ICLT 2016
The 8th International Conference on Logistics & Transport 2016

PROCEEDINGS
OF THE INTERNATIONAL CONFERENCE
ON LOGISTICS AND TRANSPORT

Next Generation Supply Chains: The Future of Supply Chain Management

6th - 8th of September 2016
Grand Copthorne Waterfront Hotel, Singapore

SIM UNIVERSITY

THAMMASAT BUSINESS SCHOOL

Faculty of Engineering

Supply Chain Asia
Connect. Communicate. Collaborate.

SEACL

About Supply Chain Asia Forum (SCAF)

Supply Chain Asia has been organising its annual conference since 2006. The annual Forum targets supply chain and logistics professionals in Singapore and Asia, and generally attracts more than 500 delegates to its event. The Forum provides a platform for networking as well as sharing of knowledge, trends and development impacting the industry.

About Green Freight Asia (GFA)

Green Freight Asia (GFA) is an industry-led programme. GFA is incorporated in Singapore as a non-profit organisation. GFA is a member-driven organisation mainly of shippers and carriers. Its key objective is to help lower fuel consumption across Asia Pacific sourced road freight movements, reduce CO_2 emissions from these movements and lower shipping costs across the entire supply chain.

About International Conference on Logistics & Transport (ICLT)

International Conference on Logistics & Transport (ICLT) is organised by the Centre for Logistics Research at Thammasat Business School, Thammasat University and Excellence Centre in Logistics and Supply Chain Management, Chiang Mai University. The 2016 event will be held in Singapore, hosted by the School of Business at SIM University from 6th till 8th September 2016. This major event for researchers in transport, logistics, supply chain and value-chain management has been chosen after successful conferences in Thailand, New Zealand, Maldives, Japan, Malaysia and France. The conference's best paper will be invited and considered for publication in the International Journal of Logistics: Research and Applications.

Supply Chain Asia Forum Floorplan

REGISTRATION
AVAILABLE
BOOKED

EXHIBITORS

R1 - CONFERENCE REGISTRATION
R2 - GFA, ICLT REGISTRATION
R3 - TRADE VISITORS REGISTRATION

B01 - Manhattan Associates
B02 - Zyllem
B03 - Infolog
B04 - JDA Software
B05 - Gigaquirks
B06 - Integration Point
B07-B08 - SSI Schaefer
B09-B10 - Oracle
B11-B12 - YCH
B13-B14 - Swisslog
B15 - Kewill Pte Ltd
B16 - Kerry Logistics
B17 - La Spezia
B18 - TNETS

F1 - Container Depot Association (CDAS)
F2 - Singapore Logistics Association (SLA)
F3 - Singapore Aircargo Agents Association (SAAA)
F4 - Vietnam Supply Chain (VSCC)
F5-F7 - General Brochure Station
F8-F9 - ICLT
F10 - TBC HR Consulting
F12-F13 - Singapore Workforce Development Agency (WDA)
F14-F16 - NTUC U Associate
F17-F19 - Supply Chain Hackathon

General Chairs

Assoc. Prof. Dr. Ruth Banomyong,
     Thammasat University, Thailand
Assoc. Prof. Dr. Apichat Sopadang,
     Chiang Mai University, Thailand

Programme Chair

Dr. Poti Chao,
     Chiang Mai University, Thailand

Organizing Committee

Dr. Montira Yingvilasprasert,
     Thammasat University, Thailand
Dr. Poti Chao,
     Chiang Mai University, Thailand
Ms. Tipavinee Suwanwong
     Chiang Mai University, Thailand

Local Chairs

Assoc. Prof. Yan Weng Tan,
     SIM University, Singapore
Dr. Huay Ling Tay,
     SIM University, Singapore

International Scientific Committee

Prof. Dr. Prem Chhetri,
     RMIT University, Australia
Prof. Dr. James H. Bookbinder,
     University of Waterloo, Canada
Dr. Jyri Vilko,
     Lappeenranta University of
     Technology, Finland
Prof. Dr. Yacine Ouzrout,
     University of Lyon II, France
Prof. Dr. Ing. Hartmut Zadek,
     Otto-von-Guericke-University,
     Germany
Dr. Graham Heaslip,
     National University of Ireland, Ireland
Dr. Pietro Evangelista,
     The University of Naples Federico ll,
     Italy
Asst. Prof. Dr. Magnus Andersson,
     Lund University, Sweden
Prof. Dr. Anthony Beresford,
     Cardiff University, Wales, UK
Prof. Dr. David Grant,
     Hull University, UK
Prof. Dr. Chee Yew Wong,
     Leeds University, UK
Prof. Dr. Dewinder Grewal
     World Maritime University, Sweden

Dr.-Ing. Henning Strubelt
     Otto-von-Guericke University
     Magdeburg, Germany
Dr. Adrian E Coronado Mondragon,
     Royal Holloway University of London,
     UK
Prof. Dr. Manouchehr Vaziri,
     Sharif University of Technology, Iran
Dr. Harlina Suzana Jaafar,
     UniversityTechnology Mara, Malaysia
Prof. Dr. Paul Childerhouse,
     Massey University, New Zealand
Assoc. Prof. Tan Yan Weng,
     SIM University, Singapore
Asst. Prof. Dr. Polin Lai,
     Chung Ang University, South Korea
Assoc. Prof. Dr. Yenming J. Chen,
     National Kaohsiung University of
     Science & Technology, Taiwan
Assoc. Prof. Dr. Ted T.C. Lirn,
     National Taiwan Ocean University,
     Taiwan
Assoc. Prof. Dr. Nakorn Indra-Payoong,
     Burapha University, Thailand
Assoc. Prof. Dr. Sakgasem Ramingwong,
     Chiang Mai University, Thailand
Dr. Trinh Thi Thu Huong,
     Foreign Trade University, Vietnam

INTRODUCTION

This is the 8th international conference organised by the Centre for Logistics Research at Thammasat Business School, Thammasat University and the Excellence Centre in Logistics and Supply Chain Management, Chiang Mai University. This is major event for researchers in transport, logistics, supply chain and value chain management especially in the Asia Pacific region. This year's event in Singapore, is a continuation of past successful conferences held in ChiangMai (Thailand), 2009; Queenstown (New Zealand), 2010; Male (Maldives), 2011; ChiangMai (Thailand), 2012; Kyoto (Japan), 2013; Kuala Lumpur (Malaysia), 2014 and Lyon (France), 2015. This year's event is held during September 6th to 8th, 2016 and is hosted by SIM University, Singapore. The event this year will be held in conjunction with Supply Chain Asia's annual conference.

Under the theme of "Next Generation Supply Chains: The Future of Supply Chain Management", the following topics were welcomed at the conference:

- Procurement & Supply Management
- Planning & Forecasting
- Relationship & Collaboration
- Production Planning & Operations
- Inventory Fulfilment
- International Logistics
- Humanitarian Logistics
- Maritime Logistics
- Logistics Services Providers
- Logistics Development Policies
- Supply Chain Design/Configuration
- Supply Chain Risk Management
- Sustainable Supply Chain
- Production & Inventory
- Supply Chain Performance
- Global Supply Chain
- Multimodal Transport
- Freight Logistics
- E-Logistics
- Logistics Facilitation

The conference best paper will be invited and considered for publication in the International Journal of Logistics Research and Applications.

WELCOME ADDRESS FROM THE CONFERENCE CHAIRS

On behalf of the organizing committee, we would like to welcome all participants to the 8th International Conference on Logistics and Transport (ICLT2016). It has been 8 years since the first conference was hosted in Chiang Mai (Thailand). This ICLT conference is expected to continue on an annual basis in order to facilitate the sharing of ideas, research findings, and teaching directions related to logistics and supply chain from an academic perspective. We are also striving to make our next event in 2017 included in the SCOPUS database.

The theme for this year's event is "Next Generation Supply Chains: The Future of Supply Chain Management". Due to constant changes and evolution in technologies and management practices, traditional supply chain practices of moving a product from point A to point B has become more complex with considerable effort in planning and co-ordination required.

However, due to the current market situation, the search for innovation is one of the key topic in differentiating the firm itself with its competitors but without careful planning, this might hinder a firm's future business performance.

"Next Generation Supply Chains" is an important concept. It can be used as a guiding principle to help improve firms' resources, capabilities and operational efficiencies through sustainability across the entire supply chain continuum. The challenge to harmonise these subtle changes between supply chain members remains an elusive challenge.

Nonetheless this concept does lead to greater opportunities in reviewing and revisiting processes, operations, and production activities that can comply with this given paradigm. Other potential advantages of "Next Generation Supply Chain" is continuous cost reduction, waste minimisation, rapid cycle time response, risk mitigation, and asset utilisation.

We would like to sincerely thank all presenters, reviewers, our scientific committees, and keynote speakers for their appreciated contribution. We cannot forget the important contribution of our sponsors, SeaOil (Public) Co. Ltd, Wice Logistics (Public) Co. Ltd., and SCG Logistics Management Co. Ltd who has supported us through the years.

We also apologise in advance if there are any difficulties you may encounter while participating the conference. Finally, we hope that you will enjoy this conference and we hope that the deliberations will be fruitful and successful.

Ruth Banomyong
ICLT General Chair

Apichat Sopadang
ICLT General Chair

WELCOME ADDRESS FROM THE LOCAL CHAIRS

We welcome all of you to the 8th International Conference on Logistics and Transport (ICLT 2016) in Singapore. SIM University is privileged to host the ICLT conference this year.

We live in a globalised business world where materials and components are sourced worldwide, products are manufactured offshore and distributed to different countries after local customisation. The flexibility to respond to changes in market conditions and the ability to strategise appropriate measures in response to these changes are vital because the customer in today's marketplace has become more demanding, not just of the quality of the product, but also that of customer service.

Rapid urbanisation and the rise of the affluent middle class in Asia have led to greater demand for logistics services in the region. Intra-Asian trade is set to increase significantly as Asian countries evolve to become major consumer markets. Increasing economic integration among Asian countries through the ASEAN Economic Community (AEC), Trans-Pacific Partnership (TPP) and China's "One Belt, One Road" will further spur demand for logistics services.

Emerging trends in the past few years have presented the logistics and transport industry with exciting challenges and opportunities to be better, faster, leaner and more productive. Trends such as big data, 3D printing, automated guided vehicle (or mobile robot), unmanned aerial vehicle (or drone) and augmented reality can pave the way for game-changing solutions.

The theme of this conference is indeed timely as the next generation supply chains dawn upon us. We trust this conference will provide you with the platform for a meaningful exchange of ideas and findings, as well as facilitate education and research efforts in the field of logistics and supply chain management. And to our friends from overseas, we hope that you will be able to take some time off to enjoy the sights, sounds and culinary delights that Singapore has to offer.

We wish you a memorable experience at ICLT 2016.

Tan Yan Weng
ICLT Local Chair

Tay Huay Ling
ICLT Local Chair

CONTENTS

A FRAMEWORK FOR ANALYSIS THE IMPACTS OF RFID ON REVERSE SUPPLY CHAIN PERFORMANCE

Kannika Jarernwong and Poti Chao*
Excellence Centre in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University
Email: poti@eng.cmu.ac.th

ABSTRACT
Purpose: The purpose of this paper is to design a framework for analysis of the impact of RFID practices for companies who are under decision making process of adapting RFID technologies or at preliminary stage of technological adaption for reverse supply chain functions. Reverse supply chain is the return flow of goods and information from customers back to manufactures to recapture, create value or disposal. The main enabler of this particular process is through managing, checking, accurate information and communication.

Design/methodology/approach: The method used in this paper is Hierarchical Regression analysis (hereby HReg). To present RFID practices increase the performances and how much RFID practices improve the reverse supply chain performance, HReg is used to evaluate the impact of RFID practices in transport and inventory functions of a company.

Findings: This paper proposes a step by step framework of analysing the impact of RFID practices for companies with reserve supply chain functions. The proposed framework will be later used and validated in future study.

Practical implications: -

Originality/value: This research wishes to propose new management directions for shippers in strategic management planning.

Keywords: Reverse Supply Chain, Reverse Supply Chain Performance, RFID, Hierarchical Regression Analysis.

A SYSTEMATIC REVIEW OF THE HUMANITARIAN LOGISTICS AND SUPPLY CHAIN PERFORMANCE MEASURMENT LITERATURE

Paitoon Varadejsatitwong, Panupong Wanjuntuk, Ruth Banomyong
Centre for Logistics Research (CLR), Thammasat Business School
Thammasat University, Bangkok, Thailand
Email: varpaitoon@yahoo.com

ABSTRACT

Purpose: The purpose of this paper is to provide a systematic review of the humanitarian logistics and supply chain performance measurement literature that is combined with a citation network analysis. This will enable an identification of the main research clusters in the field of humanitarian logistics and supply chain performance measurement.

Design/methodology/approach: A systematic review of the literature identified related scientific articles from published journals during the 2005-2015 period. The systematic review describes the article type, data collection method, year of publication, data analysis method, methodology and research context. The main research clusters were identified by following the guideline of Main Path Analysis (MPA) and analysed with the Pajek software 4.01.

Findings: As can be expected, the review will highlight the key role of the constructs in humanitarian logistics and supply chain performance measurement. In this light, the research will claim to provide statistical evidence of a link between the constructs of humanitarian logistics/supply chain and performance measurement, most notably between humanitarian, logistics, supply chain, as well as performance measurement. There will be two main findings from this systematic review. The first finding is that the majority of reviewed articles are published in which type of journals. This will be included the main type of published research. The second finding is that how humanitarian logistics and supply chain performance measurement can be split into research streams.

Research limitations/limitations: This manuscript only considered only published scientific articles but there are other sources that could be considered type as conference paper, trade journal, and white papers.

Practical implications: This systematic review provides practitioners and scholars with a classification of research clusters in humanitarian logistics and supply chain performance measurement.

Originality/Value: There are many ways to measure the performance in humanitarian logistics and supply chain management which depends on the objective or framework.

Keywords: Systematic review, Humanitarian, logistics and supply chain management, Performance measurement

CENTRALIZED PURCHASING OF MANAGEMENT CONSULTING SERVICES: BEYOND INVOLVEMENT, TOWARDS OUTSOURCING

Andreas Norrman, Susan Dam, Caroline Bennet
Department of Industrial Management and Logistics. Lund University,
Faculty of Engineering.
Email: andreas.norrman@tlog.lth.se

ABSTRACT

Purpose: Purchasing of management consultants services (MCS) has traditionally been made decentralized to functional managers, but it has lately been argued for a movement towards centralized purchasing. This explorative study intends to increase the understanding of both the structure and the process of the purchasing function after that purchasing of MCS has been centralized.

Design/Methodology/approach: The study is based on case studies of four large companies that all have centralized their purchasing of MCS and where purchasing professionals are more than just slightly involved. The analysis is made by pattern matching and explanation building.

Findings: Based on pattern matching of the four cases, we observed a movement from functional manager's purchase of individual consultants, to a centrally driven process where first the providing companies' general service is specified and contracted in framework agreement, before a second specification and selection of individual consultants are done in the ordering process. This study extends current research by discussing how the centralization evolves over time starting with strategic activities, then tactical stages (until contracting), then ordering activities, and finally measurement and follow up. Finally, we observe and discuss the use of vendor brokers, a neutral middlemen, which we found that the most mature cases used in both the tactical and operative stages of the purchasing process.

Originality/Value: The findings challenges the traditional perspective of how important the functional manager/user must be as a key person in the purchasing process.

Theoretical implications: This study contributes with descriptions, discussions and insights from cases that have gone further in their implementation of centralization (really done it) than we have found in previous reported research. In doing this, we have contributed by outlining an adapted purchasing process based on empirical findings.

CHARACTERIZATION OF FOOD PROCESSING MANUFACTURERS WITHIN THE CHAOPRAYA WATERSHED FOOD INDUSTRY SUPPLY CHAIN NETWORK

Akkapoj Wongpuengchai[1], Chonnanath Kritworakarn[2]
Department of Industrial Engineering
Faculty of Engineering, Chiang Mai University, Chiang Mai
E-mail: akkapoj@gmail.com[1], chonnanath.krit@gmail.com[2]

ABSTRACT
Purpose: This study identifies the behavioral characteristics of dynamic FISCN (inter-communication and intra-organizational, organizational flexibility, inter-organizational relationships, coordination of supply chain outsourcing, inventory management and mass manufacturing strategy customization) from the producers of food processing and tests their relationship to organizational performance. The mains purpose are;
- To explore the typical characteristics exhibited by manufacturers who are in the Chaopraya watershed area.
- To identify dynamic behaviors in food processing businesses that have specifically increased the complexity beyond the capability of existing supply risk management approaches.

Design/methodology/approach: The manufacturing process may be designed in different ways. For example, changes in manufacturing activity may be indicated by a comparison output during certain subsequent periods. This method of analysis generally provides acceptable measurement variable success of the manufacturing process, but says little about the production process itself. The study data was collected from 150 manufacturing organizations in the Chaopraya watershed region, located on the banks of Chaopraya River, listed from north to south.

Findings: The results illustrate the significant positive relationships between the eight characteristics of FISCN and organizational performance. This indicates the importance of these behavioral characteristics FISCN dynamics that companies need to develop and implement effectively to maximize organizational performance. The results reveal that the flexibility of the organization has the strongest relationship with performance. Therefore, it should be a top priority of management in the implementation FISCN. The study helps manufacturers in the development and implementation of effective FISCN. The next step is developing Damage recovery from flood disasters numerical model, based on the complexity beyond the capability of existing supply risk management approaches.

Research limitations/implications (if applicable): --

Practical implications (if applicable): --

Originality/value: exploring the unexplored manufacturing characteristics of FISCN within the within the Chaopraya watershed region.

Keywords: Food Supply Chain Network, Manufacturing Characteristic, Dynamics behavior.

COMPARING DIFFERENT PERCEPTIONS TOWARD LOGISTICS MEGA PROJECT: A CASE OF PAKBARA DEEP SEA PORT IN THAILNAD

Pimpika Chawalit[1], Pairach Piboonrungroj[2*] and Benjenop Buranasiri[3]
Supply Chain Economics Research Centre (SCERC) and
Centre of Excellence in MICE
Faculty of Economics, Chiang Mai University, Thailand
[1]*khingginger@gmail.com*, [2]*me@pairach.com* and [3]*benjenop@gmail.com*

ABSTRACT

Purpose: A mega logistics infrastructure project often stem conflict amongst public toward its impacts. Current literatures seldom measure different perception of stakeholders. Hence this study aims to provide empirical evidence by comparing the perception of local residents and others toward the Pak Bara deep-sea port located on the western coast (Andaman sea) of Thailand.

Design/methodology/approach: We compared the perceived impact of local residents and others with by the Multiple Group Structure Equation Model (MG-SEM). The framework was derived from sustainable development including the related studies in logistics development. Primary data were collected through a self-administrative questionnaire survey from people who live in Satun province, divided into local group who live in La-Ngu districts and others.

Findings: The result indicates that local residents who live in La-ngu district have more concern in logistics impact, social and culture and institutional trust. On the other hand, the others are only interested in economics and environmental impacts. Others significant MG-SEM is a gender comparison, the result shows that female concern about environmental and trust in government, while the group of found no significant impact they concerned.

Research limitations/implications: This study measure the impact from the perception of the resident, not the real impact and the Pakbara project has not started yet. Hence the real impacts may be different.

Originality/value: The current wisdoms provide little discussion around different perception of impacts from logistics mega project. This research provide a novel knowledge of how different group may perceive differently

Keywords: Pak Bara deep-sea port, Structural Equation Model, Multiple group analysis, Perception, Logistics mega project

DEMAND FORECASTING FOR SPARE PARTS – A PERSPECTIVE FROM THE MARINE PORT INDUSTRY

Shao Hung Goh and Wei Yee Chan
School of Business
SIM University, Singapore
Email: shgoh015@unisim.edu.sg

ABSTRACT

Purpose: This study investigates the forecasting practices for spare parts in a case study on a marine port operator. It describes the challenges in achieving good forecast accuracy at the subject company.

Methodology: Research is conducted using two approaches. First, historical forecast and actual usage data for spare parts is collected. A survey of stakeholders (on their forecasting approaches and considerations) is then conducted.

Findings: Spare parts which have planned or scheduled maintenance schemes have better forecasts. Furthermore, consumables and MRO (maintenance, repair & operations) spares have poor forecast accuracies, compared to repair and refurbished parts. Results also suggest that there is no one single method that practitioners in the company studied use in forecasting the demand for spare parts.

Research limitations: The study is focused on the perspective from just one company in the marine port industry and results may not be reflective of the industry at large.

Practical implications: Forecasting for spare parts is particularly challenging, due to the sporadic nature of the demand. While sophisticated forecasting techniques exist, intuition/experience-based approaches remain important in the industry.

Originality: The research links academic theory and industry practice, and it has contributed a case to the body of research on the management of spare parts.

DESIGN OF BIODEGRADABLE PACKAGAING SYSTEM FOR ELECTROLYZERS APPLYING A METHODOLOGY IMDNP

Marisol Rico-Cortez[1], Eduardo Oliva-López[1], Juan M. Sandoval-Pineda[2], Rosa González-Huerta[3]

[1]*Instituto Politécnico Nacional, Escuela Superior de Ingeniería Mecánica y Eléctrica, Sección de Estudios de Posgrado e Investigación, Unidad Profesional "Adolfo López Mateos" Edificio Email: marisolricocortez@gmail.com*
[2]*Instituto Politécnico Nacional, Escuela Superior de Ingeniería Mecánica y Eléctrica, Sección de Estudios de Posgrado e Investigación Unidad Azcapotzalco, Ciudad de México, D.F.*
[3]*ESIQIE-IPN, Laboratorio de Foto-Electro catálisis, Unidad Profesional Adolfo López*

ABSTRACT

Purpose: Due to the strong globalization the use of appropriate packaging, secure, cost-effective, lightweight and biodegrable is a design strategy; for this is necesary the use of methodologies could help companies to develop better and biodegradable packages. The aim of this paper is to present an Integral Methodology of Design new products (IMDNP).

Design/Methodology/Approach: The research is based on comprehensive literature review and was carried out in three steps: The first step was to obtain the main requirements by QFD Methodology. The second step is to develop the design concept with tools will be present in this paper, the third step consist to manufacture a prototype.

Findings: As a result, this paper presents a prototype of a packaging system sustainable to protect electrolyzers all the way of logistics, out of production, storage, transportation and distribution to end consumer. Its main features are a perfect proportion, ergonomic, resistant to the stowage, with an auto-ventilable function, anatomical, anthropometric user and fully recyclable product system,

Originality: Develop biodegradable packaging systems its an urgent need to care environment, with low cost and improve its logistics. The (IMDNP) it's a tool could help the development of packaging from its design. In this case the distribution of special products like alkalines electrolizer is present.

Keywords: Biodegradable Packaging System, Electrolyzers, design strategy, New Products

DEVELOPING A HUMANITARIAN SUPPLY CHAIN DIAGNOSTIC TOOL

Ruth Banomyong[1], Panupong Wanjantuk[2] and Paitoon Varadejsatitwong[3]
[1]Department of International Business, Logistics and Transport, Thammasat Bussiness School, Thammasat University, Thailand and
[2]Centre for Logistics Research, Thammasat Bussiness School, Thammasat University, Thailand. Email: wanjantp@gmail.com
[3]Centre for Logistics Research, Thammasat Bussiness School, Thammasat University, Thailand

ABSTRACT

Purpose – The humanitarian organization are faced with logistics complexity, destabilized infrastructure and environment and their staff works in an extremely chaotic environment. For an effective humanitarian supply chain management, the diagnostic tools are crucial. The aim of this paper is to develop Quick Scan Audit Methodology (QSAM) as an effective humanitarian supply chain health-check tool for the humanitarian organization.

Design/methodology/approach – The research questions are Can the QSAM be adapted for the humanitarian supply chain? If so, what would the humanitarian QSAM consist of? This paper apply the triangulations of both collected data and research methods to answer the research questions. The layout of this paper was demonstrated by the foundation of the original QSAM as developed by Cardiff University and was designed to refine the existing QSAM to be consistent with the characteristics of the humanitarian supply chain and the use of humanitarian organization as a case study.

Findings – The results of this research have aimed to enhance the benefit of an original QSAM when it is applied within the humanitarian supply chain, whose characteristics are essential different to those of the commercial supply chain. The results are therefore precise enough for organizations to identify individual areas of strengths and weaknesses. The tool is relatively simple and easy to use and understand.

Research limitations/implications - Limitation is related to the availability of the required assessment data. The availability of data is a reflection of systematic data collection and storage procedures of the respondent humanitarian organizations.

Originality/value – The outcome of this research was that QSAM was proposed as the diagnostic tool for humanitarian supply chain. However, in order to satisfactorily develop QSAM to be implemented within the humanitarian context, there should significantly be some adjustment and additions.

Keywords Humanitarian Supply Chain, Assessment, Diagnostic Tool, Humanitarian Logistics

DIGITALIZATION OF LEARNING RESOURCES IN A HEI: ANALYSIS OF THE CRITICAL FACTORS FOR TRANSFORMATION

Huay Ling Tay, Stephen Low
SIM University, Singapore
Email: hltay @unisim.edu.sg

ABSTRACT

Purpose: Around the world, traditional manufacturing industry is in the throes of a digital transformation that is accelerated by exponential growing technologies. This is 'Industry 4.0' at work. The term Industry 4.0 is used to refer to a fourth industrial revolution where integrated computing, networking and physical processes are revolutionising production processes and the entire logistics chain (Brettel et al., 2014, Almada-Lobo, 2016, Lasi et al., 2014). Logistics and supply chain operations need to adapt to this rapid change if they are not to be left behind by development in their sector and their competitors. The study examines how Lean innovation can be integrated with resource digitalization to bring about simplification in process and operational complexity.

Design/methodology/approach: The paper examines a case study at a Higher Education Institution (HEI) that is implementing the digitalisation of its learning resources over a three-phased period in line with its strategy to operate as a Lean enterprise. Both primary and secondary data were collected in this case based research that include focused group meetings and interviews, relevant literatures and learning resources archives.

Findings: Based on interpretative analysis of the data, the study identifies the key challenges that organisations may face involving stakeholders' integration, information sharing and transformation processes. A conceptual framework is proposed that characterise the managerial levers that can be applied to engender the Lean transformation through process innovation and behavioural changes that will benefit the organization's operations, instructors and learners.

Originality/value: The study is expected to provide practitioners with a more holistic view of the implications and how benefits can be reaped by applying appropriate levers to manoeuvre the transformations that are brought about by digitalisation.

Keywords: Lean Innovation, Virtual Inventory, HEI, Case study

EXPLORATORY FACTOR ANALYSIS OF SERVICE QUALITY FACTORS FOR THAI LOW-COST AIRLINE INDUSTRY

Raviwan Tananchai and Apichat Sopadang*
Excellence Center in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University
Email: Sopadang@gmail.com

ABSTRACT

Purpose: The purpose of this study aims to categorize service quality factors for performance measurements of Thai low-cost airlines industry.

Design/methodology/approach: The service quality factors of low-cost airline industry are accumulated and analyzed by literature review. These factors are categorized through the factor analysis by questionnaire survey, also known as Exploratory Factor Analysis (EFA). The 100 sets of questionnaires are distributed to the customers. Subsequently, the Analytic Hierarchy Process (AHP) is used to evaluate the weighted factors by pairwise comparison.

Findings: The reliability was found to be a key factor of airline service quality, which composts of flight safety and punctuality of flight.

Research limitations/implications: The weighted factors are calculated by primary experts but required further data from passengers.

Practical implications: Thai low-cost airline industry is able to enhance the service quality towards customer needs.

Originality/value: The service quality factors of low-cost airline in Thailand can be identified.

Keyword: Service Quality, Performance Measurement, Low-Cost Airline, EFA, AHP

IMPROVING AND OPTIMISING SPARE PARTS INVENTORY MANAGEMENT

Ng, Shiyun Heidi, Halim, Tony
School of Engineering Temasek Polytechnic, Singapore
Email: TYHALIM@tp.edu.sg

ABSTRACT

Purpose: With increasing market globalisation, the spare parts logistics in Asia-Pacific region has prosper to achieve high business margin for corporate profits. Managing spare parts inventory is challenging. Organisations are realising the higher customers' expectations on quality and prompt after-sales support to ensure spare parts availability (TLI, 2015). This is mainly because end customers hope to extract the maximum value from products by extending products' lifecycle. Global Part Centre Singapore (GPCS) is an after-sales division of a printer manufacturing company. The problem of uncertainties propagates in GPCS' supply chain and this leads to inefficient non-value adding activities. The objective of this study is mainly to find out the challenges and difficulties faced by GPCS, understand GPCS' performance based on several key performance index (KPI) and recommend best solution(s) for improving current inventory policy to overcome uncertainties.

Design/Methodology/Approach: Quantitative research are collected and measured with controlled standard manner to ensure data validity. Using statistical techniques, the numerical data are analysed to examine any relationship between the variables. Alternatively, qualitative research requires naturalistic interpretation in order to constructed meanings (Saunders et. al., 2012).

Findings: This project focused on issues faced by GPCS for managing spare parts logistics. There are several factors contributing to the inventory problems. They are namely the lead time to fulfil demand, spare parts quality, age of repaired printers, government regulations on imports and exports, standardisation on replenishment planning method, desired service level and relevant costs incurred (like inventory holding cost, overstocking cost and stockout cost).

Practical Implications: Through this study, it highlighted the importance of having a reliable information system to ensure visibility in the supply chain (e.g. shipment schedules and inventory statuses can be updated instantaneously in system) and provide accurate data for decision making. Several simulations have been completed to increase the safety stock buffers against uncertainties (e.g. extended lead time due to port congestions) while maximising profits. By establishing a strategy that corresponds to the Key Performance Indicator (KPI) can help to manage GPCS in the right direction.

Originality/Value: This research is based on the understudy of a company that has a global parts centre that is based in Singapore and serves the regional client. The company aims to progressively emerge to gain and retain end-customers through competitive advantage. and the findings is also applicable to organisation that operates in the similar structure for spare parts management

IMPROVING CARBON EFFICIENCY THROUGH CONTAINER SIZE OPTIMIZATION AND SHIPMENT CONSOLIDATION

Nang Laik Ma[1] and Kar Way Tan[2]
[1]*SIM University e-mail: nlma@unisim.edu.sg*
[2]*Edwin Chong Lik Ming Singapore Management University*
E-mail: kwtan@smu.edu.sg, edwin.chong.2013@smu.edu.sg

ABSTRACT

Purpose: Many manufacturing companies that ship goods through full container loads found themselves under-utilizing the containers and resulting in higher carbon footprint per volume shipment. One of the reasons is the choice of non-ideal container sizes for their shipments. Consolidation fills up the containers more efficiently that reduces the overall carbon footprint. The objective of this paper is to support decisions on selection of appropriate combination of container sizes and shipment consolidation for a manufacturing company. We develop two-steps model which first takes the volumes to be shipped as an input and provide the combination of container sizes required; then evaluate possibility of shipment consolidation from multiple ports (of loading) within the same country to the same destination (port of discharge). In both steps, the objective function is to minimize carbon footprint by applying linear/integer programming. Only consolidation within the same country is considered due to practical considerations to avoid the need for cross border clearances.

Design/Methodology/Approach: In this paper, we first provide an Integer Programming model to minimize the companies' shipping carbon footprints by selecting the ideal container sizes appropriate for their shipment volumes. Secondly, we proposed a strategy to minimize the carbon footprint by consolidating the shipments in the same country from multiple domestic locations at a port of loading by road freight, before the international sea shipment. A mixed-Integer Programming model has been developed to determine if one should ship each shipment separately or have shipments consolidated first before being shipped.

Findings: Computational results using real-world data will be showcased.

Originality/Value: Optimize the container size for shipment for a manufacturing company and consolidating the shipments within the same country.

Practical Implications: We verify our model with a real-world business case (and data) in the consumer product manufacturing industry. By applying the proposed approach and models, the company can reduce the carbon footprint by 13.4% by using the optimal container size and further reduce the carbon footprint by 12.1% from consolidation of shipments as compared to the current practice without optimization.

IMPROVING EFFICIENCY OF TEA VALUE CHAIN:
A CASE STUDY OF THAI TEA COMPANY

Punnakorn Teeratidyangkul, Sakgasem Ramingwong,
Korrakot Yaibuathet Tippayawaong,ALonnggot Limchareon
Excellence Center in Logistics and Supply Chain Management,
Department of Industrial Engineering, Faculty of Engineering,
Chiang Mai University, THAILAND
Email: punnakorn1@gmail.com

ABSTRACT

Purpose: The purpose of this paper is to improve efficiency in Tea Company in Northern Thailand by using value chain analysis.

Methodology: Value chain activities are analyzed which consists of 5 primary and 4 support activities. The analysis of the current production was analyzed by Failure Mode & Effect Analysis (FMEA) to perform a risk assessment within the manufacturing process weaknesses.

Finding: The risk assessment is used to identify weaknesses or deficiencies of manufacturing process by FMEA the process of sorting tea leaves is the most concern. Issues of sorting standard and conveyer speed, uneven quality of inbound material have been selected to improve efficiency. Therefore, this approach may increase accuracy in sorting process by introducing sorting standard and adjustment of conveyer speed. The result can increase efficiency of employee which shows from the yield of sorting process dry tea leaves increase up to 11.76%. (From 382.5 kg/day to 427.5 kg/day)

Value: The result can be used as a guideline for other companies in the tea industry to improve their process activities.

Keywords: Value Chain Management, Efficiency improvement, Tea Industry, FMEA

INCREASING EFFICIENCY IN INVENTORY SYSTEM BY BARCODE TECHNOLOGY IN SPORTSWEAR TAILORING FACTORY

Korrakot Yaibuathet Tippayawong, Rungrat Northao*, Alonggot Limcharoen, Uttapol Smutkupt, Ekkaphon Jaiyen

Excellence Center in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University, THAILAND Email: rungratnt@gmail.com

ABSTRACT

Purpose: This paper used value chain management concept on the case study factory aiming at increasing efficiency in inventory system by applied barcode technology at sportswear tailoring factory.

Design/methodology/approach: The concept focuses in inbound logistics, operations and outbound logistics activity. The activity basics of sourcing material strategy activity. Moreover, following by discussion the inventory systems management by using barcode technology. The analysis is based historical data of incorrect shipments.

Findings: The program can check the products was 100% true. Employees can make corrections before products is shipped to customers. Thus resulting no errors in delivery which the wrong product to customers.

Value: The result of this case study factory is the application of barcode technology to verify the finished goods that are delivered from factory to customer. The application detects faulty goods before delivery to customers.

Keywords: Value Chain Management; Inventory; Efficiency Improvement; Barcode technology; Sportswear tailoring

LAST MILE FULFILMENT USING AUTOMATED PARCEL LOCKER SYSTEM: SERVICE EXPECTATIONS OF E-MERCHANTS

Derek Ang
School of Engineering, Republic Polytechnic, Singapore
Email: derek_ang@rp.edu.sg

ABSTRACT

Purpose: There has been an increasing amount of online transactions and sales reported by online e-merchants throughout these few years, and the last mile delivery is considered the most expensive activity of the fulfilment. One of the methods to complete this activity is using automated parcel locker system. This paper seeks to understand the service expectations of e-merchants on the use of these systems.

Methodology: An online survey was designed with a logistics service provider, which provides both door-to-door courier delivery services as well as these locker systems, to understand the delivery process of e-merchants from various industries, and their views on using these systems. The survey outcome of 59 responses was analysed to determine the key factors that will encourage e-merchants to adopt the system as one of the last mile delivery options.

Findings: The research confirms that there is positive interest in using these systems, especially when reliability of delivery is one of the most important requirement. The accessibility of the lockers and its operating cost are the main concerns of the e-merchants. However, there is also a lack of awareness on this system, and while some of them were receptive to using the system for goods returns, many of them had reservations about it.

Value: With these findings, it will assist companies that are providing these systems to address the needs of e-merchants more effectively, and also lower the overall cost of the last mile delivery.

LOGISTICS SERVICE PROVIDER PERFORMANCE MEASUREMENT: A CONCEPTUAL FRAMEWORK

Ruth Banomyong[1], Paitoon Varadejsatitwong[1], Poti Chao[2]
[1]*Centre for Logistics Research (CLR), Thammasat Business School Thammasat University*
Email: varpaitoon@yahoo.com
[2]*Excellence Centre in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University*
Email: poti@eng.cmu.ac.th

ABSTRACT

Purpose: The purpose of this paper is to provide a comprehensive and innovative performance measurement framework for a logistics service provider. The framework is supported in a thorough revision of the existing literature regarding performance indicators system, with particularly significant domain in the field of logistics and freight transport.

Design/methodology/approach: This paper is separated into 2 main sections. The first section will discuss the systematic review methodology of the logistics performance measurement literature for logistics service provider combined with a citation network analysis approach. Then, the findings of the review will be presented through the use of the Pajek software and conclusions will be derived. While the 2nd section, a conceptual theory building is used to develop a framework representing a theory of logistics service provider performance measurement.

Findings: the authors introduce the concept of performance measurement – the integration of environmental, social, economic and others criteria that allow service providers to achieve long term sustainable viability – to the logistics literature. Then a proposed framework of logistics performance measurement and develop performance indices based on logistics service provider's perspective. The authors conclude by discussing managerial implications and future research directions, including the further development and testing of the framework.

Research limitations/limitations: This paper is part of ongoing research. Then this proposed conceptual framework will be empirically validated, to prove this framework into accepted and validated model.

Practical implications: Results encourage researchers and practitioners to be more highlight the importance of framework development over other factors like developmental strategies, success factors etc which had been the prime focus of earlier researches.

Originality/Value: Based on this research, new performance measurement conceptual framework is proposed for existing logistics paradigms. The detailed analysis presented in this research paper offers a set of characteristics and structure that industry as well as academia could use it as a guidance framework to measure logistics service provider performance.

Keywords: Systematic review, Conceptual framework, Logistics service provider, Performance measurement, Performance indices

PERFORMANCE-BASED LOGISTICS SERVICE BUSINESS MODEL UTILIZING COULD COMPUTING

Jasmine Siu Lee Lam
School of Civil and Environmental Engineering
Nanyang Technological University, Singapore
Email: [*sllam@ntu.edu.sg*](mailto:sllam@ntu.edu.sg)

ABSTRACT
Purpose: This paper proposes a novel approach for an automatic measurement of logistics service levels by utilizing a cloud-based Internet of Things (IoT) approach.

Design/Methodology/Approach: The study develops a performance-based intelligent logistics service business model for LSPs which enhances their capability in logistics service offering and improves supply chain performance. Based on the measured data, the overall performance is ensured by applying two service level evaluation models: first, to evaluate the historic performance of partners for contracting and, second, to evaluate the actual service level of partners during operations.

Findings: The study demonstrates that the proposed business model rewards or penalizes partners based on delivered service levels in order to improve the overall performance.

Originality/Value: Performance-Based Logistics strategies highly rely on accurate measurements of agreed service levels delivered by supply chains and related LSPs. In the literature, however, the measurement is mostly grounded on subjective performance assessments which are unsuitable for improving performance and reducing cost. This research is the first attempt towards addressing objective logistics performance evaluation by using cloud-based IoT.

Keywords: Logistics service provider; Internet of Things (IoT); cloud computing; business model; Performance Based Pricing

REDUCING EXCESS INVENTORY IN A HIGH-MIX LOW-VOLUME MANUFACTURING SETTING

Huiting Liu, Dion Chan, Huay Ling Tay and Yan Weng Tan
School of Business, SIM University, Singapore
Email: johanramadhan@yahoo.com

ABSTRACT

Purpose: This paper addresses the issue of excess inventory and stock obsolescence in a high-mix low-volume original equipment manufacturing company using Lean Six Sigma's DMAIC (Define-Measure-Analyse-Improve-Control) approach. This Original Equipment Manufacturer (OEM) produces batteries for the consumer electronics industry. About 90% of the products are customised according to customer's requirements. As most items are unique to the end product, the company finds it difficult to use the components for production of other battery models, resulting in stock obsolescence and higher operating cost.

Design/methodology/approach: The paper uses the case study method to conduct an empirical study of the inventory issues faced by the OEM. Relevant data was extracted from the case company. We examined the item category with the highest impact on overall inventory by looking at two decision variables: level of excess stock and stock value. We identified the root causes of excess stock using the Cause-and-Effect Diagram and Interrelationship Digraph. We then recommended strategies to establish an improved inventory management and control system for the long run.

Findings: Lean Six Sigma was successfully applied to improve operational efficiency through the reduction of excess inventory and stock obsolescence in the high-mix low-volume manufacturing mode. The item with the highest impact on overall inventory had 8,307 days of stock coverage and contributed to 60% of the overall inventory value. The root causes were identified as customer's requirements, high forecast variation, ambiguous goals and poor communication. Possible solutions were organised using the impact/effort matrix.

Practical implications: This paper focuses on the 'Analyse' and 'Improve' phases of Lean Six Sigma's DMAIC methodology. It can serve as a guide on the techniques that can be applied to a high-mix low-volume manufacturing setting to reduce excess stocks and improve operating cost.

Originality/value: The application of Lean Six Sigma techniques for the reduction of excess stocks so as to improve operational efficiency in the high-mix low-volume manufacturing context has been sparse. This paper provides a needed orientation as to how these techniques can be applied in such a context through a focussed analysis of critical inventory item categories.

Keywords: Excess inventory, high-mix low-volume manufacturing, Original Equipment Manufacturer (OEM), Lean Six Sigma

SOUTH FLORIDA PORTS - THE BATTLE FOR THE SEA IS WON INLAND?

Violeta Roso
Division of Service Management and Logistics, Chalmers University of Technology Sweden
E-mail: violeta.roso@chalmers.se

ABSTRACT

Purpose: Competition requires seaports to focus on their inland access, on the demand for services in its traditional hinterland and also on development in areas outside their immediate market. Many container ports around the world are involved in implementation and/or development of inland intermodal terminals/dry ports/inland ports to improve their inland access in order to increase their competitive advantage. However, container ports in South Florida; Port of Miami, Port Everglades and Port of Palm Beach, function perfectly well, annually increasing their container volumes, without particular engagement in development of their inland access or hinterland expansion. Therefore, the purpose of this paper is to investigate why these seaports can function without any particular collaboration with inland container facilities while many other ports have to work hard on inland access through collaboration with inland intermodal terminals.

Research approach: Data for the study was collected through face-to-face interviews at Port of Miami, Port Everglades and Port of Palm Beach. Prior the field study an extensive literature review has been carried out; in addition, a number of secondary sources were used, such as reports and internal documents.

Findings and originality: Capacity increase only at seaport facilities without improvements in seaports' inland access often is not enough for the entire container transport chain to function properly. With constantly growing container transports, efficiency of rail and flexibility of road are increasingly needed for inland access to/from the seaports. Competition requires seaports to focus on their inland access but between container ports in South Florida there is no competition; they work on bringing the volumes to Florida from different markets in hinterland and foreland; and they have no particular capacity issues at their terminals.

Research impact: Many seaports tend to expand their hinterland through close links with inland intermodal terminals based on a higher level of functional integration. However, the seaports in the study show functionality without involvement in inland side of operations as long as the seaports in question don't face space, congestion or completion issues! Data for the case studies are collected at ports of Miami, Everglades and Palm Beach. A more comprehensive view on the issue could be obtained through additional cases on other seaports in the US.

Keywords: Port, Inland access, Inland intermodal terminal, Dry port, Competition, South Florida

SUPPLIER SELECTION IN REAL ESTATE INDUSTRY USING FAHP AND FUZZY TOPSIS: A CASE STUDY IN THAILAND

Nattarika Sutakal and Apichat Sopadang*
Excellence Center in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University
Email: Sopadang@gmail.com

ABSTRACT

Purpose: The purpose of supplier selection in this paper is to ensure a portfolio of best in class suppliers is available for use. A comparison of Fuzzy AHP and TOPSIS in supplier selection.

Design/methodology/approach: The first step in any supplier rating procedure is to find the appropriate criteria to be used for assessing the supplier. To comply with the criteria for supplier selection and their importance, the required data is collected based on the consideration of literature and expert interview. Analytic Hierarchy Process (AHP) was used for computation of relative weighting of criteria and computation of the relative ranks. And then, We use the Fuzzy Analytic Hierarchy Process for determining the best supplier from evaluating few suppliers with qualitative supplier selection criteria. We compare a result of final supplier by The Technique for Order of Preference by Similarity to Ideal Solution method (TOPSIS) which using the multi attribute suppliers ranking method to order the feasible alternative solutions because in case study needs to consider both qualitative and quantitative factors.

Findings: Importance criteria can be effectively applied to the supplier selection process in construction. A result of comparing selection method is used AHP better TOPSIS method in qualitative data in this real estate industry.

Research limitations/implications: The criteria may not use for construction, but concepts can be define and develop a supplier selection in another the construction material supplier.

Practical implications: We can be applied in the supplier selection.

Originality/value: We were fined criteria that suitable with supplier selection and applied in the supplier selection.

Keywords: Supplier Selection, Real Estate, AHP, TOPSIS.

THE IMPACT OF GUANXI ON BUSINESS PERFORMANCE: THAI SHIPPERS' PERSPECTIVE

Wanvisa Chaikij and Poti Chao*
Excellence Centre in Logistics and Supply Chain Management, Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University
Email:poti@eng.cmu.ac.th

ABSTRACT

Purpose: In the current competitive environment, modern businesses no longer compete as solely autonomous entities, but rather on collaboration through supply chain. Under the context of relationship, the concept of Guanxi, grounded by Confucius studies, performs as a lubricant of business activities. The purpose of this study aimed to evaluate the impact of special relationship (Guanxi) on business performance from Thai shippers' perspective.

Design/methodology/approach: Structural Equation Model (SEM) is used as the main analysis method to analyse the multiple and interrelated dependent and independent relationships. SEM is a multivariate statistic analysis technique that represents simultaneously the hypothesized interrelationships between multiple variables in order to test overall model's fit to the data.

Findings: The result of study shows that Guanxi gain significant relationships on business performance. The result can also be used to provide a better understanding of Guanxi in emerging economies, with a particular focus on Thailand. It is worth noting that with Guanxi involved, commercial factors, i.e. time, cost and reliability, has became less relevant to business performance.

Practical implications: It is anticipated that this research will be significance to academic and practitioners in managing Guanxi with regard to business performance in Thailand.

Originality/value: This research wishes to propose new management directions for shippers in strategic management planning.

Keywords: Guanxi, Relationship Management, Structural Equation Model, Business Performance

TOWARDS SUSTAINABLE PORT DEVELOPMENT MODEL: A COMPARATIVE ANALYSIS BETWEEN SINGAPOREAN AND KOREAN PORTS

Seayeon Roh[1], Vinh V. Thai (Corresponding author)[2], Gi-Tae Yeo[3], Hyun-Mi Jang[4], Yiik Diew Wong[5]
[1]*Plymouth University, UK Email: rohsae@hotmail.com*
[2]*RMIT University, Australia*
Email: vinh.thai@rmit.edu.au
[3]*Incheon National University, South Korea*
E-mail: kyteo@inu.ac.kr
[4]*Korea Maritime Institute, South Korea*
Email: jangh@kmi.re.kr
[5]*Nanyang Technological University, Singapore*
Email: cydwong@ntu.edu.sg

ABSTRACT

Purpose: Reviewing recent developments in the real business world, it has become evident that the new business paradigm for economic growth should be a balancing act between meeting economic needs and ensuring social and environmental sustainability. Singaporean and Korean ports have been implementing various sustainable activities seeking to reduce the environmental impacts of shipping and related activities and promote clean and green port operations. This study aims to investigate the main factors that shape sustainable port development and their priorities from the perspectives of Singaporean and Korean Ports and to explore how these ports implement and practice sustainable port development.

Design/methodology/approach: This study adopted multi-phased mixed methods, combining semi-structured validation interviews and Analytical Hierarchy Process (AHP). Firstly, the main indicators for sustainable port development were identified through a comprehensive literature review. Secondly, for validation purpose, a semi-structured interview questionnaire was constructed. The interview questionnaire was distributed via email to 17 ports in Korea and two ports in Singapore. Lastly, after validating the sustainable port development indicators, an AHP analysis was conducted to prioritise the identified sustainable port development indicators.

Findings: It was revealed from the comprehensive literature review that a sustainable development port is attributed by eight major factors from both internal and external management aspects. In total, forty nine indicators associated with the eight factors were identified. Port managers from both countries indicated that all these factors and indicators should be considered for sustainable port development evaluation. Through the AHP analysis, it was agreed by both Singaporean and Korean port managers that Optimized Operation Planning is the most important factor for a port to be developed sustainably. Meanwhile, Internal Social Program and External Environmental Program were evaluated to be the least important factors by Korean and Singaporean port managers respectively.

Value: This research empirically identified and validated the sustainable development indicators considering all three aspects (economic, social, environmental) of sustainable development in the port industry. Also, the current research has shed light on the priorities of important factors for sustainable port development as perceived by port managers.

Research limitation/implications: This research only confined its scope to the sustainable development of the port industry. Future research should expand the scope to other different stakeholders of port operations and development.

Practical implications: Sustainable port development indicators provide a development model to port authorities and operators on how their port should be developed sustainably. Given the priorities of importance of the factors, port managers are informed of areas to be focused on and that need more interest for improvement for balanced sustainable port development.

USE BIG DATA TO PREDICT SERVICE TIME FOR DELIVERY PLANNING IN CITY LOGISTICS

Liu Shubin[1], Alvin Arulselvan[2], Teng Suyan[2], Li Zhengjie[2], Derek Ang[2]
[1]*Centre of Innovation for Supply Chain Management, Republic Polytechnic, Singapore*
[2]*School of Engineering, Republic Polytechnic, Singapore*
Email: teng_suyan@rp.edu.sg

ABSTRACT

Purpose: Unlike intercity delivery planning where traveling time plays a significant role, in city logistics, service time (loading/unloading) takes higher percentage in overall delivery time. In order to develop an efficient vehicle routing and dispatching plan in city logistics, it is important to have accurate estimation of service times. This paper is to analyse historical big data and effectively predict the service time of delivery job.

Design/methodology/approach: Based on the Global Positioning System (GPS) data of a delivery man, we will analyse the delivery man's speed (vehicle speed and walking speed), location and electronic proof of delivery (ePOD) data for each delivery job and derive its start and end time. An algorithm will be developed to generate the total service time starting from the time that a delivery man stops his vehicle to carry out his delivery to the point that he starts his vehicle engine again for the next delivery job.

Next, we will identify and investigate the factors that affect the service time. These include the vehicle type (e,g, van, truck or motorcycle), packaging (e,g, pallet or box), number of units of a delivery order, the building type (residence building, warehouse or other industrial buildings), and the delivery area (central business area or suburb). Based on the factors and the service times of the delivery points, a regression model will be built to describe how the service time changes as the factors change. As companies build up enough delivery historical data, they can accurately predict the service time based on the profile of a delivery order.

Findings: We have found that service time can be affected by a number of factors with some factors having more significant impact than others.

Originality/value: With our findings, we can help transportation companies accurately predict the service times of delivery jobs. Therefore, they can develop more efficient and cost effective delivery plans which also improve customer service level. Previous assumptions on factors that affect the service time will also be debunked.

Keywords: City Logistics, Delivery Planning, Service Time Prediction, Big Data, Linear Regression

Admission Information >>>

Admission Criteria
Admission to the program will be based on the Admission Committee's careful evaluation of the applicant's qualifications.

Master's degree requirement
Applicant must hold a Master's degree in related field.

Interview
Applicant must show strong commitment, strong research capability and ability to communicate in English.

Research Proposal
Only an applicant enrolling for plan I has to submit a research proposal in area of interest and the Ph.D. executive committee will consider and suggest the dissertation advisor who might be interested in the proposal.

Admission Requirements
1) A TU-GET score of 550 or TOEFL score of 550 (paper based), 213 (computer based), 79 (Internet Based) or IELTS score of 6.0 taken within 2 years on the application date.
2) A GMAT score of 550 or GRE score of 1100 (verbal and quantitative parts) or SMART II score of 600 (minimum of 200 for each part) or satisfactory level score of Graduate Program Admission Test taken within 5 years on the application date.
3) Three letters of recommendation
4) A statement of intent to pursue a Ph.D. degree
5) The Research Proposal (for application to Plan I)

Tuition Fees and Expenses
Tuition and general fees are approximately 230,000 Baht per annum.

For more information contact:

Doctor of Philosophy Program in Business Administration (Ph.D.) Room no. F-303, 3rd floor, Anekprasong Building II, Thammasat Business School, Thammasat University 2 Prachan Road, Pranakorn, Bangkok 10220

Tel: 02-613-2261, 02-623-5651-2 Fax: 02-623-5650
Email: phd@tbs.tu.ac.th Facebook.com/PhD.TBS
website: http://www.grad.bus.tu.ac.th/th/academic-programs.htm

THAMMASAT BUSINESS SCHOOL

PhD
DOCTOR OF PHILOSOPHY PROGRAM IN BUSINESS ADMINISTRATION

Master of Engineering (M.Eng.)
Logistics Engineering and Supply Chain Management
(Bi-Lingual Program)

หลักสูตรวิศวกรรมศาสตรมหาบัณฑิต
สาขาวิศวกรรมโลจิสติกส์และการจัดการโซ่อุปทาน
(หลักสูตรสองภาษา)

Class Location:
Faculty of Engineering
Chiang Mai University

Duration:
2 years program

Language:
Bi-Lingual (Thai and English)

Qualifications:
Bachelor Degree in Engineering,
Science, Agro-Industry,
or related fields

Application forms and information are available at:
The Graduate School Chiang Mai University
Tel: +66 53 94 2405 Fax: +66 53 89 2231
Website: http://www.grad.cmu.ac.th

For more information:
Contact K.Sudarath Kaewsangjai
Industrial Engineering Department Faculty
of Engineering Chiang Mai University
Tel: +66 53 94 4126 ext.106
Fax +66 53 94 4185
Website: http://ie.eng.cmu.ac.th
Email: logisticsprogram@eng.cmu.ac.th

Now with option:
Double Degree with
Otto-Von Guericke University
Germany

SCHOOL OF BUSINESS
— MASTER OF BUSINESS ADMINISTRATION

WE SET YOU ON THE RIGHT PATH
SO THAT YOU GO EVEN FURTHER.

For more information, please visit
www.unisim.edu.sg/UniSIM_MBA

SIM UNIVERSITY
Manage Your Future

📞 6248 9777
🔗 unisim.edu.sg

📘 facebook.com/UniSIM
💼 SIM University
🐦 @UniSIM

SIM University
CPE/UEN: 200504979Z
Registered 4 June 2016 to 3 June 2022

SCHOOL OF BUSINESS
— MASTER IN MANAGEMENT [URBAN TRANSPORTATION]

WE ENABLE YOU TO PLAY A LEADING ROLE IN POLICY FORMULATION, PLANNING, MANAGEMENT AND OPERATIONS OF LAND TRANSPORT SYSTEMS.

For more information, please visit
www.unisim.edu.sg/SBIZ