. Alam and Uddin (2009) discovered that interest rate has no relation with share price but changes of interest rate have negative relationship with changes of share price. As the result, increasing in interest rate will increase the borrowing costs that have to be paid by the investors in the future. This is a bad news for investor as demand on purchased stock would be stands in a downward trend and might lead to reduce in requiring rate of return. Based on the discussion above, the independent variable can be concluded with hypothesis below.

**HA: There is a relationship between interest rate and stock market return.**

### 2.3 Exchange rate

In recent years, there has been an increasing amount of literature on exchange rate. Previous studies by Singh, Metha and Varsha (2011) defined exchange rate as reference to a value of one country’s in exchange for another country’s currency. Exchange rate can be quoted directly or indirectly by dealers. Direct quote is where the value of one foreign currency in denomination of domestic currency and vice versa. The effect of exchange rate toward stock market index is based on the level of nation’s international trade on its trade balance and the effect of exchange rate will be more significant on domestic stock prices (Pramod & Puja, 2012). The greater the nation international trade the greater the effect of exchange rate on stock market index will be.

Besides that, one interesting finding is exchange rate will be fluctuates as the inflationary processes in the country. As according to Baggs, Beaulieu and Fung (2009) the volatility in exchange rate has direct impact on firm’s margin performance and competitiveness where exporters are expected to benefit from depreciation of local currency and vice versa for importers. The currency depreciation is a popular monetary tool among the central banks as it can be implemented easily. However, majority of the studies failed to show that poor implementation this policy will result in great effect to global economy. In the recent study by Mutuku and Ng’eny (2015), exchange rate is found has positive impact on stock market. The appreciation of domestic currency will reduce the competitive of domestic exporters and increase the price advantage of imported goods. The revenue of domestic companies will depreciate due to price disadvantage of its output and will decrease the stock prices (Pramod & Puja, 2012). Similarly, Sensoy and Sobaci (2014) also found that when U.S dollar appreciates against Turkish Lira will increase Turkish stock market return.
However, there are several studies proved exchange rate has negative influence on stock market performance. Robert (2008) found that there is no relationship between exchange rate and stock market in Brazil, Russia, India and China the study is used the Box-Jenkins Autoregressive Integrated Moving Average (ARIMA) model to test the time series relationship between exchange rate and stock market index. It also supported by Haque and Sarwar (2012), the study found that there is a significant negative relationship between exchange rate and equity returns in textile sector. This indicates the appreciation of home currency stimulate the export in textile sector.

Moreover, the other study made by Wavelet filtering in the Islamic stock indices shows that the relationship between exchange rate and all KLCI index are negative significant correlated at different time scales but the relationship is not fixed. Meanwhile, Japan also has shown negative significant relationship between exchange rate and stock market return index. But the result may be twisted due to their unique economic environment as they have been hit by deflation for 20 years. Therefore exchange rate is expected to have negative relationship against stock market performance in Malaysia where similar with the finding of Rahman, Sidek and Tafri (2009). Based on the discussion, the independent variable can be stated in the hypothesis below.

**HA: There is a relationship between exchange rate and stock market return.**

### 2.4 Crude Oil Price

Crude oil is the largest component of consumable oil and a significant and multi-function input for food and non-food industries. Malaysia Palm Oil Council (2014) stated that Malaysia is the second largest oil producer in the world which has contributed 44% of world’s export and 39% of world’s production. The issue of oil price has received considerable critical attention nowadays. Oil price is become an important aspect in estimating the stock return in recent year because it affects many sector in the industry such as manufacturing, tourism, servicing and many more. Changes in oil price will be affecting the transportation cost as well as their product cost. The raising of production costs will cause inflation to happen. This is because, the increase in cost will be transposed to consumers which eventually reduce their purchasing power. In a study conducted by Bina and Vo (2007), it was shown that during oil crisis in 1973-1974, a decline of stock prices is cause by the rise in oil prices and it shows that change in oil price cause the stock return to fluctuate. Furthermore, a stock return is differing greatly depending on the cause of the oil price shock. Most research on palm oil has been carried out and it predicted possess a positive relationship with the stock market returns. When the palm oil price increase, it will increase the earning and the value of the company especially for the plantation company. Therefore increase the company stock price will push the market up. A recent study by Saiti et al. (2014) had examining the causality between KLCI and palm oil price and exchange rate. The result shows that there is relation between stock market index and commodity prices which represent by palm oil price. In the same vein Nordin et al. (2014) in his study also test the impact of palm oil price on Malaysia stock market performance. He uses Autoregressive-Distributed Lag (ARDL) test to find the relationship between the factor and the result showed that all the variables included by the researcher are important and positively affecting the index of Malaysian stock market.

However, in different research context, Kilian & Park (2007) found negative response of stock prices to oil price shocks. The study found only when the oil price rises due to an increase in avoiding demand driven by fears about the potential accessibility of crude oil. In contrast,
positive effect on cumulative stock return happens if higher oil prices are driven by a global economic expansion. Meanwhile, study made by Arouiri and Fouquau (2009) found that stock market index react positively to oil prices. Similar with the study made by Ghorbel and Younes (2010), it shown that an oil price shock has a positive affecting on real stock returns for US and some emerging country like Malaysia.

In contrast to the previous study, Doğrul and Soytas (2010) argue that, there is no causality relationship between the price of oil and stock prices among economists. The result shows that there is no significant relationship between stock returns and change in the price of oil futures. The results is same with Al-Fayoumi (2009) who reveals that changes in oil prices do not adversely effect on oil importing countries’ stock markets. But normally, positive shock will cause the oil price increase and thus increase stock prices. Thus, to expand this investigation, this paper will examine how the oil price affects the Malaysia stock return. Upon the decision, the independent variable can be stated in the hypothesis below.

HA: There is a relationship between oil price and stock market return.

2.5 Gold Price

Other than oil price, another commodity that caught the interest of researchers to consider on all around the globe is the gold price. However, the examination for the relationship between the gold price and Malaysia stock market is still new and fresh in their research paper. In any case, as known the worldwide, gold is a main economic indicator the fluctuation of gold price that will address economy of a country. As stated by Khong, Lee and Chelliah (2017), their examination to study about the relationship between gold price and the KLCI found that there is negative and significant between them. They claimed that the gold price is specifically has an impact on Malaysia asset value. This clarified by lessen in gold price will influence the Malaysian reserve in this manner will effect on Malaysian economy. Decrease in Malaysian economy will influence the KLCI to be downtrend in its performance. Besides that, according to research made by Rejeb and Arfaoui (2016) on his study about gold and stock market interdependencies, he found that there is significant negative relationship between gold price and stock markets. They concluded that falling in stock market will lead to rise in the gold price. In this manner, they proposed that gold as the safe haven. Meanwhile, Gokmenoglu and Fazlollahi (2015) found that gold has the highest impact on stock market in long-run and short-run. The investors should think about gold as the substitution to the stock. This is on the grounds that they claimed gold can hedge investors against the inflation.

However, Narang and Singh (2012) think about is contradicting with the other past research. They said that there is no connection between stock market and the gold market. Their investigation was to inspect the relationship amongst SENSEX and the gold price. They found that SENSEX record does not impact the gold price and gold price does not influence the SENSEX index. Claim made by Narang and Singh (2012) likewise supported by Najaf, Najaf and Yousaf (2016) study where they additionally found that gold price does not have an impact on Karachi Stock Exchange. Upon the decision, the independent variable can be stated in the hypothesis below.

HA: There is a relationship between gold price and stock market return.
3. Data Set and Methodology

Since it would be almost impossible to incorporate every potential aspect to explain the stock market behavior, we limit this study to selected macroeconomic variables. We employed Kuala Lumpur Composite Index (KLCI) to proxy for Malaysian stock market return, interest rate, Exchange rate (ER), Crude Oil Price (OP) and Gold Price; all of which are standard variables in the literature. Data selection takes into consideration the availability of data and their consistency within the accessible time frame. Our monthly data ranged from January 2007 which marks the commencement of financial and capital account liberalization, and spans to as far as December 2008. The research methodology is based on statistical analysis, which in this paper includes the ordinary least square (OLS) and multiple regression analysis. This type of analysis is used for modeling and analyzing several variables.

Prior to deciding on the appropriate method, a preliminary examination of the nature of the data is analyzed. Primary inspection of graphical presentation of the data which indicates possible non-stationary of the variables which facilitates for unit root testing. We follow the standard procedure of unit root testing by employing the Augmented Dickey Fuller (ADF) test. Since the ADF test is often criticized for low power, we complement this test with the Phillips Perron (PP) test and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. For the last two decades, emphasis was given for unit root testing to time series data such that the empirical relationship of the variables satisfies the classical stationary assumptions and to avoid spurious regressions if the variables in ordinary regressions are non-stationary. To examine the time series property of the variables, the Augmented Dicky Fueler (ADF) test is conducted. The ADF test emphasizes on unit root testing to time series data such that the empirical relationship of the variables satisfies the classical stationary assumptions and to avoid spurious regressions if the variables in ordinary regressions are non-stationary as well as to avoid the hypothesis testing for regression parameters to become invalid. The result of the test can be see through its p-value in order to reject or fail to reject the null hypothesis. The stationary result indicates by the p-value of 5% or below, which means the significant level, and vice versa. This model is called an Augmented Dickey-Fueler (ADF) test. The equation can be written as:

\[ \Delta y_t = \alpha y_{t-1} + x_t' \delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \cdots + \beta_l \Delta y_{t-l} + v_t \]  

(1)

The null and the alternate hypothesis are identical to the standard Dickey-Fueler test. The test statistic of the unit root does not follow the conventional student t-distribution and the critical value is independent of the number of lagged choice. MacKinnon (1991, 1996) tabulated custom critical values for various test and sample sizes which are used in this study.

**Diagnostic Test**

The diagnostic tests involve the data distribution in terms of normality, extreme outliers and multicollinearity.

Normality is related to the distribution of quantitative data and corresponds to the normal distribution. In multivariate analysis of data, normality is a basic assumption; thus if there is a sufficiently large deviation, the statistical test results are invalid (Hair et al. 2010). There are two ways to test the normality, namely: skewness and kurtosis. Skewness relates to the symmetry of distribution, with skewness of non-normal distribution on the one side, either left or right. Kurtosis is to do with the flatness of the distribution when compared with normal distribution. To solve the normality problem of outliers, data transformation is needed. But
different author have opposing arguments. Data that has been transformed sometimes does not have the same meaning as the original data (Grissom 2000). Tabachnick et al. (2007) suggested that data transformation is not usually recommended because the result is sometimes more difficult to interpret.

Lastly, the multicollinearity is related to the correlation among dependent variables and independent variables, with two or more predicted variables that are highly correlated with each other. The percentage of high correlation is around 0.90, which means that the collinearity problem shows the independent variables are related to each other (Hair et al. 2010; Tabachnick & Fidell 2007).

One of the problems in cross-sectional data is heteroscedasticity. Heteroscedasticity is when the error of variance is constant. The regression disturbance in the panel data model is restricted by the assumption that the time variance and unit are the same (Baltagi 2008). Moreover, it was argued that homoscedastic disturbance produces results that are consistent with the estimates of coefficient regression and so the estimate of the standard error is biased (Baltagi et al. 2005). The problem with regression analysis is autocorrelation, which is related to the correlation in the time-series data. Autocorrelation is important in influencing the covariant metric from the square estimator when compared with heteroscedasticity (Greene 2008). For detecting autocorrelation in Stata, the xtserial syntax program is used for testing of serial correlation in the linear panel data model in idiosyncratic errors (Wooldridge 2002).

Serial correlation is the errors are correlated between the observations. The Serial Correlation is applied for the study because the study is using time series data. According to Durbin Watson Statistic, test value should be around 2 for no serial correlation but for Breusch-Godfrey, test is more general and test for higher serial correlation. Serial correlation also can identify by compare the probability value with the value of alpha. If the probability value more than the value of alpha, there is no serial correlation.

**Ordinary Least Square (OLS) Method and Multiple Regression Analysis**

Ordinary least square is a method of analysis that predicts the relationship between one or more independent variables and a dependent variable. The method predicts the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable. There is only one independent variable predicting a dependent variable.

The multiple regression analysis is the types of regression that applied for the study. The regression analysis is being revealed in equation. It also uses to identify the significant relationship between dependent variable with all independent variable. The multiple regression equation shown at below:

\[ X = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \]  

Where a Constant denoted by \( \alpha \), \( \beta_1 \), \( \beta_2 \) and \( \beta_3 \) are the coefficient to be estimated while \( X_1, X_2, X_3 \) and \( X_4 \) denote for independent variables namely inflation rate, exchange rate, crude oil price and gold price, respectively, and \( e \) is the error term.

We calculated the coefficient of determination \( R^2 \), which had the aim of indicating the percent of how much of the total variance is explained by the independent variables. Than we turned
to F test and to Student test, respectively t with n-(k+1) degrees of freedom, in order to see which hypothesis can be accepted.

**Autocorrelation**

The problem of regression analysis is autocorrelation, which is related to the correlation in the time series data. Autocorrelation is important to examine whether there is serial independent for the error term. It measures the serial correlation in residuals. The Breusch-Godfrey test and Durbin Watson test is implement in the study to get the result of autocorrelation problem. This study is use Durbin Watson test to get autocorrelation result. The model is assumed free from the autocorrelation problem if the result from Durbin Watson test shows the value around 1.5 to 2.5. Table 1 lists the variables used to proxy KLCI stock market return and its determinants. We also include the notation and the expected effect of the determinants according to the literature.

### Table 1: Summary research sources of data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Proxy</th>
<th>Description</th>
<th>Hypothesized relationship with market stock return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock Market Return</td>
<td>KLCI</td>
<td>Stock market index in Malaysia</td>
<td>NA</td>
</tr>
<tr>
<td>Independent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest Rate</td>
<td>IR</td>
<td>Average monthly interest rate (%) in Malaysia</td>
<td>+</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>ER</td>
<td>USD per Malaysia Ringgit</td>
<td>+</td>
</tr>
<tr>
<td>Crude Oil Price</td>
<td>OP</td>
<td>US Dollars per Barrel</td>
<td>+</td>
</tr>
<tr>
<td>Gold Price</td>
<td>GP</td>
<td>US Dollars per Troy Ounce</td>
<td>+</td>
</tr>
</tbody>
</table>

Source: The data for KLCI Stock Market Return is obtained from Bursa Malaysia Website. The data for the independent variables are sourced from Bank Negara Malaysia and World Bank Websites.

Table 2 presents the summary statistics of the dependent and the explanatory variables used to construct the model.

### Table 2: Descriptive Statistics Model Result

<table>
<thead>
<tr>
<th></th>
<th>DKLCI</th>
<th>DIR</th>
<th>DER</th>
<th>DOP</th>
<th>DGP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.801513</td>
<td>0.002101</td>
<td>-0.000509</td>
<td>-0.007563</td>
<td>4.421765</td>
</tr>
<tr>
<td>Median</td>
<td>9.570000</td>
<td>0.000000</td>
<td>0.000308</td>
<td>0.840000</td>
<td>3.520000</td>
</tr>
<tr>
<td>Maximum</td>
<td>118.1900</td>
<td>1.000000</td>
<td>0.011135</td>
<td>13.87000</td>
<td>186.2600</td>
</tr>
<tr>
<td>Minimum</td>
<td>-155.0700</td>
<td>-0.625000</td>
<td>-0.015921</td>
<td>-26.97000</td>
<td>-105.7100</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>46.90681</td>
<td>0.232401</td>
<td>0.005366</td>
<td>6.653376</td>
<td>48.96220</td>
</tr>
</tbody>
</table>

Note: The table presents the summary statistics of the variables used in the regression analysis.
4. Results

In this section, we will discuss the unit root test preliminary analysis, diagnostic test, Heteroskedasticity Test (Breusch-Pagan-Godfrey), Multicollinearity, and static ordinary least square including the multiple linear regression model.

The results of the ADF unit root test are presented in Table 3. All variables are stationary in test of unit root at level with p-value below the 5% significant value (0.0000), demonstrate that the null hypothesis is rejected.

Table 3 Augmented Dickey-Fuller test statistic (ADF test)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DKLCI</td>
<td>0.0000</td>
</tr>
<tr>
<td>DIR</td>
<td>0.0000</td>
</tr>
<tr>
<td>DER</td>
<td>0.0000</td>
</tr>
<tr>
<td>DOP</td>
<td>0.0000</td>
</tr>
<tr>
<td>DGP</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

For Diagnostic Test, Jarque-Bera test is used to identify whether the error term is distribute or not. The result of 5.272777 Jarque-Bera test and the corresponding p-value is 0.071619 indicate that the test fails to reject the null hypothesis.

Table 4 Heteroskedasticity Test (Breusch-Pagan-Godfrey)

<table>
<thead>
<tr>
<th>F-statistic</th>
<th>Prob. F(4,114)</th>
<th>0.3672</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obs*R-squared</td>
<td>Prob. Chi-Square(4)</td>
<td>0.3588</td>
</tr>
<tr>
<td>Scaled explained SS</td>
<td>Prob. Chi-Square(4)</td>
<td>0.2635</td>
</tr>
</tbody>
</table>

Table 4 indicates that the Probability Chi-Square on “Obs*R-squared is 0.3588, greater than 5% significance level. Therefore null hypothesis is supported, whereby the heteroscedasticity does not exist and residual are homoscedastic.

4.1 Multicollinearity Test

The correlation analysis is used to examine the degree of correlation between the independent variables. Multicollinearity problem is exist if correlation coefficient is higher than 0.80. The correlation coefficient between pair (DER and DIR) is 0.0594, (DOP and DIR) is 0.0125, (DGP and DIR) is 0.4501, (DOP and DER) is 0.0000, (DGP and DER) is 0.0003 and (DGP and DOP) is 0.0635. Thus, there is no multicollinearity issue.
### Table 5 Multicollinearity Test

<table>
<thead>
<tr>
<th>Correlation Probability</th>
<th>DIR</th>
<th>DER</th>
<th>DOP</th>
<th>DGP</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>1.000000</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DER</td>
<td>-0.173344</td>
<td>1.000000</td>
<td>0.0594</td>
<td>-----</td>
</tr>
<tr>
<td>DOP</td>
<td>0.228341</td>
<td>0.400019</td>
<td>1.000000</td>
<td>0.0125</td>
</tr>
<tr>
<td>DGP</td>
<td>-0.069892</td>
<td>0.323771</td>
<td>0.170677</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

### 4.1 Static Ordinary Least Square Method

To test the relationship between KLCI stock market return and macroeconomic determinants described in this study, the following regression model is estimated:

\[ KLCI = \alpha + \beta_1 DIR_1 + \beta_2 DER_2 + \beta_3 DOP_3 + \beta_4 DGP_4 + e \]  

(3)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>-27.72950</td>
<td>17.48607</td>
<td>-1.585805</td>
<td>0.1156</td>
</tr>
<tr>
<td>DER</td>
<td>2848.323</td>
<td>833.4021</td>
<td>3.417706</td>
<td>0.0009</td>
</tr>
<tr>
<td>DOP</td>
<td>1.857737</td>
<td>0.657008</td>
<td>2.827571</td>
<td>0.0055</td>
</tr>
<tr>
<td>DGP</td>
<td>-0.303558</td>
<td>0.081654</td>
<td>-3.717610</td>
<td>0.0003</td>
</tr>
<tr>
<td>C</td>
<td>6.666045</td>
<td>3.811059</td>
<td>1.749132</td>
<td>0.0830</td>
</tr>
</tbody>
</table>

KLCI = 6.666045 - 27.72950 DIR + 2848.323 DER +1.857737 DOP -0.303558 DGP + e

### Table 6 Multiple Linear Regressions

<table>
<thead>
<tr>
<th>Dependent Variable: DKLCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Least Squares</td>
</tr>
<tr>
<td>Sample (adjusted): 2 120</td>
</tr>
<tr>
<td>Included observations: 119 after adjustments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIR</td>
<td>-27.72950</td>
<td>17.48607</td>
<td>-1.585805</td>
<td>0.1156</td>
</tr>
<tr>
<td>DER</td>
<td>2848.323</td>
<td>833.4021</td>
<td>3.417706</td>
<td>0.0009</td>
</tr>
<tr>
<td>DOP</td>
<td>1.857737</td>
<td>0.657008</td>
<td>2.827571</td>
<td>0.0055</td>
</tr>
<tr>
<td>DGP</td>
<td>-0.303558</td>
<td>0.081654</td>
<td>-3.717610</td>
<td>0.0003</td>
</tr>
<tr>
<td>C</td>
<td>6.666045</td>
<td>3.811059</td>
<td>1.749132</td>
<td>0.0830</td>
</tr>
</tbody>
</table>

R-squared: 0.261100  Mean dependent var: 3.801513  Adjusted R-squared: 0.235174  S.D. dependent var: 46.90681  S.E. of regression: 41.02205  Akaike info criterion: 10.30720  Sum squared resid: 191840.1  Schwarz criterion: 10.42397
To identify the independent variable that could drop from the model, the approach is observing the p-value of t-test statistic. The significance level is 0.05, p-value decision rule is reject null hypothesis if p-value less than significance level, indicates that the independent variable has an influence on the dependent variable.

For the interest rate variable, since the probability value is equal to 0.1156 is more than the chosen level of significance 0.05, therefore fail to reject the null hypothesis. The p-value t-test is statistically significant at 5% level of significance level, thus indicates that independent variable, interest rate does not have an influence on the dependent variable, stock market return. The regression for exchange rate, crude oil price and gold price indicate different findings. The results fail to reject the null hypothesis, thus explains that these three determinants have a strong influence on KLCI stock market return.

To see the reliability of the model, F-Statistic has been analyzed. The result indicate that the value of F-test result is 10.07084 and the p-value of F-test is 0.00001. Therefore, at 5% significant level, the finding is successfully reject the null hypothesis. This explains that the entire variable is useful in predicting macroeconomic factors that influencing KLCI stock market return with some treatment and alteration. The Coefficient of Determination (R²) and adjusted R² obtained are 0.261100 and 0.235174 indicated that 26.11% and 23.51% of the stock market return and its variation in explain by chosen macroeconomic factors respectively. The remaining of 73.89% of variation in stock market return is explained by other variables that omitted on the model. Lastly, the Durbin Watson statistic of 2.033358 of the regression test shows that the linear regression model estimated is free from autocorrelation problem. These results, including the F-test of 0.0000001 summarizes a clear evidence to reject null hypothesis which can be conclude that there is a significant influence by those selected variables (ER, OP, GP). With the p-value of exchange rate is 0.0009 (less than significant value 5%), this finding rejects the null hypothesis, thus concludes that there is a significant relationship between exchange rate and stock market return. Furthermore, the p-value of oil price is 0.0055 which rejects the null hypothesis and can conclude that there is a relationship between oil price and stock market return. Lastly, with the p-value of gold price is 0.0003, this study concludes that there is a relationship between gold price and stock market return.

5. Conclusion

The study was carried out to examine macroeconomic factors that could affect the stock market return (KLCI) over the period of 2007 to 2016. The empirical findings of this study indicate that all objectives of this study are achieved, and seem to suggest that the three variables namely exchange rate, oil price and gold price are positively related to stock market return, thus significantly explained the performance of KLCI. During the period under study, the results suggest that the investors need to actively participate in the stocks market when the crude oil price is on bullish pattern or increasing in its price, and also pay close attention to exchange rate and gold price movement in Malaysian market. The investors can secure their capital and benefits from the capital gain, as all investors looking for profits, this is the best way to involve in the stocks market.
Future research could include more variables such as industrial production rate, inflation rate, consumer price index, money supply and other economic variables because the determinant of stock market return in a country is influenced by various factors. As investors, they should be aware of the factors that could influence the stock market return. Another possible extension could be analyzing the macroeconomic variables in the bigger timeframe to examine the relationship between stock market and selected macroeconomic variables in the long run involving different countries, which may use panel data. By using different types of data structure, it would provide the researcher new and wider perspectives as well as to make comparison with the existing studies for the purpose of knowledge expansion.

6. References


Viewpoints and Methods of Data Analysis for
Accounting Fraud Discovery

- Analysis of Cases of Accounting Fraud at Overseas Subsidiaries
  of Japanese Listed Companies -

Takashi Ishijima
Hosei University
ishijima@im.i.hosei.ac.jp

Abstract

In Japan, Internal Control Reporting System was introduced in 2008 following the US-SOX system. This system requires managements to evaluate and report that the internal management process for the preparation of appropriate financial statements is functioning effectively and to request the external auditors to audit the details. However, even after applying this system, accounting fraud in Japanese listed companies has been steadily occurring, and cases of large-scale accounting fraud occurred in overseas subsidiaries of listed companies that globally expand. In this research, the author studied the viewpoints and methods of effective data analysis for accounting fraud discovery.

This research covered examples of accounting fraud at overseas subsidiaries of the manufacturing industry listed on the Tokyo Stock Exchange. In this research, the author uses the "Improvement Report" or "Improvement Status Report" submitted to the Tokyo Stock Exchange. As accounting fraud cases, in addition to cases of JVC Kenwood Corporation, Oki Electric Industry Co., Ltd. and FUJIFILM Holdings Corporation, recent cases will be added. On the other hand, the framework of data analysis using IT created by the author consists of Management Index Analysis, Accounting Journal Data Analysis, Transaction Data Analysis, Document Data Analysis, and Behavior Data Analysis in order from the top level. Furthermore, Access Management Data Analysis for discovering falsification of data is added.

Due to accounting fraud, residual balances of accounts receivable, lease receivables, inventory assets, etc. are generated, but concealment is done by not recognizing debt or using inappropriate account items. In order to deal with such concealment behavior, it is effective to monitor the relation between the flow of products/services in the business process and the cash flow by data analysis. As a result of this research, based on this concept, the authors propose monitoring viewpoints and methods using data analysis to deal with accounting fraud.

Keywords: internal control reporting system, accounting fraud, cash flow, data analysis
Accounting as A Choice of Academic Programme: A Comparative Study between Malaysian and Indonesian First-year Under-graduate Accounting Students

Maheran Zakaria
Universiti Teknologi MARA Kelantan, Malaysia
maher835@kelantan.uitm.edu.my

Muhammad Saiful Anuar Yusoff
Universiti Teknologi MARA Kelantan, Malaysia
saifmadini72@gmail.com

Ida Rosnidah
Universitas Swadaya Gunung Jati, Indonesia
idarosnidah2010@yahoo.com

Abstract

Although rapid and tremendous economy development worldwide has sparked a massive demand for accountants, developing nations like Malaysia and Indonesia are dearth of this profession. Triggered by this mismatch and emulating variables postulated by Theory of Reasoned Action, the objectives of this study are to decipher intention to choose accounting as academic programme with regards to attitude towards accounting profession and social group influence in Malaysian and Indonesian contexts. There were approximately 350 Malaysian and 150 Indonesian under-graduate accounting students participated in the study. Data were analysed using Sequential Equation Modelling (SEM) of Smart Partial Least Square (PLS) version three. Results for both nations indicated that the attitude towards accounting programme and social group influence were more likely to affect student’s intention to choose accounting as academic programme. The former perceived that the paramount prospect offered by the profession is good long-term income, while the later believed that it is broad job opportunities. Likewise, students for both nations were more likely motivated to comply with the expectations of family, followed by teachers, friends, counsellors and peers. These discoveries provide useful insights for policy makers, accounting professional bodies and higher education to formulate policies exposing students and social groups on the importance, incentives and prospects of the accounting profession. It is hoped that many students would be enticed to choose accounting program and join the profession. Hence, accountants are vital for robust economic development that will expedite the countries’ aspiration of becoming full-developed nations in due time.

Keywords: accounting, programme, attitude, Indonesia, Malaysia, social influence, students
Abstract

The paper is written to highlight the presence of a unique opportunity in the current economic development in ASEAN countries, in resolving the systemic weaknesses of the curriculum at the graduate schools of business whilst at the same time supporting the sustainable development goals initiated by the United Nations.

Properly carried out, the curriculum update proposal will in addition to re-energizing the teaching and learning approaches of both the learners and instructors, also present a major step in countering upcoming massive job losses and replacement by machines that are designed with artificial intelligence (AI).

Keywords: sustained development goals; curriculum update of teaching and learning in business schools; job losses and replacement by machines with artificial intelligence.
1. Need for a graduate business school curriculum update

As an introduction leading into the topic, the following five major points playing a pivotal role in the consideration for the timely need of a proposal for curriculum update:

1.1 Curriculum in present graduate business schools in ASEAN

Text books used today in university undergraduate and graduate business schools in ASEAN countries mostly follow those that are written by experienced authors in developed countries. Very often, for expediency, the entire textbook is adopted and used in classroom for teaching and learning with student assignments picked from them without any modification. This can be easily understood and accepted because for these young developing countries such as those found in ASEAN, the majority of the university instructors are still in the mode of busily teaching than research and publication specific to their own market and business environment and consumer behavior. Whilst many may justify that the concepts and theories in these books are well proven, unfortunately, these textbooks are less than satisfactory when applicability is taken into consideration with respect to the different stages of the market development, the resourcefulness and experience of the business corporates, the maturity and the different behavior of the consumers as well as the governance and regulations of the government of the day. Over time, with the growth of the developing countries and their economy, this unsatisfactory state of affairs can be changed and improved. Perhaps this is the time to catch up together with the developed world with our own unique specific environment focusing on sustainability and sustained development guided by the sustained development goals of the United Nations.

1.2 The problem of rote learning and distraction from mobile phones

It was consistently observed that rote learning and distraction by computers, and mobile phones and pads are the major obstacles towards effective learning by students in the business schools in Asean. Many researchers (Hallinger 1998, Rajaram and Collins 2013, Chan 1999, Griffith and Roberts 2013, Burford and Park 2014) pointed towards the learning heritage and style of the students from the East as well as ease of availability of the devices for the manner the students behaved in class. The present authors opined that the lack of motivation by the helpless monotonous use of the often-irrelevant textbooks written by authors of a different culture for different settings may have majorly contributed to the negative teaching and learning observations.

1.3 Graduate students leading a sedentary lifestyle

Many graduate students in business schools in Asean have been observed generally not especially keen to participate in any individual or team sporting activities. Their lives often simply revolve around going to classes and self-studying all day in the library or at home. The pressure of peer influence and lack of organizing leadership for interesting sporting events probably accounted for the main reason for this observation (Zhou et.al 2018).

1.4 Disruption by Artificial Intelligence (AI) that can lead to massive job losses and employment

Whilst the winner of the debate between the Optimists and the Pessimists is yet to be settled, a few conclusions are clear and definite in the next few years a) There will be job losses b) Many
jobs that were once available will no longer be c) Job losses will be mostly replaced by robots and machines and by those who have different expertise (Khan, M 2016; Stark, H 2017; Stall, N 2017). This is not surprising from the rapid development in AI technology in recent years. What is very surprising is that most business schools especially those in Asean, have not started preparing for this major business environmental transformation in having their program curriculum and courses updated.

1.5 The increase in traffic in regional tourists’ arrival

As the regional economy of China and her Asean neighbors improved and increased in recent years, it is first noticed at the airports with both the regional and domestic tourists arrivals (Lotha, L July 2018). The burden will be immediately borne by the infrastructure at the popular tourism destinations and the services required by the tourists such as food, accommodation and local transport. The next to suffer is the environmental impact with waste and pollutants (Nair, V et.al 2016). Many of the emerging economies in Asean rely on tourism to do well economically as the tourists fall in love with their sun and beach.

2. Sustainable Development Goals adopted by the United Nations General Assembly

2.1 Business sustainability is a fairly new term. Today, it is a very important terminology. The aim of business is to have a sustainable enterprise, one that can last beyond, for example, over a hundred years, and still be in business and thriving. The majority of startup businesses today are very short-lived; most could not sustain beyond 3-5 years before they are forced to a final shut down involuntarily. The on-going process needed to arrive at sustainability is termed sustainable development. Most entrepreneurs are not sufficiently skillful with the sustainable development process needed by the young enterprise and painfully had to witness the premature demise of relatively new born enterprise.

Significantly, in a bigger picture, sustainability of our planet that we are living in today has been called into question. In other words, we are not sure today our future generations will still have our present planet to live on if we continue do nothing but just doing what we are doing today.

Very fortunately for all of us, during the Sustainable Development Summit held from 25th-27th September 2015 at the UN headquarters, A historic new agenda entitled “Transforming Our World: The 2030 Agenda for Sustainable Development” with the 17 Sustainable Development Goals (SDGs) was agreed upon by the 193 Member States of the United Nations. The Sustainable Development Goals (SDGs) are a global agenda, have a vision of ending poverty, protecting the planet and ensuring that all people enjoy peace and prosperity.

3. The 17 sustainable development goals (SDGs) to transform our world:

GOAL 1: No Poverty
GOAL 2: Zero Hunger
GOAL 3: Good Health and Well-being
GOAL 4: Quality Education
GOAL 5: Gender Equality
GOAL 6: Clean Water and Sanitation
GOAL 7: Affordable and Clean Energy
GOAL 8: Decent Work and Economic Growth
GOAL 9: Industry, Innovation and Infrastructure
GOAL 10: Reduced Inequality
GOAL 11: Sustainable Cities and Communities
GOAL 12: Responsible Consumption and Production
GOAL 13: Climate Action
GOAL 14: Life Below Water
GOAL 15: Life on Land
GOAL 16: Peace and Justice Strong Institutions
GOAL 17: Partnerships to achieve the Goal

On March 11th 2016, A United Nations Statistical Commission’s Individual and Expert Group on SDG indicators (IAEG-SDGs) had agreed on 230 individual indicators to monitor the 17 goals and 169 targets of the SDGs


Whilst over the last three years, we were exposed more and more to the terms ‘sustainability’ and ‘sustainable development,’ and even SDGs, the authors have to admit that the understanding was very superficial and with minimal commitment. The situation changed abruptly during Christmas of 2018 when we were visited by Mr Thirach Runruangkanokkul, the Executive Director of the Agricultural and Food Marketing Association for Asia and The Pacific, an inter-governmental agency. Director Thirach brought the in-depth introduction and the true meaning of the SDGs and there was an immediate connection with this worthwhile effort and belonging. Thank you Director Thirach.

It was a very appreciated when Director Thirach pointed us to SDG Goal 14: Life Below Water. He commented that to fully understand our role, responsibilities, and possible contribution towards achieving SDG Goal 14, we must ourselves first love the sea and ocean. We were very delighted when Director Thirach further suggested and offered that he and his Sustainable Development Centre could help with regularly training and qualifying our students and instructors in skin and scuba driving at a very minimal affordable cost.

We discussed at length over three meetings on how our students and ourselves can benefit from the offer of Director Thirach. Following are our thoughts that culminated to this conference paper with a two-prong purpose. Firstly, riding on the exciting idea to revamp and update our Graduate School of Business curriculum for improvement. Secondly, to use the conference platform in further promoting the United Nation’s Agenda 2030 and the SDGs.

5. Connecting SDG 14 to continuously improving of business school curriculum.

Thailand and most Asean countries are amongst the most famous tourism destinations in the world and there is enough sea and ocean located around the country. Hence there are lots of opportunities to work on SDG 14 in helping business organizations such as shipping lines to understand and achieve the SDG 14 indicators and target goals. Students could also, by understanding and working with the sea and ocean, come up individually or group entrepreneurial projects relating to them; Just as they would normally do with land-based projects introduced by the textbooks authored by those based in developed countries. In this way, the curriculum can be re-written with local ownership whilst working on the SDGs.

Traditionally, most lectures are class-room based, working on the SDGs apart from them being very meaningful and responsible, they also present options for instructors to design more classes to be conducted in the outdoor and have learning in the natural environment. These new
efforts will also inject enthusiasm to re-energize the teaching and learning approach so that the instructors and students will look forward to their classes.

Director Thirach was enthusiastically commenting that having a job relating to SDG 14 working on innovative product and services from the sea, may well be a way to protect future jobs for our graduating students as it will be a while before Artificial Intelligence could catch up in this regard.

Succeeding in encouraging students to step out of their comfort zones to be with the natural world can both be very spiritual as well as putting back the zeal in life for the majority of our graduate students who had chosen to live a sedentary lifestyle.

6. Conclusion

In conclusion, this is one very rare idea if we could make it work whilst updating our curriculum by injecting fun and enthusiasm to continuously improve the teaching and learning outcome of the students and instructors even as it at the same time plays a role in ensuring that our future generations would still have this beautiful planet of ours though our efforts to sustain it.

7. References


Vikneswaran Nair, Badaruddin Mohamed, Toney K. Thomas, Richard Teare: How can the tourism industry respond to the global challenges arising from climate change and environmental degradation? Worldwide Hospitality and Tourism Themes, Volume: 8 Issue: 5, 2016
Enhancing Social Responsibility in Chinese Higher Education Institutions

Chongyan Zhang
Doctor of Philosophy in Educational Leadership, Graduate School of Human Sciences
Assumption University
P6019506@au.edu

Abstract

Higher education institutions are an integral part of society and thus not exempt from influencing and contributing to social responsibility. As China has solidified its presence as a global leader, its contribution and responsibility for enhancing and sustaining social responsibility in various sectors, and especially that of business, will be essential to maintaining that leadership role. In this light, higher education institutions in China have dual roles of being proponents and examples of social responsibility and the cultivation, training and production of future leaders who are aware of the importance of social responsibility. This paper intends to explore how Chinese higher education institutions play a role in influencing and promulgating social responsibility and how social responsibility is taught and imbued in students and student leadership, especially in business programs. The lens through which this paper’s objectives will be viewed is through that of the theories of Corporate Social Responsibility (CSR) and University Social Responsibility (USR). Analysis and synthesis of the literature will be used to evaluate the context of social responsibility in China, determine the current state of social responsibility in relation to higher education institutions in China, and explore the various methods and procedures in which social responsibility is taught in higher education institutions. From the synthesis of the literature, a strategy for enhancing social responsibility will be proposed with recommendations for further study.
1. Introduction

Higher Education Institutions as tight sector of society that improving and contribute social responsibility. Nowadays, China as a business leader role in region, international, and global, meantime, China need sustainable development in the future. Therefore, Chinese HEIs have mission to educate their students to possess knowledge, skills, and attitudes with CSR under the global perspectives (Weihong, 2015). Therefore, this paper aimed to contribute explore what a role of Chinese HEIs for influencing and promoting social responsibility and explore how teach social responsibility in Chinese HEIs, and how imbued student leadership development with social responsibility, especially in business programs.

In this academic paper, there are two study objectives as following: Study objective 1: To explore how Chinese higher education institutions play a role in influencing and promulgating social responsibility. Study objective 2: To explore how social responsibility is taught and imbued in students and student leadership, especially in business programs.

2. Literature Review

2.1 Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is a broad concept in business area, especially for SMEs. Because CRS acclaimed collaborative profits for entrepreneurs around the World. (Othman & Othman, 2014). There is a famous framework of CRS, it was established in 1991 by Carroll, the framework of CRS demonstrated how and why organizations meet their social responsibility, the Carroll’s CRS pyramid includes four dimensions of responsibilities: First, economic responsibility; Second, legal responsibility; Third, ethic responsibility; Forth, philanthropic responsibility (Fenghuang, Monica, Varshney, & Sanjay, 2016).

First, economic responsibility. There are two assumptions under the economic responsibility. one assumption is that business has responsibility to be profitable sector around society (Julia & Anamarija, 2016). And another one assumption is business need to survive and benefit to society for long term. Therefore, corporations have mission to contribute economic growing factors to their society, encourage local and international economic development as well as (Ana, Marisa, Aldina & Vanda, 2018).

Second, legal responsibility. The terminology demonstrated businesses as one important branch of social, which should obey laws and regulations (Jirawan, Leela & Mark, 2016). However, businesses not only should obey laws and regulation by themselves, but also should lead other social members working together to obey laws and regulations as usual as. Then, corporations should observe special laws as employment, industrial competition, and healthy care (Hai, James, Lunhua & Sophia, 2012).

Third, ethic responsibility. Commercial corporations are required for ethical moral responsibility (Luis, Carlota & Ana, 2016). Actually, this ethic responsibility is over than laws and regulations what businesses should observe (Roziana, Azlineer, Azizah & Zakaria, 2018). For example, how to maintain supply chains, or commercial organizations how treat their employees. In simple word, business has mission to employ ethical leadership to encourage individuals engagement and involvement (Ana, Marisa, Aldina & Vanda, 2018).
Forth, philanthropic responsibility. Corporations attain profits from society, since that, businesses are able to possess large wealthy (Jenny & Carlos, 2013). But beneficial corporations need to back their benefits to society, this is very important for corporations, whatever for their reputations or sustainable development. Many famous corporations engaged to community service, sustainable development programs. It is around charity for society by commercial corporations (Veldman, 2018).

2.2 University Social Responsibility (USR)

University Social Responsibility (USR) is a special framework of Corporate Social Responsibility in higher education contexts, USR is transformed from CSR to Higher Education Institutions (HEIs). At present, USR also employs in quality management and accreditation for universities around the World, especially in business schools (Jenny & Carlos, 2013).

University Social Responsibility is not new concepts, but it requests to HEIs need to rethink how to explicit their social responsibility at cut-age society, HEIs need to clear what social responsibility they will possess? What are challenges for HEIs nowadays? Because HEIs need to target to educate global citizen under the globalization trend (Latif, 2018).

First, Disseminating new knowledge. Now under the 21st century, learning community has mission to disseminate new knowledge to learners, this is valued by learning community, scholar, and global citizenship, even new knowledge under global perspectives. Universities as learning community, they also have mission to communicate new knowledge and skills required in the 21st century, then, equip their students to be knowledgeable and skillful human resource, make students have ability to engage to sustainable development (M Isabel & Emerson, 2016).

Second, development of local human resource. Universities educates their students who have ability to be ethical leaders, their graduated students will acquire good knowledge, skills and attitudes to engage quality and virtue for local human resource advancement. Then, affording platforms that wealth-creator, national building, and global human improvement (Veldman, 2018).

Third, Development of dynamic learning for society. HEIs as learning organizations, they need to contribute dynamic learning methods to learners, as well as, they need to contribute to update research, technology, exposure theory and theory-in-use. Even, universities as good learning bridge between national and international (Luis, Carlota & Ana, 2014).

Forth, improving civilization under the universal. HEIs around the World targeting to improve universal civilization level. Because, people who are living under the globalization age, they need to ability to understand diversity in life, they could understand and tolerant for different kinds of diversity, especially culture diversity. Universities need to nurture their students to be global civic citizen, and respectful for diversity around their surrounding (Luis, Carlota & Ana, 2015).

2.3 College Student Leadership in Chinese Higher Education Institutions

College student leadership is not new concept in Chinese HEIs, many research indicated Chinese HEIs realized as important learning organizations in China, they need to educate
Chinese undergraduate and graduate students possess ability to lead social change among individual, group and society level (Weihong, 2015). Because, students as future leaders between national, international, and global. China now is being a leader role in regional, or global (Memon, Aamir & Khattak, 2014). For China’s national development standard, Chinese HEIs need to educate college students to possess social change leadership competences and good self-knowledge for themselves (Weihong, 2015).

College student leadership development programs in China is emerging programs, there are some of HEIs from industrialized zone explore appropriate framework of college student leadership development in Chinese social contexts. For example, universities in Shanghai and Xiamen, they already have exclusive research center for college student leadership development programs, they have big dataset and analysis methods to support their scientific research for their program (Anbang & Hui, 2007).

In common, college student leadership development programs in Chinese HEIs either obey principles of social responsibility, they explore a suitable framework to support college students how and why meet their social responsibility by improving their social change leadership competences and good self-knowledge (Serap & Tutku, 2007).

3. Analysis and Findings

3.1 Analysis and Findings of Study Objective 1: To Explore How Chinese Higher Education Institutions Play a Role in Influencing and Promulgating Social Responsibility.

Setting CRS curriculum. Chinese HEIs as significant learning communities in society, they will undertake to educated future generations as social responsibly leadership, setting social responsibility curriculum in their general education and civic education (Anbang & Hui, 2007). Many research indicated most of 211 and 985 project universities in China, especially in their business and management education, they open business ethic or social responsibility curriculums to students (Memon, Aamir & Khattak, 2014).

Close gaps among different regions. Corporate social responsibility curriculum design and curriculum development have gaps between industrialized region and unindustrialized region in China (Zucheng, 2014). There were research showed the results as: Universities in Shanghai is champion, there have higher amount of universities or business and management school have corporate social responsibility curriculum, and then, universities in Beijing is secondary follower, but there are lack of qualitative research to explore the reason why will happen this situation until now. Therefore, Chinese HEIs should improve their research about CRS curriculum development in Chinese contexts, close the gaps between industrialized and unindustrialized region (Weihong 2015).

Improve quality of CSR curriculums. The process of CSR curriculum development in Chinese HEIs is not ideal. Although there is increasing trends for CSR curriculum to students who study in business program, for some of barrier factors, these CSR curriculum are lack of good quality. For example, there might be lack of experienced professors to teach the course, or there might be lack of good quality of textbooks to students (Zucheng, 2014).

Realize barriers to development CRS curriculum in Chinese HEIs. For example, there are some of main barriers to the CSR curriculum in Chinese HEIs as: Lack of social and public
movement, lack of good quality of materials, and lack of qualified teachers (Memon, Aamir & Khattak, 2014).

Explore to reform business and management education system. In China, business and management education is belong to educational borrow from industrialized countries or regions around the World, Chinese HEIs need to explore teach methods, curriculum objectives, and curriculum itself to be suitable for Chinese education system. Therefore, some of comprehensive universities, or research centers need to focus on how to reform Chinese business and management education system (Zucheng, 2014; Weihong, 2015).

3.2 Analysis and Findings of Study Objective 2: To Explore How Social Responsibility Is Taught and Imbued in Students and Student Leadership, Especially in Business Programs.

In summary from several of empirical studies about strategies for teaching social responsibility, these research results mainly advocated to concentrate on essential of curriculum, name of curriculum, instructors, textbooks, teaching methods, curriculum objectives (Zucheng, 2014; Weihong, 2015).

First, essential of the CSR curriculum. Some of previous quantitative research showed essential of the curriculum has significant relationship with how social responsibility is taught, there are two types of essential of the CSR, one is required curriculum and another one is selected curriculum. However, in Chinese HEIs, especially business programs, need to increase credit for the CSR to be required curriculum. In this way, increasing movement and engagement for students to participate this curriculum, as well as, business and management education institutions could afford specific selected curriculum, especially non-academic curriculum, such as seminar to students, facilitating students to acquire what essential of social responsibility and how to practice by team work (Anbang & Hui, 2007; Zucheng, 2014).

Second, Name of the CSR curriculum. Name of the curriculum is expression core values about curriculum objectives, different core values will lead different curriculum design and curriculum development, in this way, will create different knowledge, skills, and attitudes to students. In fact, there are interdisciplinary subject as philosophy, management, ethics, government behavior, business laws and CSR, but there is a little of universities in China using CSR as name of the curriculum, Therefore, as business and management educators in China, they need to consider clear what are curriculum objectives for current Chinese students. Then, design related core values to the curriculum for students (Zucheng, 2014; Weihong, 2015).

Third, instructors. There were many unexperienced and qualified teachers in front of the first line of business and management education in China in past, as Chinese HEIs developing, universities realized they need experienced and qualified teachers for business and management education. Therefore, Chinese HEIs reported to education administration department to make supporting policies to extend their teacher resources, supporting their recruitment for new teachers, meantime, improve teacher professional development for aging teachers, lead these aging teachers to meet their new ability standards. For example, supporting aging teachers to come to continue learning programs, or exchange them to the top of universities out of China for visiting learning (Memon, Aamir & Khattak, 2014).

Forth, textbooks. In common, there are three types of textbooks in Chinese business and management education institutions, they are as editing by university publication, editing by
Chinese publication, editing by international publication. In Chinese HEIs, they often choose editing by university or Chinese publication, there are less numbers of universities choose international publication to students. But there are emerging fixed sets of textbooks in some of universities for business and management education, such as one book is Chinese publications and another book is international publication (Zucheng, 2014; Memon, Aamir & Khattak, 2014).

Fifth, teaching methods. In Chinese business and management education programs, there are more teacher-centered methods in classroom, whatever bachelor’s degree, master’s degree and doctor’s degree, such as lecture by instructors. But sometimes, there are a little of learner-centered methods in classroom, such as case study, group discussion. But for undergraduate students, because it is large size of classroom. Therefore, undergraduate students’ classroom is more teacher-centered methods, but for graduate students, it is relatively small size of classroom. Therefore, graduate students’ classroom has opportunity to use learner-entered methods. (Anbang & Hui, 2007; Zucheng, 2014; Memon, Aamir & Khattak, 2014).

Six, Curriculum objectives. The core curriculum objective of the CSR is aspiration students to engage their business with ethical and moral in society. These are commonly including as understanding what relationship between business operation and ethics; What is CSR; How to judge business ethics; How to increase CSR for business. Actually, in Chinese HEIs, especially business programs, most of programs do not clear what curriculum objectives they want, and even though some of programs do not clear what is first curriculum objective and what is secondary curriculum objective. Therefore, they need clear curriculum objectives in the process of the CSR curriculum design and development (Anbang & Hui, 2007; Zucheng, 2014; Memon, Aamir & Khattak, 2014; Weihong, 2015).

In additional above six elements of how teach social responsibility, there are another perspectives for student leadership development. Business programs either need to extend social change leadership competences with the CSR to educate students, these programs can afford activities to encourage students to realize what are their social responsibility at present. And Chinese universities could build the CSR center of advisory to students, recruit experienced and qualified advisor from internal and external sector, guide students successfully to proceed social change with the CSR among individual, group, and society level change (Anbang & Hui, 2007; Zucheng, 2014; Memon, Aamir & Khattak, 2014; Weihong, 2015; Luis, Carlota & Ana, 2015).

4. Conclusions and Recommendations

Chinese HEIs have social responsibility to support sustainable development for Chinese society. Then, Chinese society facilitates Chinese HEIs to update their curriculum objectives of the CSR. Especially, business programs in Chinese HEIs, they are business leadership prepare education. Therefore, Chinese HEIs input what core values of CSR, then, process by social, environment, political, economical, legal, technological influence, finally, it will output what core values of CSR and how to practice the CSR core values outputted, future students graduated from the business programs, they will practice these outputted theory in reality.

There are two types of teaching methods as teacher-centered and learner-centered, at present, Chinese HEIs realized theory-in-used is equally important than exposure theory for business and management education. Therefore, they will explore suitable strategies to extend learner-
centered methods and adult learning approaches for students. For example, spaced internship, group discussion, case study.

In summary, there are purposed strategies enhancing social responsibility for Chinese HEIs. First, promote social movement to enhance curriculum of the CSR; Second, setting the curriculum as required curriculum in the future; Third, recruit good quality of teachers; Forth, understanding emerging paradigms of CSR and student needs. Final, reform teach methods gradually.

In the future, First of all, related research need to extend to employ qualitative research to explore why will create the curriculum of the CSR of gaps between different region in China; Then, there is suggestion that employ mixed-methods to explain and explore new paradigms of the CSR for Chinese society, international, and global.

5. References


Salute to the Black Sheep: The Legitimacy of Workplace Bullying from the Perspective of Organizational Cohesive Affinity and Organizational Competitiveness

Hsiang-Ying Cheng
Department of Business Administration
Fu Jen Catholic University
Email: sana951753@gmail.com

Kai-Ping Huang
Department of Business Administration
Fu Jen Catholic University

Abstract

This study aims to examine the impact of black sheep effect on organizational or group performance by exploring the role of group cohesiveness and group development. Black sheep effect occurs when members of the organization facing high task related pressure or strong competition and the pressure or tension cannot be released. Therefore, someone (black sheep) in the organization will be isolated, bullied, or disregard by others to adjust the pressure or aspire the sense of belonging. In this situation, those bullies and bystanders become “butchers” and “(white) sheep” without conscious. Consequently, there is forming a unusual phenomenon that a group of good people bully a good person.

Prior research has paid lots of attention on the reason why black sheep effect and bully’s behavior occur within organization. However, little is known on black sheep’s contribution to the organization or group. This study takes a neutral posture to explore the relationship between workplace bullying and black sheep effect in organization, and illustrate if the influence of this phenomenon has benefit result in the view of whole organization. This study proposed that black sheep effect is positively related to group cohesiveness. And group cohesiveness is positively related to group development.

In contrast with prior research focusing on psychological point of view, this study enables management to extend the focus from individual to organization standpoint and develop specific strategy toward a positive attitude on black sheep effect.

Keywords: black sheep effect, group cohesiveness, group development, social identity theory, self-categorization theory, task commitment, workplace bullying
1. Introduction

Lots of prior social psychology researches indicated that perceivers’ reaction is different depending on the target belongs to ingroup or outgroup. According to ingroup favoritism effect, perceivers have more positivity reaction to the ingroup member rather than the outgroup member (e.g., Allen & Wilder, 1975; Billig & Tajfel, 1973; Sherif, Harvey, White, Hood, & Sherif, 1954; Sumner, 1906; Tajfel, 1970; Wilder, 1981). In a later period, only social scientists studied the theory opposite to ingroup favoritism effect. For example, Marques and his colleagues have proposed in a series of studies about “black sheep effect” (Marques, Robalo, & Rocha, 1992; Marques & Yzerbyt, 1988; Marques, Yzerbyt, & Leyens, 1988). When the feature or evaluation of the target is exactly negative, the perceiver’s response to the ingroup target will be more extreme and unfavorable than the outgroup target.

Although ingroup favoritism effect and the black sheep effect represent two completely opposite result for the ingroup member, Marques and his colleagues believe that the theoretical basis for the two effects is the same - social identity theory (Tajfel, 1981; Tajfel & Turner, 1979; Tajfel & Turner, 1986). This theory indicates that both ingroup favoritism effect and black sheep effect have the same potential motivation. By giving a positive evaluation to an individual in the group, the positive identification of the ingroup membership is enhanced, provided that the feature of the target is judged to be favorable or ambiguous by members in the group. On the other hand, when the target is identified as clearly unfavorable, the response to the ingroup target is more negative and severe than the outgroup target. Because when the target belongs to the ingroup, it is more relevant to other members of the group. Therefore, such a person will devalue the psychological value and self-identity of other members in the group (Tajfel, 1981; Tajfel & Turner, 1979; Tajfel & Turner, 1986).

The occurrence of some workplace bullying can be explained by the black sheep effect. Lewis proposed that the “negative ingroup members from high perceived entitativity groups may pose a meaningful threat to the perceiver’s social identity that can be alleviated by denigrating the target” (Lewis, 2010, p211). Specifically, when ingroup members facing high task related pressure or strong competition and the pressure or tension cannot be released, someone (black sheep) in that group will be isolated, bullied, or disregard by others to adjust the pressure or aspire the sense of belonging. In this situation, those bullies and bystanders become “butchers” and “(white) sheep” without conscious. Consequently, there is forming a unusual phenomenon that a group of good people bully a good person.

To mention the impact of groups on organizations, one must think about group cohesiveness among members. Social scientists explain group cohesiveness in different ways. Lott believes that group cohesiveness can be explained by interpersonal attraction, that is, when team members have active emotions with each other, there will be forming group cohesiveness (Lott & Lott, 1965). And social scientists believe that the cohesiveness between group members stems from a high sense of belonging. Later studies inferred that the attraction of the entire group led to group cohesiveness, which is reminiscent of social identity theory (Tajfel, 1981; Tajfel & Turner, 1979; Tajfel & Turner, 1986). According to Hogg, group cohesiveness is based on social attraction, which refers to the attraction between members of a significant social group (Hogg, 1992). In many past studies, Lott has found that individuals’ similarities in background, attitudes, values, and personality traits are related to group cohesiveness (Lott & Lott 1965). And from the perspective of social attraction, the similarity between group...
members is that individuals divide themselves and others into ingroup and outgroup, which serves as the basis for group cohesiveness (Hogg, 1992).

For a long time, people have a comprehensive negative evaluation of the "black sheep", and social scientists' explanation of black sheep effect has been mostly discussed in psychological factors. However, black sheep effect occurs frequently in our lives, especially in the workplace, but few studies mention the connection between the black sheep effect and the business management field. Therefore, this research aims to use the perspective of social psychology to explore the positive contribution of “black sheep” to the organization and to propose that the existence of the black sheep effect has a positive impact on group development.

**LITERATURE REVIEW AND PROPOSITION DEVELOPMENT**

**Black Sheep Effect**

The black sheep effect proposed by Marques and his colleagues indicates that "*Ingroup members were consistently evaluated in a more extreme way than outgroup members, either favorably or unfavorably*" (Marques, Yzerbyt, & Leyens, 1988). Marques explained the two different reactions of the ingroup favoritism effect (e.g., Allen & Wilder, 1975; Billig & Tajfel, 1973; Sherif, Harvey, White, Hood, & Sherif, 1954; Sumner, 1906; Tajfel, 1970; Wilder, 1981) and the black sheep effect. When he confirmed the black sheep effect, he explained that the theoretical basis is the same as the ingroup favoritism effect. Both use the social identity theory (Tajfel, 1981; Tajfel & Turner, 1979; Tajfel & Turner, 1986) as the basis for development. He indicated that the black sheep effect can be categorized as the expansion of ingroup favoritism effect (Marques, Yzerbyt, & Leyens, 1988). According to the social identity theory, if an organization can change the self-identity of members in the group, it can also change the behavior of the individual, and the reason for the change is the member's cognition and emotional attachment to the group. (Tajfel & Turner, 1979).

Due to the limitations of social identity theory, John Turner and his colleagues developed a self-categorization theory (Turner et al, 1999). The theory assumes that the self can be categorized at various levels of abstraction. In other words, humans may categorize the self as a singular “I” (personal identity), or as a more inclusive “we” (social identity). The social identity theory explains why members of the ingroup are not more positive or negative about the ingroup target. Because when the correlation between the members of the group is higher, raising the group value by giving positive evaluation to the ingroup target also improves the social identity-ingroup favoritism theory. Conversely, when the characteristics of the target are clearly negative, he or she threatens the social identity of the members of the group, so the members chooses to exclude or isolate the target and eliminate the negative impact of the target on the group-black sheep effect. Marques showed in his experiments that the interaction between the ingroups is stronger than the outgroup, and black sheep effect occurs when the judgment characteristics of the target are related to social identity (Marques, Yzerbyt, & Leyens, 1988)).
Group Cohesiveness

Previous studies have indicated that most researchers define group cohesiveness as the task commitment and attraction (Lata & Kamalanabhan, 2005; Carron & Brawley, 2000). And the cohesiveness among the members of the group stems from the members' high sense of belonging to the group and the attraction of the whole group.

Lott believes that the attraction of group cohesiveness can be explained by interpersonal attraction, that is, when team members have positive emotions with each other, there will form group cohesiveness (Lott & Lott, 1965). Later studies inferred that the attraction of the entire group led to group cohesiveness, and it is based on social attraction, which refers to the attraction between members of a significant social group (Hogg, 1992). Hogg explained that team cohesion is developed by social attraction and self-categorization theory. According to his theory, individuals will psychologically classify themselves as internal or external members of the group, through drawing similarities and differences between others. And Hogg believes that social attraction refers to the individual's love and identity to the whole group, rather than the interpersonal attraction proposed by Lott (Hogg, 1992; Hogg, 1993). In other words, Hogg believes that individuals will distinguish between others and their own through the four components of social perception - observation, attribution, integration and confirmation (Aronson et al, 2010), and have an overall identity for the ingroup, which is reminiscent of Tajfel and Turner's social identity theory, “the evaluation of the group is regarded as their own value”. In addition, task commitment is another important element in forming group cohesiveness. Sports and organizational theorists point out that the commitment of group members to accomplish team tasks and achieve organizational goals creates cohesiveness (Yukelson et al, 1984; Guzzo, 1995). Such group will have strong interdependence and be responsible for the results of the team's work. This will result in group cohesiveness among the members through the goal of accomplishing the task together (Beal et al, 2003).

Proposition 1: black sheep effect is positively related to group cohesiveness

According to the development background and literature review of the black sheep effect and group cohesiveness, this study consider that the black sheep effect has a positive relationship with group cohesiveness. Black sheep effect is a rigorous evaluation and exclusion behavior of ingroup members for the ingroup target, that is, the behavior of the ingroup members in order to make the entire group’s social value not depreciate. By giving negative evaluation to separate the target who has a negative impact on the group from the entire group to maintain the consistent identity and value of the group. At the same time, these behaviors also bring the relationship between themselves and the group closer. In other words, it is the pursuit of belonging and security.

The development of black sheep effect, in addition to the extension of the partial ingroup favoritism effect, its theoretical prototype is derived from social identity theory (Tajfel, 1981; Tajfel & Turner, 1979; Tajfel & Turner, 1986). The application of the theory in the group indicates that the members will have a holistic identity to the whole group and that their value is closely related to the whole group. Bringing this application to the cohesiveness of the group is similar to Hogg's view of group cohesiveness.

Hogg believes that team cohesion can be explained by social attraction and self-categorization theory. Social attraction refers to the individual's love and identity for the whole group. Self-categorization theory states that individuals will classify themselves into "personal identity"
and "social identity" at the psychological level. One of the reasons is that individuals will adapt themselves to the relationship between groups in this way. In his article, he confirmed that due to the application of the above two theories, individuals will classify the similarities and differences between members, and partition the ingroup and outgroup. Therefore, group cohesiveness is formed (Hogg, 1992).

According to past literature, the theory of self-categorization was developed by John Turner and his colleagues in order to solve some of the limitations in social identity theory. Therefore, the theory that states the state between groups is an extension of social identity theory (Turner & Oakes, 1986; Turner, 1999; Haslam, 2001). In addition, Marques' black sheep effect shows that group members' more stringent evaluation target are not only to eliminate negative impacts and maintain group consistency, but also to strengthen the closeness between members and thus pursue sense of belonging (Marques, Robalo, & Rocha, 1992; Marques & Yzerbyt, 1988; Marques, Yzerbyt, & Leyens, 1988). One of the past scholars’ interpretations of cohesiveness is that the group cohesiveness stems from a high sense of belonging. 

Through the above discussion, we can find out that the core theory and application of the black sheep effect and group cohesiveness are consistent. Therefore, this study concluded that the black sheep effect has a positive correlation with group cohesiveness.

**Group Development**

Among the various group development studies, the most influential research is the Tuckman’s stages of group development, including forming, storming, norming and performance (Tuckman, 1965). And he added the fifth stage to these four stages in the later research-adjourning (Tuckman, 1977). In Tuckman's stages group development, the first three stages are closely related to interpersonal relationships and group relationships.

The first stage is the forming, and this process is to form a dependency and dependence between the members. So when the group is at this stage, the main task is to eliminate the uncertainty and fear that arises when members join this group. The second stage is the storming, and the interpersonal relationship problem is the most important unstable factor at this stage. At this point, team members will face problems caused by differences of opinion and personality conflicts between members. Tuckman mentioned in the discussion that some groups will have long-term stalemate between members due to factors such as values, personality, opinions, etc., and thus cannot enter the next stage (Tuckman, 1965). In other words, not all groups can pass the storming to enter the norming. The main goal of this stage is to make team members willing to express their ideas and build a sense of trust and belonging among within the group. After the team passed the storming and entered the norming, the members resolved their differences and personality conflicts, which created a greater sense of intimacy and formed a spirit of cooperation (Tuckman, 1965). There is a strong sense of identity and belonging between the members at this stage, and will focus again on work tasks and team goals. Compared with the previous stage, the emotions of tension and anxiety have fallen sharply, so the work performance will be better. During this period, the team's culture and influence are more intense, and individuals will have a sense of self-esteem and security for the entire group.

**Proposition 2: group cohesiveness is positively related to group development**

Through reviewing the relevant literature on group cohesiveness and group development, this study consider that group cohesiveness has an important influence in promoting group
development. The first three stages of group development that Tuckman described in his research are related to the procedure of individual adaptation to the whole group. Hogg defines the attraction of group cohesiveness as illustrated by social attraction and self-categorization theory. Substituting his argument into Tuckman's group development reveals that individuals in the group are gradually shifting from the "personal identity" of the forming period to the "social identity" of the norming period. Moreover, according to the social attraction theory, members will have a holistic identity with the internal groups, that is, they will link their own values with the group values (Tuckman, 1965; Turner et al, 1999).

In addition, in Tuckman's group development, as the group progressed from the storming period to the norming period, the team reduced interpersonal pressure and membership differences, so the members' work concentration will be greatly improved. It is another component of group cohesiveness-task commitment. The commitment of team members to complete team tasks and achieve organizational goals creates cohesiveness (Yukelson, Weinberg & Jackson, 1984; Guzzo, 1995). Such groups will have strong interdependence and be responsible for the team's work. Through the goal of accomplishing the task together, group cohesiveness will be generated among the members (Beal et al, 2003).

Based on the above discussion, comparing the group cohesiveness with Tuckman's group development shows that the improvement of group cohesiveness will make the team have a greater chance to pass the storming period into the norming period, and the interpersonal interaction and work performance will be greatly improved. Therefore, this study concludes that there is a significant positive relationship between group cohesiveness and group development.

2. Conclusion

This study aims to provide organizational and group leaders an article exploring the workplace bullying caused by black sheep effect from the perspective of social psychology, and to discuss the relationship between black sheep effect and business management field. Analyze whether these phenomena have a positive contribution to the group or organization from an organizational perspective.

After the discussion in the previous chapters, in the first proposition, we found that there are two main parts of the relationship between black sheep effect and group cohesiveness. The first part is the researches on social identity theory and self-categorization theory, which explains the group phenomenon with social identity value and group identity. The second part is the phenomenon of gathering and crowding out within the group caused by social attraction and sense of belonging. It is speculated from the above two major points that black sheep effect will have a positive impact on group cohesiveness.

In the second proposition, we consider that the theory of group cohesiveness and group development has two elements. The first is the association between group identity and self-value as mentioned in self-categorization theory and social attraction. The second is the task commitment, which illustrates the formation of cohesiveness in the group and its important application in group development. From the above two points, there is a significant positive relationship between group cohesiveness and group development.
Based on the above, this study demonstrates that black sheep effect will enable the group to enter the work-oriented stage more quickly and accelerate group development through the establishment of group cohesiveness.

This study refers to the contribution of the existence of black sheep to the group or organization, but in any case, workplace bullying is definitely not the right behavior. For the leader, only by understanding the reasons behind the emergence of workplace bullying, it is possible to eliminate such things and find solutions. This is also the impact that this study hopes to bring, and to encourage people to analyze and solve problems in a more rational way rather than shirking responsibility or punishing the litigant.

In future work, the research attempts to propose a negative impact of black sheep effect on team management and speculates on the solution and the main points of prevention. It is hoped that the research will provide more different contributions to this topic.

Acknowledgment
We would like to thank the financial assistant and all support related to this study by. The Ministry of Science and Technology.

3. References


Tuckman, Bruce W (1977). The Five Stages of Project Team Development.


Exploring A Model for Strategic Buyer-Supplier Relationship:
FMCGs Industry in Thailand

Suppasit Sornsri
Assumption University
suppasitsrn@msme.au.edu

Abstract

The main objective of this study is to propose a conceptual framework for strategic buyer-supplier relationship in the context of fast moving consumer goods (FMCGs) industry for future empirical testing. In developing a sustainable relationship with supply chain partners, firms attempt to understand specific measures that facilitate such a relationship and its key drivers. To gain insights into practical and theoretical strategic relationship, this study responds to two main research questions, namely on how to develop dimensions of relationship quality in a strategic manner, as perceived by the buyers, in the B2B market, between buyers and suppliers in FMCGs industry and what factors would influence such a strategic relationship quality. This study adopts the Investment Model (Rusbult, 1980) to compose the dimensions of relationship quality in FMCGs business context to meet such a purpose. Subsequently, the researcher examines the influential factors as mainly recommended on the basis of practical standpoints and the extant academic literatures. The research methodologies consisting of literature reviews, document analysis, and preliminary exploratory interviews with experienced sourcing practitioners were employed in order to propose the conceptual framework and state the propositions. This study is expected to contribute to scholarly studies on business relationship marketing in FMCGs industry. Future research direction is finally discussed.

Keywords: B2B relationship quality, investment model, FMCGs in Thailand
1. Introduction

In the face of continuous increase of competition, companies have increasingly realized the importance of how to create and maintain their competitive position in both domestic and international markets (Folinas & Fotiadis, 2018). It has been emphasized that businesses should develop close relationship with their customers and their suppliers in order to develop and provide goods and services personalized to the needs of customers. Buyers and sellers recognize that they need to jointly cooperate to achieve the mutual goals in terms of cost, quality, delivery, and time (Monczka, Handfield, Giunipero, & Patterson, 2016). As a result, collaborative relationship becomes more essential and motivates firms to create new business models that emphasize on trust, cooperation, and information exchange (Folinas & Fotiadis, 2018). As companies have been collaborating, they would experience benefits when the companies coordinate their efforts and investments in creating collaboration, resulting in increased profit performance and realized competitive advantages (Jap, 1999). Hence, this research concentrates on the need to develop collaborative-oriented relationships between suppliers and buyers in FMCGs industry.

Relationship quality, as a multi-dimension construct in the B2B context has been often studied as a relational construct reflecting strategic relationship or collaboration between buyers and suppliers (Chou, Chen, & Kuo, 2018). Despite that fact, previous empirical B2B relationship quality studies frequently focused on want-to dimension of relationship (e.g. trust, commitment) and increasingly on ought-to dimension (Gyau, Spiller, & Wocken, 2011; Chou et al., 2018) (e.g. cooperation, collaboration). There seems to be other dimensions, ought-to and have-to dimensions, as pointed out in the Investment Model (Rusbult, 1980; Moon & Bonney, 2007). In particular, Moon and Bonney (2007) suggested to apply the Investment Model to B2B relationship, which would help comprehend the three dimensions of B2B relationship quality. Empirical B2B relationship studies (e.g. Ganesan, 1994) employing such a theorized model have been limited, thereby providing a good venue for this study to incorporate a need-to dimension of relationship into B2B relationship quality dimensions.

The collaboration between buyers and suppliers becomes increasingly important as well as the influential factors that motivate it. It is due to the facts that more strategic criteria of supplier selection or relationship development play more important role in today’s highly competitive business environments, especially in the context of FMCGs, which has been understudied. These criteria including traditional, strategic, and currently required criteria from buyers’ perspectives will be explored in this study. Ellis (2015) has argued that five important factors that FMCGs companies want from their suppliers to be considered in a strategic relationship include the best price, operational effectiveness through technological competence, quality, sustainable sourcing, and innovation plus technical expertise. However, these five factors have not been widely and empirically tested in a single study of FMCGs strategic buyer-supplier relationship model (e.g. Schulze, Wocken, & Spiller, 2006; Gyua, Spiller, & Wocken, 2011). Moreover, the knowledge relevant to sourcing from practitioners reveals that some important factors demanded in B2B relationship quality, especially in FMCGs context, should also include information exchange. Therefore, it is worth examining the relationships between these influential factors and B2B relationship quality dimensions developed for the FMCGs business context of this study. This study also posits that product importance will moderate the relationship between relationship quality and its determinants.
Fast-Moving Consumer Goods Industry: Context of the Study

The fast-moving consumer goods (FMCGs) industry is characterized as the industry with low-priced products that consumers use or consume for a certain period of time (Baron & Jones, 1991) and are interchangeably called consumer packaged goods. Categories of FMCGs product consists of packaged food and dairy products, tableware and paper products, pharmaceuticals, plastic and electronics products, stationery and printing products, household goods, beverages, and so on (Economy Watch, 2010). The FMCGs industry is important to many economies. The FMCGs represents a large spending area of consumers in all countries (Çelen, Erdo, & Taymaz, n.a.) and FMCGs retailers are closely related to their suppliers or manufacturers. To meet consumers’ more advanced requirements and respond to consumer digital lifestyles in today’s highly competitive and integrative traditional and omni-channel markets, buyers and suppliers should closely work together towards a higher level of collaborative relationships to gain competitiveness in their supply chain and to optimize value for their end consumers (SCB, 2011).

2. Research Objectives

As far as the earlier mentioned gap of research is concerned, this present research is going to incorporate and build a conceptual model of relationship quality with six determinants including price satisfaction, consistent quality, technological competence, sustainability, innovation, and information exchange. Doing so would also help fill the gap that empirical studies on business markets’ relationship building constructs in the FMCGs industry in Thailand have been limited.

Therefore, the objectives of this research are 1) to propose a set of B2B relationship quality dimensions formed through the lens of the Investment Model (Rusbult, 1980); 2) to examine the relational linkages between the six determinants of relationship quality and the proposed relationship quality dimensions, taking into account product importance as a moderating variable; and, as a consequence, 3) to propose a conceptual framework of strategic buyer-supplier relationship quality for future empirical investigation based on buyers perspectives of the FMCGs companies in Thailand.

3. Literature Reviews

Theories Related to Collaboration and B2B Relationship Quality

The Changing Nature of Relationships: Mutual Collaborative Relationship

Collaboration is defined as the process by which two or more parties emphasize greatly on persistent cooperation to maintain a business relationship over time (Monczka et al., 2016). This definition gives rise to the ought-to dimension of relationship quality. To collaborate, a perception of purchasing functions has been to a relational view (Baily, Farmer, Crocker, Jessop, & Jones, 2008). It was noted that companies today focus more on the development of mutual supplier-buyer relationships. A new trend of relationship is sharing mutual benefits between buyers and suppliers in terms of shared confidence, technology, commitment, efficiency, information exchange, and support. However, these shared benefits will vary, depending on business relationship context. Figure 1 shows these mutual benefits from the supplier-buyer relationship points of view.
Relationship Quality in B2B Context

Relationship quality in B2B context can be defined as a form of appropriate levels of long-term and progressive working and cooperating inter-organization relationship between buyer and seller who aim to achieve mutual outcomes with minimum problems (Shiu, Henneberg, & Naude, 2016). Relationship quality is a multidimensional construct. Various combinations of relationship quality measures have been developed from different definitions it suits the study contexts (Yen, Wang, & Horng, 2011; Lalaeng, Jadesadalug, & Sansook, 2016; Chou et al., 2018). Most of the combinations include satisfaction, trust, and commitment as key elements of relationship quality, with trust as the most widely used element (Ahearne, Jelinek, & Jones, 2007; Fu, Lin, & Sun, 2013; Winit & Kantabutra, 2017). Other research contexts, specifically financial services, logistics services, retails, Thai SMEs, etc. comprehended those key elements of relationship quality with additional elements including inertia, dependence, relationship specific investment, identification (Yanamandram & White, 2010; Chou et al., 2018; Nyaga & Whipple, 2011; Winit & Kantabutra, 2017).

It is noted that the aforementioned elements used to measure relationship quality are in line with those proposed in the Baily et al. (2008)’s mutual relationship structure representing collaborative relationship. However, the Investment Model (Rusbult, 1980; Moon & Bonney, 2007) recommended that relationship perspectives should be reflecting want-to, ought-to, and have-to types of relationship. Investigating existing dimensions of relationship quality in B2B empirical studies provided a research gap consistent with the observation in the Investment Model. More specifically, the B2B relationship quality dimensions with want-to, ought-to, and have-to aspects included in a single model of previous empirical studies have been very limited (e.g. Chou et al., 2018). To illustrate, most of the studies captured only want-to (Yen et al., 2011; Fu et al., 2013; Winit & Kantabutra, 2017) and want-to together with have-to (de Ruyter, Moorman, & Lemmink, 2001; Nyaga et al., 2011). Some captured both ought-to and have-to aspects in a single study (Yanamandram & White, 2010). It was obviously revealed that only one B2B relational quality study incorporated all the three aspects in a single model (Chou et al., 2018). They include trust, commitment, dependence, and collaboration in the study of logistics services. Therefore, this study attempted to develop a comprehensive set of relationship quality measures that are consistent with notions of the Investment Model (Rusbult, 1980) for the FMCGs context.
Investment Model (Rusbult, 1980)

The Investment Model presents the interpersonal relationship process (Rusbult, 1980; Caryl, 2011), also applicable to business relationship, that explains the reasons for which business partners stay in a relationship. Those reasons include satisfaction, quality of comparable alternatives, and investment size. Satisfaction is the level of satisfaction with the current relationship upon their overall positive experiences, which indicates a "want to" perspective. Quality of comparable alternatives indicate the reciprocity of staying in the relationship because of continued benefits obtained, indicating an "ought to" form of relation. The investment size means the invested resources in the relationship in terms of not only money but time, efforts, information, tangible and intangible assets also. This reflects the need to remain in the relationship due to the sunk costs having so far incurred from the relationship until now and to turn into valuable exchange in the future. Next, the three dimensions of relationship quality for this study, specifically trust, cooperation, and dependence were developed from the application of this Investment Model (Rusbult, 1980).

Relationship Quality Dimensions in this Study

Trust

Trust has been one of the relationship quality dimensions in most of the B2B relationship quality studies (e.g. Yen et al., 2011; Winit & Kantabutra, 2017). In this study, trust is treated as a want-to element of buyer relationship quality. Trust is an intangible aspect that refers to the belief in the nature, capability, quality, and truthful action of the other party (Monczka et al., 2016). Trust in a supplier means perceived honesty and integrity of the supplier and the supplier’s ability to perform actions as promised in a positive way for the benefits to the firms (Nielsen, 1997; Anderson & Narus, 1990) Based on trust, the supplier would be willing to share cost data with a buyer. As a result, both parties jointly try to help share ideas about how to reduce costs (Monczka et al., 2016). Relationship marketing researchers defined trust in terms of one party’s willingness to rely on the other relationship party who makes one party confident and show the party reliability, honesty, as well as integrity (Moorman, Rohit, & Gerald, 1993; Morgan & Shelby, 1994; Garbarino, 1999).

Cooperation

Cooperation is included as a dimension of relationship quality in this research because it is a prerequisite to collaborative business relationship. Cooperation is crucial in FMCGs context since it involves necessary information exchange (Spekman, Kamauff, & Mohr, 1998) as also emerged during the study’s exploratory interview with a sourcing practitioner in a FMCGs business. This study considers cooperation as an ought-to element of relationship quality because it is an action and an expectation based on the reciprocal exchange (Lancastre & Lages, 2006) between buyer and supplier in the relationship Business partners consider their comparable suppliers to whom they feel more cooperative than the others so that in turn they could cooperate well and reinforce relationship quality. Cooperation in this study is defined as the situations that both buyer and supplier works together to accomplish mutual benefits, which help them to achieve the outcomes greater than those that would be achieved if performed individually in buyer or supplier own interests (Lancastre & Lages, 2006). Cooperation as a dimension of B2B relationship quality can be measured in terms of regular interaction, open communication between buyer and supplier, overall satisfaction with the interaction with the supplier (Lancastre & Lages, 2006).
Dependence

Ganesan (1994) provided an empirical support that trust and dependence played important roles in determining the long-term orientation of both buyers and sellers, in the dyadic retail relationship context. Dependence is defined as the need of a buyer to maintain a business relationship with a supplier for goal accomplishment and the degree of dependence will be higher when the supplier can help a buyer achieve important valuable and profitable goals, constituting to buyer investment in specific assets in the relationship (Ganesan, 1994). These definition items are consistent with the notions of investment size in the Investment Model (Rusbult, 1980). Therefore, dependence could be considered as the have-to dimension of relationship quality. Dependence has been studied in many B2B relationship quality studies; yet it has been understudied together with trust (want-to aspect) and cooperation (ought-to aspect) in a single model (see, for example, Scheer, Miao, & Garrett, 2010; Chen, Chen, & Wu, 2017). Inclusion of trust, cooperation, and dependence would provide a better total picture of a strategic relationship building approach and would provide the empirical support for the application of Investment Model (Rusbult, 1980). In the context of FMCGs, dependence plays theoretical and practical roles. Dependence is a relational effect that, if implemented effectively and fruitfully to both buyer and supplier, can help create buyer-supplier relationship sustainably, as empirically evidenced in terms of increase in relationship value (Chen et al., 2017), long-term orientation (Ganesan, 1994; Scheer et al., 2010), and buyer insensitive to competitive offerings (Scheer et al., 2010).

4. Proposed Conceptual Framework

Based on the literature reviews on online article and previous empirical studies on business-to-business relationship quality, knowledge from the preliminary interviews with two sourcing practitioners in FMCGs businesses, and document analysis on the online information publicly accessible of a well-established and leading hypermarket in Thailand, the conceptual framework (Figure 2) depicts that price satisfaction, technological competence, consistent quality, sustainability, innovation, and information exchange could enhance buyers’ relationship quality as indicated with trust, cooperation, and dependence. The enhancement would be moderated by an importance of the products purchased from the buyers’ strategic supplier.
Figure 2. A Proposed Conceptual Framework

- Price Satisfaction (PSA)
- Technological Competence (TEC)
- Consistent Quality (CQL)
- Sustainability (STB)
- Innovation (INO)
- Information Exchange (IFO)

Factors:
- Trust
- Cooperation
- Dependence

Drivers:
- Product importance
Determinants of Relationship Quality

Price Satisfaction

Price satisfaction is the psychological effect of the difference between the expected prices and the perceived price and it is a multi-dimension construct that emerges over time (Gyau et al., 2011). Price satisfaction consists of subcomponents including favorable price, comparable price, and good price (Gyau et al., 2011). Moreover, a supplier should perform well in price, for example, its price should be transparent, stable, and reliable. Price levels that satisfy buyers reflect in fair price or the lowest total cost of ownership and the price that both buyer and supplier can generate sustainable margin advantage (Ellis, 2015). This study’s document analysis implied that a buyer would maintain a strong relationship with the supplier when the buyer could obtain such the best price continuously from the supplier. For example, a ten-year relationship between a buyer and its apparel supplier has been well established due to the fact that the supplier has continued offering its low-priced, yet high-quality products to the retailer. Such a relationship has been also created through a close working cooperative relationship for design and quality development continuously. Product price change is one type of uncertainty that buyer would not be able to predict, leading both buyer and supplier to depend on each other (Oliver, 1990; Noordewier, John, & Nevin, 1990). Therefore, the first proposition is stated as:

Proposition 1: Price satisfaction would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.

Technological Competence

Technological competence is a measure of a company’s operational effectiveness (Ellis, 2015). It can be shown in the ability of the company to supply the products consistently at the right time, based on the buyer’s budget, streamlined utilization of resources, and quick response to escalating consumer demand as well as the ability to help buyer firm to become the first to its market (Ellis, 2015). He argued that the ability to do so would strongly affect the buyer’s return on investment (ROI). For example, a preliminary interview with the sourcing practitioner suggested that new technology innovated by the supplier must not weaken the buyer firm’s operational performance. Salam (2008) found that technology had a positive impact on the degree of collaborative supply chain relationship in the FMCGs business sectors in Thailand, more specifically between retail convenience stores and the suppliers of FMCGs. It was maintained that (Tan & Ndubisi, 2014) technology includes accessible knowledge developed for creating expertise, experience, equipment, method, and process properties in order to streamline resources and performance of the organizations. Technology such as production technology includes its advancement, automation, flexibility, which can interrelate management process, structure, and people roles for firm performance. Suppliers who can apply modern technology effectively would frequently differentiate and vary their goods and services, gain economies of scale, lower manufacturing costs, facilitate speedy and efficient information sharing. For example, this study’s document analysis revealed that cooperation between retail buyer and its suppliers in technological development could help both manage stocks and predict sales volume more accurately as well as increase the products shelf life. Tan and Ndubisi (2014) proposed that technology has been positively related to relationship quality. Although their association was not significant, the study was conducted in palm oil processing context in Malaysia. Overall, the second proposition is:
**Proposition 2:** Technological competence would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.

**Consistent Quality**

Consistent quality means the quality that conforms with the brand’s promise every time the products have been delivered and that meets requirements during rapidly higher demand (Ellis, 2015). He pointed out that buyers want to avoid costs of defective quality and use quality as their competitive value over their competitors. With his view, it is implied that a supplier that could provide consistent quality and improve its quality to keep up with buyer’s competitor quality would be able to strengthen the relationship with the buyer. The study’s document analysis determined that a retail buyer had a successful cooperative relationship with its largest supplier as the supplier could deliver quality products during huge demand periods directly to its distribution center at the satisfactory prices as perceived by its consumers. In addition, a ten-year relationship between the buyer and its apparel supplier as found in this study’s document analysis has been well established due to the facts that the supplier has continued offering its high quality products at low price to the retailer. Such a relationship has been also created through a close working cooperative relationship for design and quality development continuously. FMCGs retailer’s different perceptions of higher quality of the new brands or stores, such as new Asian brands, offered by suppliers of FMCGs products would influence relationship quality with which the buyer has already built (Jung Choo, Jung, & Hee Chung, 2009). Jung Choo et al. (2009) found, in a fashion B2B market, that product quality was an important influencer of relationship quality enhanced through satisfaction with suppliers’ product, with supplier cooperation, and with the relationship. Therefore, consistent quality should be a minimum requirement for relationship quality enhancement. With these, the researcher offers the third proposition as:

**Proposition 3:** Consistent quality would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.

**Sustainability**

Sustainability refers to the ability of the supply chain members to set and meet their sustainability goals, basically regarding social and environmental sustainability (Ellis, 2015; Johnson & Flynn, 2015). Increasingly, consumers nowadays are more interested in the environmental sustainably brands (Ellis, 2015). The sustainability trend in supply chain is growing, such as sustainable sourcing of Unilever (Ellis, 2015) and a hypermarket’s green supplier. Since 2017, there have been global changes in environmental, social, and technological conditions (Wongsravit, 2018). Sustainable sourcing of supplier is one of the strategic or currently required factors that the buyer will seek when developing a strategic relationship with supplier (Johnson & Flynn, 2015). Social and environmental sustainability dimensions have been emphasized (Johnson & Flynn, 2015). Aljarah, Emeagwali, Ibrahim, and Ababneh (2018) found that corporate social responsibility had a positive relationship with trust, which was moderated by economic development factor. One study (Tiwari, Turner, & Younis, 2014) provided an empirical support that suppliers’ social responsibility of purchasing had a positive effect on performance, trust, and cooperation of suppliers. Empirical literatures on sustainable sourcing are rather limited probably due to availability of a global sustainability construct or difficulty in determining its scale content validity. A study of relationship quality of sustainable businesses in Thailand found that sustainable practices of the sufficiency economy-oriented firms could develop relationship quality with their stakeholders (Winit &
Kantabutra, 2017). Their relationship quality dimensions were comprised of satisfaction, trust, commitment, identification. Therefore, the fourth proposition is:

**Proposition 4:** Sustainability would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.

**Innovation**
Buyer expects that, in strategic relationship, suppliers must innovate through their innovation project initiatives, managerial and technical expertise development, and continuous improvement (Ellis, 2015; Johnson & Flynn, 2015). Dekoulou and Trivellas (2017) found that process and product innovation performance (e.g. the number and the novelty of new products) did not only have a positive consequence on customer relationship value, but also a direct positive effect on financial performance of the firm. They argued that innovation through product and process improvement could help firms greatly differentiate their goods and services from their rivals and also increase revenue and profitability growth rate. For example, a retailer’s supplier developed a new feature of packaging at lower costs and with more environmental friendly feature, and cooperated with the supplier to initiate new business model. Lages, Silva, and Styles (2009) proposed that product innovation positively influenced relationship performance with importer, which adopted relationship quality, reputation, and loyalty as the scales. An empirical B2B relationship study using ISO14001-accredited manufacturing firms of Thailand posited that the green innovation strategies had a positive impact on the firms’ customer relationship and competitiveness (Lalaeng et al., 2016). Consequently, the researcher postulates that:

**Proposition 5:** Innovation would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.

**Information Exchange**

Despite the earlier mentioned determinants suggested for FMCGs in general economies, this study’s exploratory interview discovered a missing linkage between information exchange and relationship quality in the FMCGs industry, which was strongly emphasized and would perhaps help strengthen the relationship in terms of cooperation. Information exchange or communication is a formal or informal sharing of important and prompt information in the right amount and with the right quality of communication between buyer and supplier (Lancastre & Lages, 2006). The study’s interview revealed that exchange of information responsively is needed especially during insufficient information periods. They must cooperate together to reduce uncertainly. Johnson and Flynn (2015) emphasized that trend is towards single sourcing, more focus on buyer-supplier alliances and partnerships, and greater information sharing, implying that collaborative buyer-supplier relationship needs close attention among buying and supplying firms. Lancastre and Lages (2006) found that communication and information exchange was positively and directly related to trust. Information exchange would allow both buyer and supplier to plan and forecast together and suggest customers properly about their products needed (Chou et al., 2018). They found that good communication influenced collaboration including indicators such as working jointly to create new ideas and sharing proprietary information continuously, and in turn affected trust and dependence positively. So, the sixth proposition is formulated as:

**Proposition 6:** Information exchange would enhance the relationship quality (trust, cooperation, dependence) between buyers and their suppliers.
Product Importance: A Moderating Effect

This study posits that product importance will moderate the relationship between relationship quality and its determinants. For example, when the product purchased is classified by the buyer as strategic type, the relationship between sustainability and relationship quality might be smaller than that of the non-strategic type. It means the more strategic level of the products purchased strengthens the effect of sustainability capability of supplier on relationship quality. Product importance is defined as the perception of the purchasing firm on financial and strategic impact of a product on the firm success of its missions or objectives (Cannon & Perreault, 1999). For example, in retail business some products available in the store will be more strategic to the retailer’s profitability and customer value than the other items, such as stationery products it purchases for resale. Athanasopoulou (2009) predicted that product criticality can moderate the relationships particularly when the purchased item is strategic to the business or when the accurate delivery requirements need to be met by the supplier for achieving end consumer requirements. It can be mentioned that the more strategic level of the product purchased strengthens the effect of sustainability capability of the supplier on relationship quality. Therefore, the study’s seventh and final proposition is:

**Proposition 7**: Product importance would positively moderate the relationship between the six influential factors (e.g. price satisfaction, technological competence, consistent quality, sustainability, innovation, information exchange) and the relationship quality (trust, cooperation, dependence).

5. Conclusion and Future Research Direction

Strategic buyer-supplier relationship can be developed through a certain level of relationship quality, which employs trust, cooperation, and dependence as relationship dimensions. There have been empirical evidences supporting that these dimensions of B2B relationship quality, in FMCGs industry, can be strengthened through the influences of price satisfaction, technological competence, consistent quality, sustainability, innovation, and information exchange to be exercised by suppliers. In addition, the effects of these determinants should be moderated by the product importance as perceived by the buyers. These arguments have been summarized and proposed in the conceptual framework section.

Future study could attempt to provide empirical support for the conceptual model proposed in this present study so as to enhance the contribution of the model to yield significant research findings beneficial to FMCGs firms, scholars, and researchers. In particular, as a matter of fact that the influential criteria or determinants of relationship quality in this study have been captured from both practical and theoretical perspectives, this study would enhance knowledge and understanding of business marketing managers on their business customer relationship management. Future research may also replicate this study’s proposed model to test in other contexts of industry similar to this study’s context.

The researcher proposes that the defined target population comprises the FMCGs company members of the Federation of Thai Industries (FTI). The companies’ contact details are available in the FTI website. The samples will include purchasing executives or senior buyers of the companies listed in the FMCGs sectors of FTI, namely food processing, footwear, pharmaceuticals, garments, textile, sugar, power producer, and herbal.
References


**Research in Thai Language:**