



Director's Message

Corporate Social Responsibility in the Shipping Industry

Special Report: Smart Port in a Smart Era

MARITIME INSIGHT

C.Y. Tung International Centre for Maritime Studies

Maritime Education | Research | Consultancy

September 2013

Maritime Insight
Issue 2, September 2013

Contents

- 2** ***Director’s Message***
- 3** ***Introduction of Corporate Social Responsibility (CSR)***
- 4 Continuing Commitment to Behave More Socially Responsible
- 5 Corporate Social Responsibility Moving Forward in the Shipping Industry
 A Case of Pacific Basin Shipping Limited
- 6** ***Rationale for Shipping Companies Implementing CSR Strategy***
- 9 Shipping Companies Implementing CSR Initiatives, Action for a Sustainable Industry
 A Case of Orient Overseas Container Line
- 10 Corporate Social Responsibility is more than just Saying
 A Case of Hongkong International Terminals
- 11** ***Methods Applied to Measure, to Realize the CSR Performance***
- 11 Introduction of Applying Factor Analysis to Measure the CSR Performance
- 14 An Institutional Theory Approach to Identify Whether CSR Strategy Was Confirmed or Decoupled
- 15 Introduction of Converting Knowledge Management into Realizing CSR Performance
- 18** ***Common Approaches in Tackling CSR Priorities***
- 19 Guidelines in Tackling Environmental Dimensional Priorities
- 20 Guidelines in Tackling Social Dimensional Priorities
- 20 Guidelines in Tackling Economical Dimensional Priorities
- 21** ***Special Report: Smart Port in a Smart Era***
- 25** ***Brief Biography of Prof. Chin-Shan LU, Director of ICMS***
- 26** ***References***

Director's Message

A warm welcome from C.Y. Tung International Centre for Maritime Studies!

Maritime transport is the backbone for the development of international trade and a key engine driving globalization. Around 80% of global trade by volume and over 70% by value is carried by sea and is handled by ports worldwide. Specifically, the Port of Hong Kong is one of the busiest container ports in the world and serving the South Asian Pacific region and acts as an important gateway to South China and Pearl River Delta. It has always played a key role and contributes to the economic development of the Hong Kong SAR.

However, the current business environment in shipping market remains complex and unpredictable, due in particular to the significant size of the ship overcapacity, the mismatch between demand and supply, shift in global economic influence and changing trade patterns, rising bunker fuel prices and operating costs, maritime piracy, environmental sustainability, as well as the climate change. To overcome increasingly multifaceted challenges, it requires skills and knowledge from a wide range of various management fields. The C.Y. Tung International Centre for Maritime Studies is dedicated to advance research and education activities in different fields of shipping and logistics operations at national and international level. The Centre aims to provide the quality comprehensive maritime education and engage in application-oriented research, professional training and consulting activities in shipping, maritime and supply chain logistics from both management and economic perspectives. Our mission is to become a world-class centre for maritime studies, education and consultancy, as well as further strengthen Hong Kong's position as a premier international maritime centre.

The Centre is expected to conduct pioneering research on container port productivity, port policy, shipping operations and management, and low carbon logistics, as well as to promote the collaborations between industries, government agency, academic organizations. In addition, the Centre provides training courses and jointly organizes the International Forum on Shipping, Ports and Airports (IFSPA) and seminars with the Department. The variety of training courses provides insights into a wide range of professional settings in which can be beneficial to the employees and organizations in the shipping context. The IFSPA is an annual event, aiming to invite international academics and practitioners to discuss and exchange views on issues related to global maritime and aviation economics, policy and management. The Conference has experienced significant successes in the past few years attracting more than 600 participants from different countries and territories.

In the years to come, we wish to further strengthen our functions and contributions in maritime sector, as well as deepen our links with the industry, government agency, and academic organizations. The Centre is planning more themes to provide valuable research outcome, education training courses, and consultancy for maritime communities.

In particular, I would like to express our deepest gratitude for the Tung Foundation and your continuing support. Together with all the staff of the Centre, we would continue to strive our best to serve the society.

My best wishes to all of you.



Prof. Chin-Shan LU
Director
C.Y. Tung International Centre for Maritime Studies
Department of Logistics and Maritime Studies
The Hong Kong Polytechnic University

Introduction of Corporate Social Responsibility (CSR)

Preface

This issue of the ICMS MARITIME INSIGHT is now touching on the aspects of corporate social responsibility (CSR) initiatives in the shipping section. This issue aims to understand the advantages of applying CSR strategy in the shipping industry. Common practices as well as measuring and realizing methods were reviewed and summarized. Guidelines towards different dimensions of CSR are outlined based on the comparison and measurement of the performance of several shipping companies and terminals in Hong Kong.

In addition, this issue has also added a new section named "Special Report". The article titled "Smart Port in a Smart Era" written by Dr Girish Gujar and Prof. Hong Yan looks at the SMART ports concept and presents readers with an image of the SMART ports of tomorrow.

There is an increasing recognition that corporate social responsibility (CSR) plays a crucial role in strengthening business competitiveness and enhancing organizational reputation. The definition of the concept of CSR is not explicit and universally accepted, though its importance and positive impact is well known among industries. Due to those implicit interpretations of CSR, managers in commercial enterprises might be confused when converting this concept into practice. It is difficult to fully understand the significance of implementing CSR without specific directions or guidelines. 

CSR is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.

(Source: World Business Council for Sustainable Development, 1999)

There is no single universally accepted definition of the CSR concept. This issue will try to summarise the common characteristics through a comprehensive review of CSR-related definitions and activities in the shipping industry. Every single company in any type of busi-

It is widely recognized that the corporate social responsibility goes far beyond the environmental dimension.

nesses interacts with multiple parties, such as employees, customers, communities, investors, governments and so on. Nowadays, enterprises pay more attention to their public image associated with social responsibility instead of only becoming aware of this after public pressures arising as in the past. The positive relationship between corporate social responsibility and firm financial performance were also evaluated through both empirical means and models in literatures (Aupperle et al. 1985; McGuire et al. 1988; and Lu et al. 2009). The positive outcome of implementing corporate social responsibility

is over and over again proved by hundreds of large multinational enterprises. This could be only achieved through improving the quality of life and working standard of their employees. The promoting of a European framework for CSR was presented by the European Union in a Green Paper in 2001 whereby companies voluntarily committed to a better society. In the publication of the UNESCAP for corporate social responsible and business sustainability, it was demonstrated that although the business advantages gained from CSR are often difficult to quantify in an exact way, there is a large body literature available which highlights key business advantages of CSR and urges businesses to adopt socially sympathetic measures which are beyond financial gains. These advantages can be applied for maritime industry as well at the time of writing. Several advantages were listed in the publication of ESCAP: (1) Brand and reputation advantage; (2) Human Resources advantage; (3) Cost advantage; (4) Risk management; (5) Innovation; and (6) Access to capital. (Source: "The Asian Way to Integrate CSR into Business Strategies", 2010). 

Continuing Commitment to More Socially Responsible Behavior

Although the ISO 26000 is not intended for third-party certification like ISO14001 and some other international standards are, it still provides organizations with guidance on how to be more socially responsible. According to the definition of social responsibility given in the ISO 26000, there are seven principles in total outlined in the standard, namely: “accountability, transparency, ethical behavior, respect for stakeholder interests, respect for the rule of law, respect for international norms of behaviour, and respect for human rights” (Source: “ISO 26000 and the Definition of Social Responsibility,” 2011).

Overview of the UN Compact & the ISO 26000



Photography by Ning WU (2013)

While there is not much literature discussing the implementation of CSR in the maritime section when searching for this topic. The Maritime Labour Convention recognises that seafaring will always pose special hazards to life and health because of the hostility of the seas and the nature of the working conditions aboard ships. Thus, there is always so much to be done to guarantee the rights of crews on the ships.

Shipping is a global industry and interacts with multiple parties associated with CSR dimensions such as an intercultural labour force, green house gas emissions, polluting water and creating noise pollution in the community . Since it has such a big impact on society, environment, climate and economy, literature and practice covering the CSR-related interpretations or activities in the maritime logistics industry are reviewed here. 

The UN Global Compact aims to encourage businesses all over the world to be socially responsible. The universally accepted Ten principles are listed below.

Human rights

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
Principle 2: make sure that they are not complicit in human rights abuses.

Labour

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
Principle 4: the elimination of all forms of forced and compulsory labour;
Principle 5: the effective abolition of child labour; and
Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment

Principle 7: Businesses should support a precautionary approach to environmental challenges;
Principle 8: undertake initiatives to promote greater environmental responsibility; and
Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anti-corruption

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

(Source: “The Ten Principles,” 2010)

Corporate Social Responsibility Moving Forward in the Shipping Industry

Interpreting the CSR Report 2012 released by Pacific Basin Shipping Limited (PB)

*Pacific Basin Shipping Limited (PB) is a leading owner and operator of modern Handysize and Handymax dry bulk ships globally, sourcing from the official website of PB. PB also engages in significant harbor and offshore tug business in Australasia with its headquarter located in Hong Kong. By taking a closer look at PB's official website, **A Case in Point** its explicit mission to achieve success by applying the highest standards of service makes it clear that they are planning to be environment friendly and socially responsible, which in turn makes their business competitively stronger and positively impacts on long-term shareholder value. (Source: www.pacbasin.com) *

Believing that improvement of CSR performance will make their business more competitive, stronger and positively impact long-term shareholder value, PB initiated CSR practices which involved commitments to sound operating and business practices, minimizing the impact their operations have on the environment at sea and on shore, engaging with the communities where their employees live and work and creating workplace conditions that allow their people to thrive.

Pacific Basin Shipping Limited (PB) integrating Corporate Social Responsibility (CSR) efforts into their daily business and operating practices

Community

By raising donations to encourage staff to participate in activities that are good for health and sponsoring students with scholarships to pursue education in the international shipping industry, PB got involved in the communities associated with shipping industry as well as the well-being of employees.

Environmental dimension

PB aims to always achieve zero pollution incidents. They achieved this aim in 2012 with zero incidents reported. In the past five years, CO₂ emissions were reduced by 20%.

Social dimension

PB endeavours to provide a better working environment and training opportunities for their employees. There were five officer training seminars and 51% of shore staff received external training in 2012. These endeavours led to high rate of staff retention for both seafarers and shore staff.

Key accomplishments included the reductions in air pollution, an increase in the number of training workshops and donations to charitable causes.

As can be seen from the above-mentioned concept of CSR as defined by various institutions as well as by the case of PB, key accomplishments across different dimensions of CSR included the increasing awareness of seafarers' rights, reductions in air pollution, engagement in communities, an increase in the number of training workshops and donations to charitable causes. The dimensions of corporate social responsibility cover social, economic and environmental aspects. **Labour rights, employment condition and community involvement** comprise the social aspect. **Financial performance and organizational efficiency** belong to the economic aspect. Environmental aspect mainly consist of **air pollution management, noise pollution control, waste and dumping management, and energy conservation.** 

Rationale for Shipping Companies Implementing CSR Strategy

The application or implementation of corporate social responsibility is challenging due to variable factors like confusing interpretations, cultural differences, management priorities, short-term time and capital cost. However, there is still a trend of practicing CSR. This section will consider the incentives of following this philosophy in the shipping industry.

Thomas et al. (2012) discussed the concept of corporate social responsibility (CSR) within the scope of the container liner shipping industry. A framework was outlined after having looked into the current CSR practice in this industry, and **rational for companies adopting and implementing CSR strategy** was proposed, as well.

The authors thought that the adoption and implementation of effective CSR strategies by a few companies at the top can easily be a role model for the other companies in the container liner shipping industry. Given a snapshot of CSR-related activities of the world's top five container shipping lines, Thomas et al. (2012) tried to find the necessity for CSR in maritime logistics. The snapshot analysis at the beginning of this chapter has shown that the top carriers' main focus in reporting on CSR activities lies on environmental issues. A case study about one of the top companies, NYK Group, CSR strategy was illustrated, with the conclusion indicating that NYK placed more focus on the environmental dimension of CSR. Authors thought a sector-specific definition of CSR for the container shipping industry is in need because Managers are confused due to various interpretations of CSR.

The first attempt to examine **the relationship between CSR and organisational performance in the container shipping industry** was a research project proposed by Lu et al. (2009). Lu et al. pointed out three critical CSR dimensions and examined the relationships between corporate social responsibility and organisational performance in container shipping in Taiwan through a factor analysis methodology. Three dimensions of CSR and the main factors in container shipping companies and container shipping related agencies were identified by factor analysis. They were (1) Community involvement and environment; (2) Disclosure; (3) Employee and consumer interests. These three factors are consistent with the principles outlined in the ISO 26000.

The first factor was comprised of 7 items all associated with community involvement and environment, such as company frequently holds charity activities, donates to charity groups, invests in educations and so on. The second factor consisted of 8 items which were related to employee and consumer interests, such as providing training to improve employees' skills. The third factor consisted of 2 items which were disclosure related such as company applying high standards for disclosure, accounting, audit, environmental and CSR reporting. Findings from the results also showed that (1) community involvement and environment and disclosure positively influence financial performance, (2) employee and consumer interests has positive effects on non-financial performance.

Lu et al. used factor analysis to summarise multiple attributions of CSR and organizational performance into a smaller key representative factors. Variables with a factor loading greater than 0.5 were extracted and variables with two factors loading larger than 0.5 were eliminated. A reliable test, analysis of variance and multiple regression analysis were conducted. Results of the multiple regression analysis demonstrated that CSR dimensions have a positive influence on financial performance in the container shipping industry. Ratings between shipping companies and shipping agencies were found to be different significantly in dimension of community involvement and environment and disclosure. 

Rationale for Shipping Companies Implementing CSR Strategy

What is the motivation for the shipping industries to adopt CSR practices instead of trying to purely satisfy the demand for transport and logistics? Furthermore, to what extent should the motivation be addressed by the organization internally? Is there any practical value of “Codes of Practice”?

Although there is no commonly defined concept of CSR, the meaning and acceptance of it is widely advocated to some extent. On the one hand, the extent that the social and environmental issues should be emphasized and to what extent should the stakeholders derive benefits from a socially responsible activity organized within the company were two confusing aspects. In order to tackle the two uncertainties, Fafaliou et al. (2006) attempted to present a better understanding of CSR attitudes and potential links between CSR and maritime sector. Authors also tried to identify the real practical value of “Codes of practice”.

The shipping industry is well understood as a service industry that satisfying the transport and logistics demand. Shipping companies over the past years hadn't considered its public image due to its business nature. In addition, though the international regulations and conventions had the minimum requirements for shipping companies, the way the shipping companies behaved and operated could not be controlled precisely and efficiently in the aspect of social responsibility. It is therefore peculiar that these companies re-considered their strategy towards the public?

Fafaliou et al. (2006) explained that the price of shipping was not decided by ship owners alone. Game theory between supply and demand influenced that, and consumers had the final say towards the supply and demand. It became evident that shipping companies should also focus on their public image in order to satisfy customers' requirement towards operational safety and quality. The **International Maritime Organization** set standards with regards to the shipping safety. Further more, the **International Safety Management Code** came into force in respect of increasing the standards of implementing measures which would ensure the safety level of shipping services. Staying within this rules became an obligatory action for shipping companies, and this could be seen as a matter of social responsibility. **Afterwards, being socially responsible, if not absolute, was not a choice but a rule to follow among the shipping industry.**

Skovgaard (2012) conducted a qualitative study of the ten largest Danish shipping companies comparing them with a previous study of the 1000 largest Danish Companies. Based on a hypothesis that change in state regulation would affect the degree corporations behave social responsibly, the author mentioned that CSR policies should contain the standards, guidelines or principles where could be translated and put into practice through any systems or procedures.

In order to evaluate the integration of Corporate Social Responsibility in business organizations, Tonya et al. (2007) conducted a case study of Wihelmsen Shipping Company which identified the leader's experience in developing and implementing CSR strategies.

Rationale for Shipping Companies Implementing CSR Strategy



Photography by Ning WU (2013)

For a comprehensive evaluation, the study utilized the triple bottom line method in defining CSR, which includes balanced attention on three aspects (financial, environmental, social), and regards “leadership” as the critical factor in maintaining the balance. Three types of leadership practices supporting CSR implementation have been identified by Tonya and Marcia (2007).

- (1) Value-based leadership model: The senior management have emphasized and reinforced five organizational core values to ensure all employees conform to them in everyday work, and the leaders facilitate the employees to incorporate these values to align with CSR strategy.
- (2) Use of the balanced scorecard: The Balanced Score Card (BSC), as a focused set of key financial and non-financial indicators including leading and lagging indicators, is implemented as a device to turn CSR strategies into practical activities and which facilitate employees to make daily decisions supporting long-term benefits.
- (3) Development of a management training program: A specialized training program (i.e. The WW Academy) is established to help managers develop strategies that integrate different dimensions of CSR implementation (e.g. organizational values, 3BL components, leadership behaviors). 

Shipping Companies towards CSR Initiatives, Action for a Sustainable Industry

It could be concluded that, with the findings of qualitative research and limited quantitative research, a large proportion of companies which are adopting the CSR strategy are either the subsidiaries of multinational conglomerates or private enterprises run by owners with social responsibility awareness. Taking Pacific Basin Shipping Limited Company, OOCL and HIT for examples, they are actually big fish in the maritime industry. They all care about the public image as well as the well-being of the community where they operate. Public pressure is along with such key players both consciously and unconsciously, so they cannot only be aware of the social responsibility until incidents happen. Public expectation is acting as a strict auditor which monitors the way key players behave and improve.

In summary, the business rationale for implementing corporate social responsibility strategy includes: Positive impact on organizational financial performance; long-term value for shareholders; good public image and reputation; encouraging innovative ideas; more self-regulation; standardized procedures to follow; more transparency and accountability; high rate of employee retention; and positive interactions with multi-parties. 

*With a clear mission declared to be the best and most innovative international container transport and logistics service provider, providing a vital link to world trade and creating value for their customers, employees, shareholders and partners, OOCL stage associated with the maritime section. **A Case in Point** plays an important role in the global It could be seen that caring for people, through quality and being responsible for the community are the core values of OOCL's philosophy. (Source: www.oocl.com)*

Not only did OOCL have an independent section for environmental care, but also an annual report about sustainability has been prepared and released by OOIL every year since 2011.

OOCL is Oriental Overseas (International) Limited (OOIL)'s wholly owned subsidiary, operating under the trade name OOCL. OOIL is reducing their impact on the communities by being committed to strengthening their sustainability. From the environmental aspect, OOIL Group pays continuous attention to the global environmental challenges associated with air pollution, energy consumption and global warming.

OOIL group recognizes and emphasizes the significance of the community where their staff live and work. Health and safety issues, and security issues are also the priorities of the group. They go further to find an approach to integrate their sustainability strategy with their business practices, which helps them clearly see their goals for the future. With respect to the future goals, some high priority aspects were identified in the 2012 sustainable report, including:

- (1) Corporate governance associated with transparency, accountability, stakeholder engagement, and sustainability reporting.
- (2) Social issues in relation to communities, employee relationship and staff development.
- (3) Environmental issues in connection with energy consumption and efficiency, carbon footprint, climate change, pollution, recycling, waste and water.
- (4) Safety, security and health issues with respect to dangerous goods and anti-piracy.

OOCL clarified that for the environmental issues, the most significant impacts include their consumption of non-renewable fuels in their operations, the emissions produced by on-shore operating trucks, and the consumption of a large volume of water, all of which lead to air pollution and GHG emissions. Therefore, efforts to improve their facilities as well as their fleet are receiving great deal of attention. 

Environmental Protection

HIT follows the principle of setting guidelines to reach a high standard of being environment friendly when there are no applicable environmental regulations and statutory requirements to comply with. In addition, HIT periodically conducts assessments and audits to ensure continual improvement and sustainable development.

HIT forms an organisational structure for managing environmental issues which consist of different committees. Managing directors, directors, general managers and engineering managers are all involved in identifying and controlling environmental issues. They have an internal environmental team and external audit to monitor environmental management. Up-to-Date information could thus be maintained through sharing outcomes with magazines, media, seminars and so on. HIT's audit complies with the ISO 14001 Environmental Management System.

Environmental protection is Hongkong International Terminals' ongoing mission as can be seen by the catchwords placed at on the top right side of the independent section for Corporate Social Responsibility on HIT's official website. HIT, indeed, do business in a way they state on its website. HIT cares for the environment, cares for the community and education, and is commitment to do business ethically and social responsibly.

Hongkong International Terminals (HIT) is a member of the world's top container port business trust, HPH trust, which is listed in Singapore. HIT is involved in businesses like port and logistics operations with an advantage of enjoying the access to services and resources within the port trust group. Undoubtedly, HIT is a key player both in the port of Hong Kong as well as in the global supply chain. The principles applied by HIT in its business and operational practices could become guidelines for industry-wide partners. (Source: www.hit.com.hk)

A Case in Point

Community Care

HIT is committed to caring for and helping the community. HIT also takes part in various activities ranging from raising donations for single special events such as the Community Chest Green Day, to collaborating with Hong Kong Red Cross in its blood donation project, to working on promoting road safety. All these efforts are highly appreciated and recognized by the community as receiving care from HIT.

Education

Over the past decades, HIT became a firm supporter of assisting Hong Kong's youth to pursue their dreams. HIT adopted two dock schools: one is the Tsuen Wan Trade Association School, the other is the Hong Kong institute of Vocational Education Tsing Yi Branch.

HIT has also been actively engaged in Youth Community Service and sponsoring competitions, and has provided scholarships to students since 1998. Investment in education is a proper way not only to benefit our community but also bring up young professionals for the future. 

Lu et al. (2009) attempted to apply the factor analysis to measure CSR performance. Table 1 shows the mean score of 22 CSR attributes after conducting a survey of container shipping firms and container shipping related agencies. In order to decrease the attributes of CSR and organisational performance, Lu et al. (2009) applied factor analysis and summarized a smaller number of attributes which were critical representative factors. There were all together 22 CSR attributes. To better interpret the factors, only variables which had one factor weighting over 0.5 were extracted, and those that had two factors larger than 0.5 were eliminated in their research. As a result, there were in total three factors that were extracted to stand for the various attributions of CSR in container shipping companies and container shipping related agencies.

Introduction of the factor analysis applied by Lu et al. (2009) to measure the CSR performance.

Table 1. Perceived agreement level of CSR attributes

CSR attributes	Mean	Rank
Our company does not make representation or omissions, nor engage in any other practices that are deceptive misleading, fraudulent or unfair	4.43	1
Our company takes adequate steps to ensure employees' occupational health and safety in their operations	4.36	2
Our company emphasises consumer privacy and provides protection for personal data	4.36	2
Our company complies with the tax laws and regulations in all countries in which it operates and contributes to the public finances of host countries by making timely payment of their tax liabilities	4.32	4
Our company does not discriminate against employees with respect to employment or occupation on such grounds as race, colour, sex, religion, political opinion, national extraction or social region	4.28	5
Our company does not obtain business interest by cheating our customers	4.24	6
Our company advocates activities such as energy saving, recycling and reduced wasting	4.21	7
Our company, to the greatest extent practicable, employs local personnel and provides training with a view to improving skill levels	4.18	8
Our company emphasises the reserved staff development, skill training and on-job training	4.18	8
Our company provides transparent and effective procedures to address consumer complaints and contribution to fair and timely resolution of consumer disputes without undue cost	4.15	10
Our company requests our business partners to enhance environmental protection awareness and comply with related environmental regulations	4.04	11
Our company undertakes initiatives to promote greater environmental responsibility	4.03	12
Our company continually controls and improves the pollution situation to reduce the influence on the environment	4.02	13
Our company sponsors charity groups	3.84	14
Our company ensures that timely, regular, relevant information is disclosed regarding our activities, structure, financial situation and performance	3.74	15
Our company adopts high standards of environmental and CSR reporting	3.72	16
Our company applies high-quality standards for disclosure, accounting, audit, environmental and CSR reporting where it is located	3.60	17
Our company supports education-related activities such as scholarship, intern opportunities and visiting	3.53	18
Our company contributes to urban and community progress for environmental improvement	3.49	19
Our company frequently holds charity activities	3.45	20
Our company participates in community development and inhabitants' welfare	3.36	21
Our company sponsors cultural and artistic activities	3.27	22

Adapted from Lu et al. (2009)

Reliability test based on a Cronbach alpha statistic

In line with the scores of the three factors, a reliability test was conducted to test whether factors were consistent and reliable or not. The Cronbach alpha value of each factor was greater than 0.7 which demonstrated a satisfactory level. As shown in Table 2, Factor 1 mainly consisted of financial related factors, such as the profit rate, revenue growth, market share and return, which together contributed to an accumulated percentage of 45.812% out of the total variance. In addition, Factor 2 comprised of non financial related factors, such as service quality, customer satisfaction and competitive position which together contributed to an accumulated percentage of 27.056% out of the total variance.

Table 2. Factor analysis of organisational performance

Performance variables	Factor 1	Factor 2
Profit rate	0.889	0.102
Growth rate on revenue	0.885	0.139
Market share rate	0.848	0.261
Return on assets	0.833	0.199
Operation cost	0.666	0.376
Service quality	0.091	0.873
Customer satisfactory	0.174	0.855
Competitive position	0.442	0.615
Eigen values	3.665	2.150
Cumulative percentage variance (%)	45.812	72.686
Cronbach alpha values	0.908	0.776

Source from Lu et al. (2009)

Analysis of variance (ANOVA)

ANOVA analysis was applied to test the differences of CSR and organisational performance between container shipping companies and container shipping related agencies. As Table 3 shows that there was no significant differences regarding the mean scores of the factors between two types of firms. The two types of firms both scored the highest in the factor of “Employee and consumer interests”.

Table 3. ANOVA analysis of CSR and organisational performance

CSR dimensions	Types of firm	
	Shipping companies	Shipping agencies
Community involvement and environment	3.74	3.33
Employee and consumer interests	4.24	4.32
Disclosure	4.10	3.39
Organisational performance		
Financial performance	3.71	3.17
Non-financial performance	4.18	3.91

Adapted from Lu et al. (2009)

Methods Applied to Measure and to Realize the CSR Performance

Table 4 shows that, to test the difference among different firms in terms of revenue, mean scores of four CSR dimensions were found to be significantly different among the tested three categories of firms. Only the mean score of the factor for “Employee and consumer interests” was found to be similar. Thus, firms of higher revenue scores higher in the other CSR dimensions listed in Table 4.

Table 4. ANOVA analysis of CSR and organisational performance among firm size in terms of revenue

CSR dimensions	Revenues (NT\$)		
	< 0.1 billion	0.1-10 billion	>10 billion
Community involvement and environment	3.33	3.34	3.97
Employee and consumer interests	4.28	4.23	4.37
Disclosure	3.37	3.61	4.31
Organisational Performance			
Financial performance	3.12	3.38	3.90
Non-financial performance	3.89	4.00	4.29

Adapted from Lu et al. (2009)

Multiple Regression Analysis

According to Table 5, the conclusion could be made that a positive relationship existed between CSR dimensions and organisational non-financial performance in the container shipping industry.

Table 5. Results of multiple regression analysis of CSR and non-financial performance

Independent variables CSR dimensions	Dependent variable non-financial performance
Community involvement and environment	0.365
Employee and consumer interests	- 0.325
Disclosure	0.042

Adapted from Lu et al. (2009)

As well as testing the influence of CSR dimensions on organisational non-financial performance in the container shipping industry, the authors also tested the influence of CSR dimension on financial performance. The results shown in Table 6 indicates a positive relationship between CSR dimensions and organisational financial performance since the regression coefficients of “Community involvement and environment” and “Disclosure” are positive, though the coefficient of “Employee and consumer interests” is negative.

Table 6. Results of multiple regression analysis of CSR and financial performance

Independent variables CSR dimensions	Dependent variable financial performance
Community involvement and environment	0.267
Employee and consumer interests	- 0.036
Disclosure	0.421

Adapted from Lu et al. (2009)

On the one hand, this study had identified three critical dimensions of CSR which were consistent with previous studies on CSR by other scholars. The three critical factors were community involvement and environment, disclosure, and employee and consumer interests. Results also showed that the performance in “community involvement and environment” and “disclosure” dimensions differed significantly in container shipping companies and container shipping related agencies. Research findings indicated that large firms, in terms of firm types as well as firm sizes, had a better performance for CSR than small firms.

Methods Applied to Measure and to Realize the CSR Performance

On the other hand, this study contributed to the examination of CSR on organisational performance in the container shipping industry by providing comprehensive evaluations. Multiple regression analysis tested the influence of CSR on organisational financial performance as well as the influence of CSR dimensions on non-financial performance. The factors that had a positive influence on financial performance were “community involvement and environment” and “disclosure”. “community involvement and environment” and “employee and consumer interests” were two major factors influencing non-financial performance. These findings may be helpful in assisting managers in the shipping industry to better understand the dimensions of CSR and thus implement this concept within the organisation.

An institutional theory approach that Jan Skovgaard used to identify whether CSR strategy was confirmed or decoupled.

Jan Skovgaard (2012) presented a paper at the DRUID Academy in 2012, titled “Corporate Social Responsibility in the Danish shipping industry”. Skovgaard attempted to examine an initiative in connection with the CSR reporting from the Danish government. Skovgaard examined whether the initiative was persuasive enough for the shipping industry to apply CSR strategy. Skovgaard conducted a qualitative study covering annual financial reports and CSR reports of the top ten Danish shipping companies for a period from 2006 to 2010. An institutional theory approach was applied in this study to identify whether CSR strategy was confirmed or decoupled.

Skovgaard investigated the decoupling of rhetoric in connection with CSR implementation in the shipping industry. Since there are various definitions and interpretations of CSR, the real value of CSR may vary in different ways in different companies, which makes the evaluation more difficult. In Skovgaard’s study, it was assumed that if a company had a policy associated with five issues, it would thus be a socially responsible company. Four of the five issues were exactly consisted with the four aspects outlined by UN Compact introduced in the Commitment to Behave More Socially Responsible Section.

The author measured the CSR policy with a Weberian approach, where organizational policies incorporating five issues was an ideal situation. Each company got one point for one issue emphasized in policy, and a company could get 5 points if it had policies associated with all five issues.

Table 7. CSR areas and activities reported by the top then Danish Shipping companies in 2009

Shipping Company	Human rights	Labour rights	Social supporting	Environmental Concern	Anti-corruption
Maersk Line	+	+	+	+	+
D/S Torm	+	+	+	+	+
D/S Norden	+	+	+	+	+
DFDS	-	+	+	+	-
J.Lauritzen	+	+	-*	+	+
Clipper G.	-	-	-	-	-
Unifeeder	-	+	+	-	-
Mols Linien	+	+	-	+	+
Scandlines	-	-	-	-	-
Hemming	-	-	+	+	-
Shipping	-	-	+	+	-

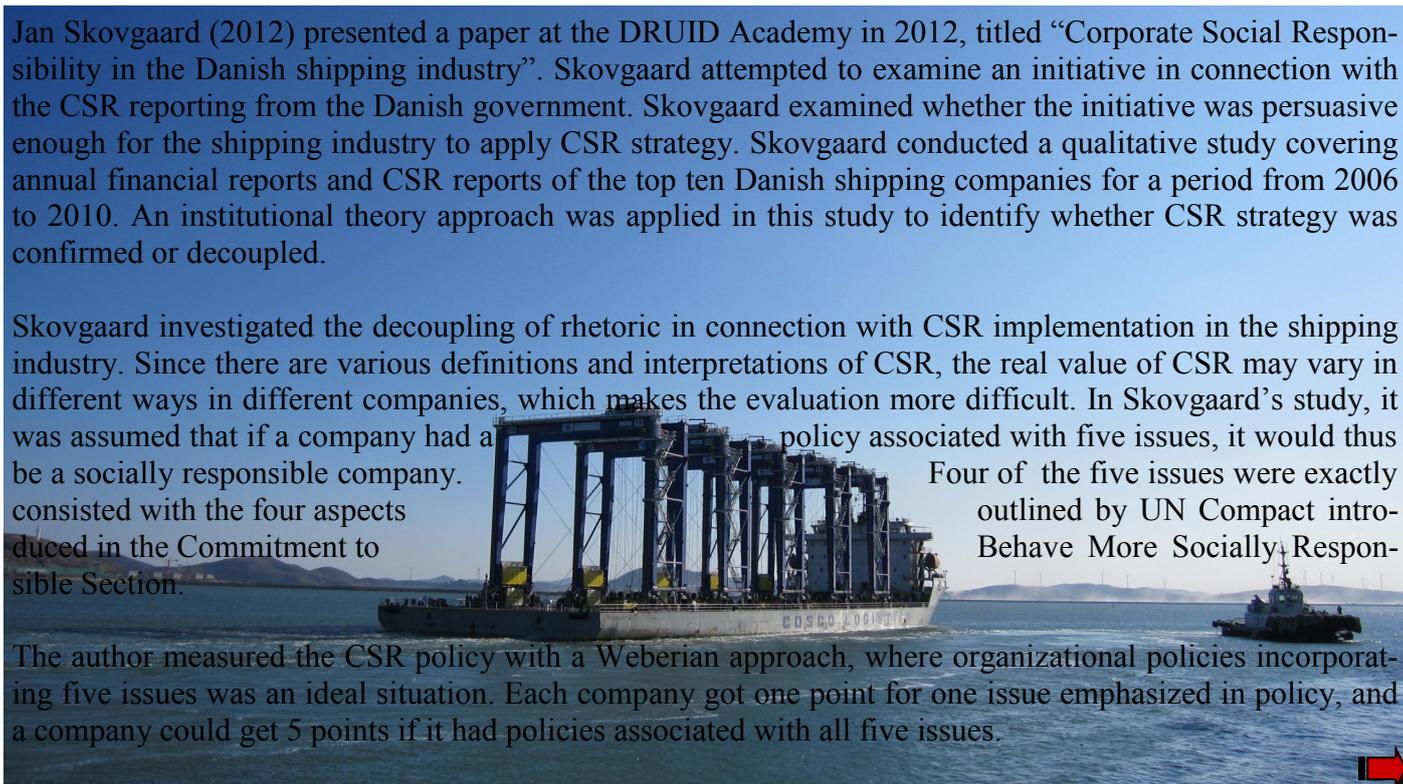
* The owner of J.Lauritzen, The Lauritzen Foundation is social engaged and has explicit charitable aims, but this has no relevance for the present study. The same apply to DFDS, Maersk Line, and D/S Norden.

Source from Jan Skovgaard (2012)

Table 8. CSR areas and activities reported by the top ten Danish Shipping companies in 2009 with tangible follow-up in 2010

Shipping Company	Human rights	Labour rights	Social supporting	Environmental Concern	Anti-corruption
Maersk Line	-	+	+	+	+
D/S Torm	-	+	-	+	+
D/S Norden	-	+	+	+	+
DFDS	-	+	+	+	-
J.Lauritzen	-	+	-	+	-
Clipper G.	-	+	-	+	-
Unifeeder	-	+	-	+	-
Mols Linien	-	+	-	+	-
Scandlines	-	-	-	-	-
Hemming	-	-	-	-	-
Shipping	-	-	-	-	-

Source from Jan Skovgaard (2012)



Methods Applied to Measure and to Realize the CSR Performance

A question arises as to whether a company really acts upon those policies associated with CSR issues. This depends on follow-up observations in the next year. A company got 1 point if it did execute those policies mentioned in the previous year. Taking the reduction of CO₂ emission as an example, statements of 2009 said that the company aimed to reduce the CO₂ emission by 10% in the next year. Evidence would be found in the next year's annual report. A promise was tested by such a follow-up action and shipping firms received 1 to 5 points in such a way. Results are shown in Table 7 and Table 8 in page 13.

Figure 1. Companies' CSR policies and follow-up measured against a Weberian ideal type of 5 points

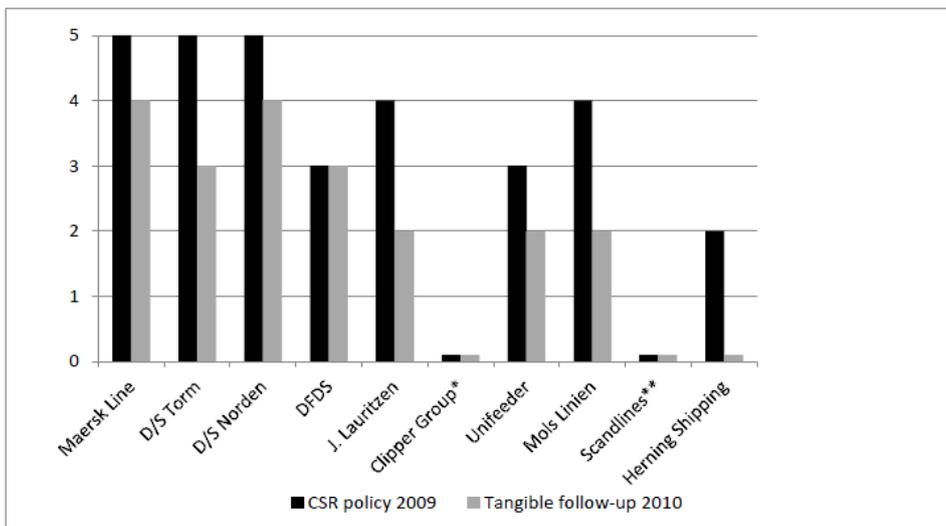


Figure 1 on the left showed that the top ten Danish shipping Companies' CSR policies and follow-up measurement against a Weberian ideal type of 5 points. Maersk Line and D/S Norden both scored the highest in terms of the Weberian points as well as the follow-up measurement.

Source from Jan Skovgaard (2012)

Wu and Haasis (2013) applied KM into realizing CSR performance.

The sustainability performance is increasingly becoming a strategic role in the freight industry. Wu and Haasis (2013) proposed a knowledge-related approach in order to better enhance sustainability performance of freight villages (FVs). As the sustainability performance of a company entails the same triple bottom line as the social responsibility, the methods of this study to promote three dimensions can be related to promoting social responsibility. Table 9 shows the three dimensions of FVs in sustainability.

Table 9. FVs' contributions within three dimensions of sustainability

FVs as a pivotal element in sustainability		
Environmental dimension	Social dimension	Economic dimension
Improve air quality; Reduce pollution emissions of vehicle and sound pollution to the central cities; Possibility for reverse logistics and consolidation; Reuse brownfield or wastefield properties; Easily access environment-friendly logistics technologies by investment advantage.	Achieve local community development goals; Increase local employment; Improve the living quality of local people; Inter-modality can significantly reduce congestion on the roads; Concentration of transportation in proximity to consumer centres; Consolidate regional or national logistics networks.	Reduce operative costs by combination of logistics services; Increase income by value-added services; Maintain long-term competitiveness for settled companies by cooperation; Create local economic value; Optimize regional economic structure; Enable efficient management of the supply chain.

Adapted from Wu and Haasis (2013)

Wu and Haasis (2013) applied Knowledge Management (KM) into realizing CSR performance.

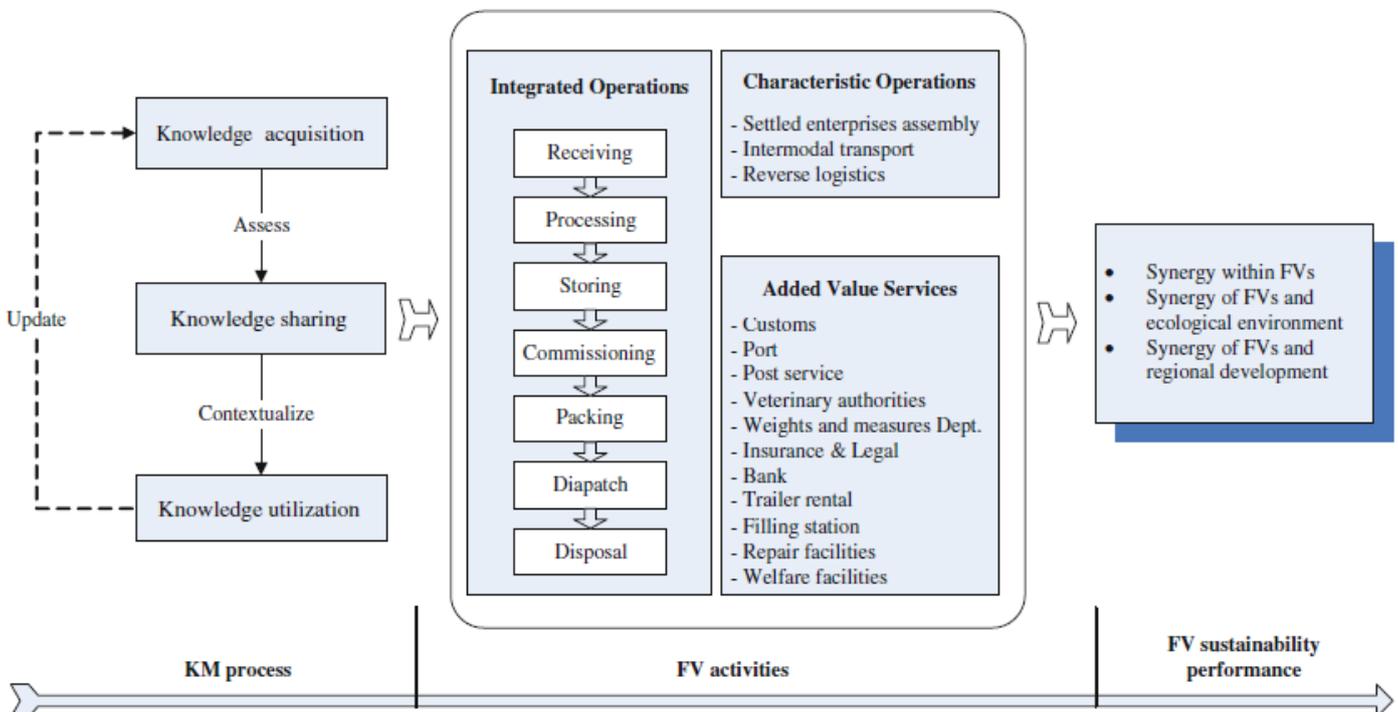
Framework of KM process

KM approach was demonstrated by the author that it was effective for realizing sustainability performance with the conceptual tool of sustainability balanced scorecard (SBSC). This article framed a three-layer roadmap of applying KM actions to build FVs' sustainability.

In line with the integration of knowledge-related topics into the logistics and supply chain field, Wu and Haasis (2013) focused on the KM implementation in FVs to convert knowledge into sustainability performance. The framework of KM process is given in Figure 2.

KM process consists of three knowledge tools: knowledge acquisition, and knowledge sharing and knowledge utilization. By applying these three tools into the FV activities, three direct and explicit sustainability performances could be achieved as such shown in Figure 2. The areas that KM facilitated were outlined as (a) Synergy with FVs, (b) Synergy of FVs and ecological environment, and (c) Synergy of FVs and regional development.

Figure 2. Framework of KM process for driving FV sustainability performance



Source from Wu and Haasis (2013)

Wu and Haasis (2013) applied KM into realizing CSR performance.

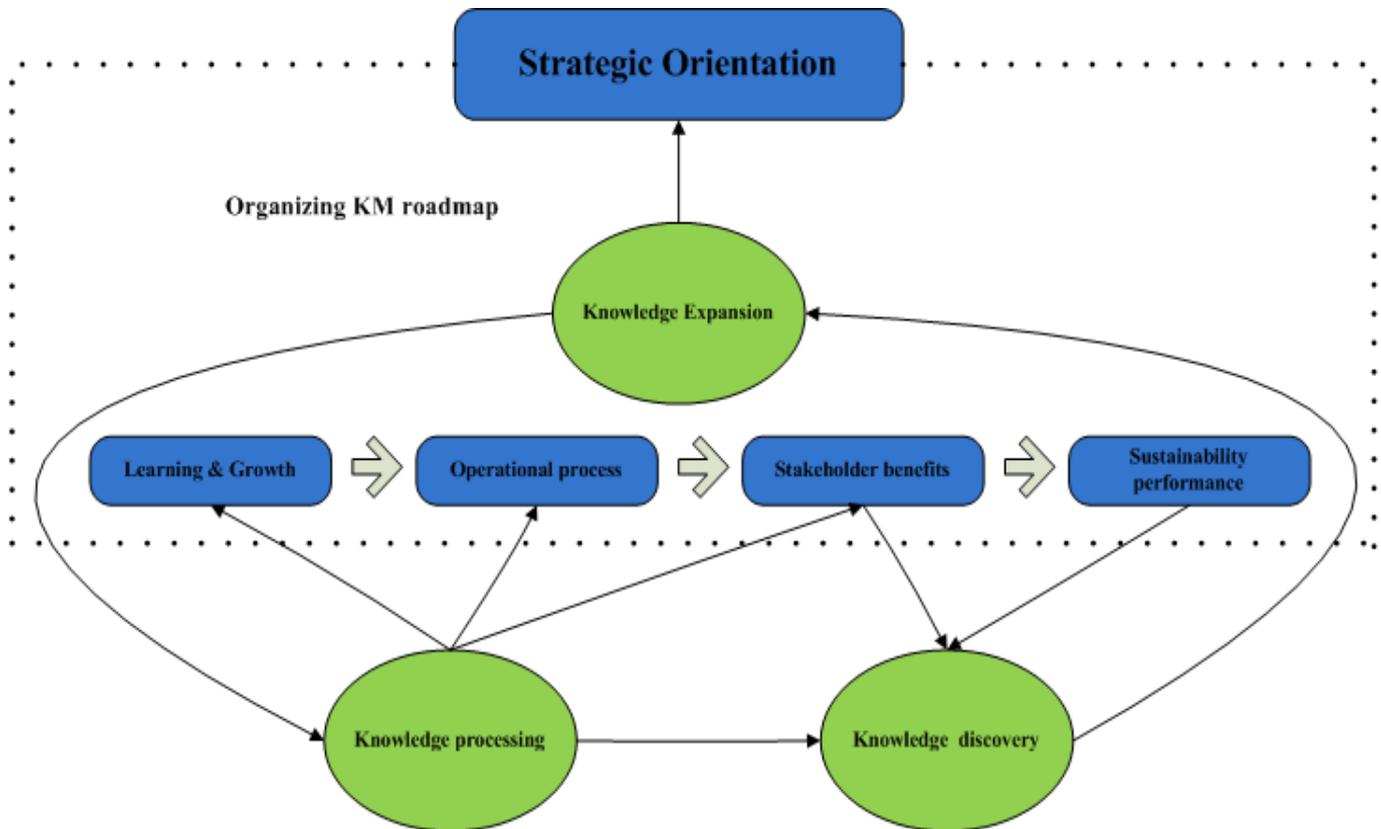
Table 10 summarises the three KM processes associated with main points of each process. Knowledge content will be assessed after they are acquired through various ways, and the insights created from these processes will be made available afterwards. In order to apply KM within the organization, a roadmap of organizing KM for building sustainability capability was accordingly given in Figure 3.

Table 10. KM process and main points associated with each process

Process	Main points
Knowledge acquisition	Identification and subsequent codification (or creation) of existing internal knowledge and know-how within the organization and/or external knowledge from the environment
Knowledge sharing	Processes transferring, disseminating, and distributing knowledge order to make it available to those who need it
Knowledge application	Incorporating knowledge into an organization’s products, services and practices to derive value from it

Adapted from Wu and Haasis (2013)

Figure 3. A roadmap of organizing KM for building sustainability capability



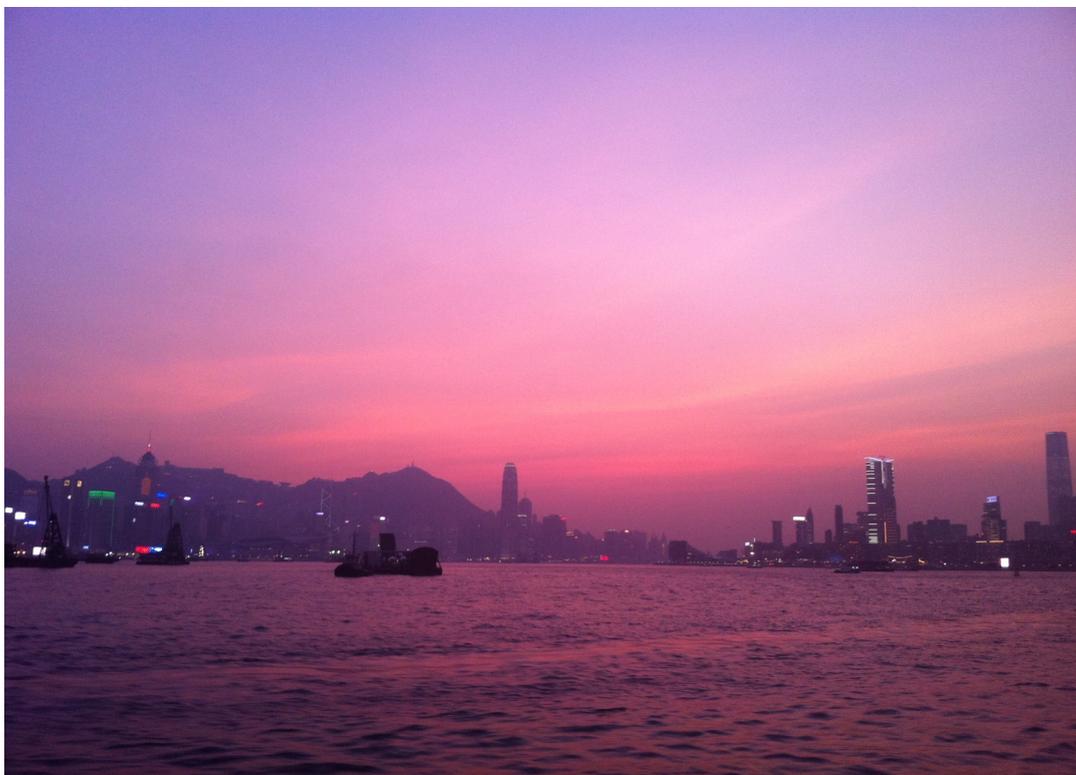
Adapted from Wu and Haasis (2013)

For Environmental Dimensional Priorities

Systematic Environmental Management

There are some tools or international standards which can help assist the environmental management in the maritime industry. The Environmental Management System (EMS), for instance, can effectively help assist managing environmental risks.

EcoPorts initiatives also assist ports in making a continuous improvement on environmental management. Initiated by the European Sea Ports Organization, EcoPorts includes several different methods: (1) the Self Diagnosis Method (SDM). This method is used to diagnose the environmental risks and set applicable priorities. Based on a quick response by the managers, an analysis report presenting a SWOT of the ports will be produced, with implications on strategic advice. Further commitment is needed due to limited understandings from port managers. (2) Port Environmental Review System (PERS). PERS is applied in follow-up measurements. A progress report to present evidence for effective implementation of the EMS is due to be produced. A follow-up review of the guidelines, documents and commitment are expected to enhance the effectiveness of environmental management even though it may be time-consuming and cost-ineffectiveness. (2) Strategic Overview of Environmental Aspects (SOSEA). SOSEA aims to guide ports on how to gather information and manage their liabilities and responsibilities by identifying key environmental aspects both at operational and managerial levels.



Photography by Fang ZHANG (2012)

For Environmental Dimensional Priorities**Implications on Individual Port's Policies****Air quality control**

- (1) Using low emission fuels when operating the fleet and other on shore equipment.
- (2) Installing and investing in low emission on shore equipment and off shore vessels.
- (3) Setting incentive mechanisms on environment friendly port users, such as rewarding ship owners with “outstanding environmental performance” type of awards.
- (4) Making shipping companies’ environmental performance an indispensable consideration during the tendering process.
- (5) Applying knowledge management in sharing good practices and experiences to improve air quality.
- (6) Offering different and better services to those good performers in air quality control. The service waiting time may be shorter or longer, and is based on the types of the off shore vessels and on shore vehicles.
- (7) Calculating and then reporting the carbon emission of the port authorities.
- (8) Managing energy efficiently and effectively by setting targets.
- (9) Encouraging innovative ideas on alternative energy sources.

Being the residents of a port city, we just want to see nothing but bluer sky when we look up. Will the blue sky go away?**Noise pollution management**

Noise always comes with transportation. New technologies in connection with transportation may make sense in noise reduction while not easy to be developed. Therefore, at the current situation, a noise management plan and monitoring record can be established in order to identify the extent of noise and the infrastructures which produce noise. Incentives for quiet ships and vehicles can be set for encouraging a higher level of commitment to services of low-noise generation.

Waste management

The EU has taken waste prevention into consideration based on the following three principles.

- (1) Waste prevention: reducing the level of waste and the dangerous amounts.
- (2) Recycling and reuse: there are many materials which could be possibly recovered and recycled.
- (3) Improving final disposal and monitoring: monitoring mechanism is due to be established to ensure safe recycling and reusing since not all the waste substances can be reused. In view of the EU’s initiatives, ports do need a plan to handle all kind of waste.

(Source: “Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste”, 2012)

Actions range from establishing a waste management plan, investing in new equipment or technology that can help deal with waste, setting incentives for rewarding those companies achieving something in waste management, setting targets in reducing waste water, and providing different service to port users which incorporate waste practices and monitory reports. A waste collection fee within the port are might also be included.

For Social Dimensional Priorities

Strengthening outreach with local communities

- (1) Corporation with local communities in environmental management, such as providing local communities with monitoring records of air pollution, waste and noise, thereby enabling communities to engage into control and monitoring.
- (2) Regular feedback collection. Through regular official or unofficial meetings with local communities, views can be collected for further discussion.
- (3) Supporting community activities (education institutions, NGOs, etc.) through sponsoring and co-organizing events which are community caring, caring for the development of the younger generations and being environmental caring.

Improving the quality of seafarers

- (1) Providing them with good living conditions, regular communications, regular pay and medical care, welfare benefits for themselves and their dependents.
- (2) Organizing social activities that can enhance their sense of security and belongings and conducting training and workshops that can improve and update their skills.
- (3) Making them feel that their job are worthwhile and making their dependents feel proud of every seafarer.
- (4) Ensuring safe and healthy working conditions.
- (5) Providing public transportations that send staff to and from their workplace and increasing the sustainability at the same time.
- (6) Complying with the International Labour Convention and International Safety Management Code in real practices.

For Economical Dimensional Priorities

- (1) Increasing the number of evolved stakeholders so that they can achieve some agreements in various aspects.
- (2) Clearly interpreting CSR concepts and related activities so managers in shipping companies can get a clear direction to follow.
- (3) Establishing traceable documentations like reports production and press releases considering CSR transparency and accountability in terms of future reviews and tracking, especially when achieving something associated with different aspects of CSR.
- (4) More interaction with massive stakeholders from multi-parties in terms of long-term value creation.
- (5) Encouraging standardized procedures and policies within individual companies.
- (6) Applying knowledge management tools to share good practices and experiences among all staff and encouraging innovative ideas by providing internal and external spiritual and material incentives.

All in all, a systematic approach is needed in tackling different dimensional CSR priorities because problems could be complicated and management processes are better to be repeatedly reviewed. Through a systematic approach, the input, output and progress can be controlled, which makes the management process easier to follow, review and adjust. 

1. Changing Trends and Birth of SMART Ports

According to Joseph Stiglitz (2002), the Nobel Prize Winning Economist, two novel ideas emerged in the United States almost simultaneously in the latter half of the 20th century. The first idea of globalization and free trade, despite its lack of sufficient clarity, was enthusiastically embraced and aggressively promoted, primarily by the developed nations led by the US. The second idea of 'Limits to Growth' (LTG) and sustainability was also widely recognized and found acceptability to a certain extent but was not aggressively promoted as the other phenomenon by the policy makers for obvious reasons.

We today, witness the impacts of both these phenomenon, where a few countries and regions like Japan and Greece to name a few, have overshot their limits by a huge margin and are facing the consequences of their erroneous behavior by way of deflated economies while other countries like India have been halted well short of their limits and have thus failed to realize their true potential. Stiglitz goes on to suggest that both the above stated forces of globalization on one hand along with limits to growth on another will perforce result in mutation of sectors, regions and countries to a higher evolved state and those entities which do not do so will shrivel and die while others will survive and succeed.

Perhaps it was erroneous to expect a perpetual linear growth of global economy and trade in the first place without accounting for some negative side effects such as global warming and unequal distribution of wealth. Hence we are witnessing a growth of different kind. Commercial entities which are nimble and smart and who have also altered their business models accordingly have managed to beat the recession and are back on the growth track whereas those who have failed to do so find themselves on the slippery slopes to bankruptcy and destruction. The same analogy can be applied to the global ports. In a globalised world, ports form a very important part of international trade as they provide cost effective movement of goods across markets.

It also should be remembered that we live in an era of smart economy where efficiency, adaptability, improvisation, innovation and customer satisfaction matters much more than size, growth rate or revenue generation. Similarly a smart port could be defined as a sustainable, measurable, highly focused, self assessing and correcting almost living creature. Thus the ports of tomorrow will necessarily have to metamorphize themselves into smart and nimble entities which are forever willing to improve their service quality in an efficient manner in order to ensure increasing stakeholder satisfaction. They will have to consistently find innovative ways to cut costs and eliminate waste. Finally value addition will be a mission rather than a process.

However in recent times, worldwide economic downturn has impacted shipping industry, port sector revenue realization as well as capacity utilization. Despite this it was expected that in the longer term, as the shipping sector being the cheapest form of commercial transport would still carry a greater proportion of world trade particularly the bulk commodities such as crude oil, petroleum products, iron ore, coal, grain and other manufactures. However capacity of global ports continues to grow at 11% whereas the port sector posts a lower of 7-9%. As such port utilization rates have declined significantly from 85% to 74%.

Most of the important ports of the world today were constructed during the industrial revolution in the 19th century which were subsequently expanded and modernized with the advent of containerization. Further capacity augmentation took place as a direct result of globalization and the IT revolution. It also led to deeper penetration of hinterlands particularly in China, US and Western Europe.

However the growth story took an interesting turn in 2008 with the occurring of financial crisis which put a sudden brake on the high speed port locomotive. The orchestrated quantitative easing did delay the end for a couple of years but the writing on the wall was clearly visible to all even then. The financial stimulus provided by respective national governments in addition to creating excess capacities also helped in providing research funding for developing innovative technology helpful for cutting costs especially in the field of robotics, automation and artificial intelligence.

The improvement in technology also gave a fillip for collecting and collating vast quantity of information aptly called 'big data' which helped to increase precision and eliminate waste and dramatically improve process efficiencies. As a result of this companies have started to relocate their manufacturing activities closer to the markets in the United States and Europe. Increased production of shale gas in the US and lowering of wages in Europe has helped to hasten the process. This has also resulted in the drastic shrinking of the shipping market leading to fall in freight rates.

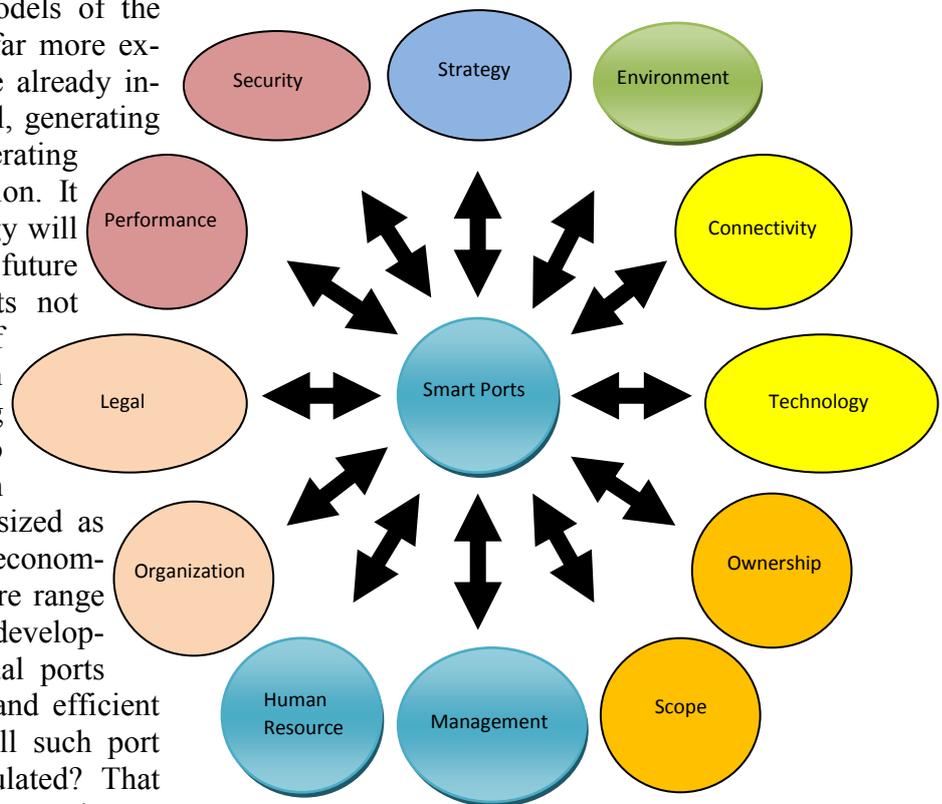
The ship owners in their quest to cut operating costs, offset the impact of higher fuel prices and regain competitive advantage had no option but to further increase the size of their ships knowing well that only a few ports in the world possessed capabilities to receive them. Further, in order to reduce risk and to optimize costs, the ship owners entered into alliances which inadvertently or otherwise assisted in stabilizing the destructive race to the bottom for a brief duration. But the rate stabilization was short lived and with the formation of the P3 alliance between the market leaders Maersk, CMA-CGM and MSC, the battle has been rejoined. This decision to form alliance has yet to receive the approval of the competition regulators who have for the time being preferred to turn a nelson's eye towards the blatant form of cartelization.

That brings us to the response of the port cooperators vis-à-vis the market entry of the mega carriers and formation of mega alliances on one hand and need to compete with other ports in attracting further away customers on the other. A solution to this conundrum can only be found by investing huge quantities of scarce and expensive capital in developing capacities particularly in dredging operations and providing hinterland connectivity. The problem which the port operators need to resolve is how to ensure adequate returns on their capital while lowering risks especially in uncertain political environment and in the face of ceilings placed on tariff setting by the state regulators. As a possible answer the ports have modified the scope of their business models.

The major port operators of today such as APM Terminals, DPW, PSA, HWL and PoR have cast their net far and wide in search of revenue and profits. In their earlier manifestation they viewed the shipping lines as their prime customers. Subsequently they shifted their gaze to the big shippers, consignees and freight forwarders. In the next phase they started providing value added services such as warehousing, inventory control and rail transportation. But the sector continues to face several constraints some of which are enumerated hereunder;

- (1) Port and dry port logistics processes
- (2) High-speed hinterland connectivity
- (3) Mechanization/Automation/Robotics
- (4) Transparent and flat organization structure
- (5) Wi-Fi and Satellite based Information systems
- (6) Capacity augmentation
- (7) Dedicated Freight Corridors
- (8) Private Sector participation and competition regulation
- (9) Environmental regulations
- (10) Ship and port security regulations

Despite this, the business models of the ports of tomorrow will be far more extensive in scope. Some ports have already invested in making steel, refining oil, generating electricity, processing food, operating tourist resorts and retail distribution. It goes without saying that technology will be playing a major role in the future growth and development of ports not only in the physical movement of cargoes but more importantly in handling, storing and disseminating the information about the cargo handled by them. The value of such information cannot be overemphasized as the information can be used in the economics of the supply chain of the entire range of cargoes. The corollary to this development would be the birth of virtual ports which could be more productive and efficient than the physical entity. How will such port companies be governed and regulated? That question will be answered in the next section.



2. Port Competition, Regulation and Governance

Prior to initiation of port privatization process most government owned ports used to operate under a sole ownership model wherein all operations were conducted by the port authorities themselves. As such there was no need for a regulator to oversee the port competition. However the necessity for a regulator was desired only with the commencement of private sector participation. The privatization policy, announced on the recommendation of the World Bank, provided for the establishment of a ‘Tariff Authority’ (TA) to ensure that there was no unfair competition between the new entrants and the established public sector ports with a special emphasis on tariff setting. This was particularly necessary as tariff is considered most vulnerable to creation of market monopolies and predatory pricing. As a result various TAs were set up which formulated guidelines developed through a consensual process involving all stakeholders. The guidelines were modified subsequently in response to new issues which emerged over the times.

Initially the TAs adopted a cost plus approach with a maximum permissible rate of return of 20% on equity employed. Tariff was also considered to be an important element of the privatization process where the key bid criteria for awarding a terminal contract to a private port operator was the royalty per TEU that the private terminal operator had to pay to the port. In addition the operator also had to assure a minimum annual throughput. On gaining experiences from several privatization projects, the criteria in subsequent bids was altered to minimum revenue share rather than royalty per TEU as there was some confusion regarding the methodology of computation of royalty which left the operator with no incentive to pay more than the minimum guaranteed sum.

Special Report: Smart Port in a Smart Era (Dr Girish Gujar and Prof. Hong Yan)

Under the new guidelines, the TAs insisted that the terminals use a cost based approach, computed by taking into consideration the total capital and operating costs and a minimum allowable return on equity capital deployed for the designed terminal capacity.

Today the role of the TA is mostly limited to tariff regulation. It is not vested with any powers to set and enforce performance benchmarks. To make matters worse appointments of officers and members of a Tariff Authority are controlled by the respective national governments themselves. Moreover, the orders of the Tariff Authority can also be superseded by the government. This renders the TAs into purely ornamental role. As such it is quite obvious that the above that the regulator/TA does not possess the competence to regulate the (dumb) ports of today, not to say the least, the smart ports of tomorrow.



Photography by Fan ZHANG (2013)

3. Conclusion

Looking into the future one can discern the blurred outlines of the smart ports of tomorrow. They will be highly integrated, multi-role, multi-national entities. It would also be logical to state that such ports would prefer to interact with similar ports in different regions in order to create synergies for the benefits of their customers, rather than with the old (dumb) inefficient behemoths. The present (dumb) ports have only two choices, either to upgrade and connect to the smart port network or shrivel and die. The smart ports network of the future will not only require large investments but most importantly national vision on the part of the policy makers and a missionary zeal on part of the port operators to mutate and evolve to a higher level of service provision. It goes without saying that revolutionary changes in legal environment will also be necessary to dovetail into the technological change. Finally it is critical to emphasize that the smart port is not science fiction of tomorrow but a fact of today on which the very survival of nations depends. The Darwinian message is clear-evolve or perish.

This research is partially supported by the C.Y. Tung International Centre for Maritime Studies Policy Research Fund, The Hong Kong Polytechnic University.

Brief Biography of Prof. Chin-Shan LU, Director of ICMS



Professor Chin-Shan Lu is currently the Director of C.Y. Tung International Centre for Maritime Studies. He has good experience and track records in the shipping management and transport logistics in the world. He received his BBA and MBA in Shipping and Transportation Management from the National Taiwan Ocean University, Taiwan, and Ph.D. in Maritime Studies and International Transport from the University of Wales, Cardiff, UK. Professor Chin-Shan Lu has a good mix of academic and service experience. He started his academic career in 1997 as Assistant Professor at the Cheng Jung Christian University, Taiwan. Later, he worked at National Cheng Kung University as Assistant Professor and Associate Professor from 1998 to 2005 and got promoted to Full Professorship in 2005. During his appointment in the National Cheng Kung University, Professor Lu also acted as a chairman for the Chinese Maritime Research Institute and independent director for the Kuang Ming Shipping Corporation in Taiwan. He also has been a co-chair for the conference of International Association of Maritime Economists (IAME) in 2012.

Professor Chin-Shan Lu's recent research addresses the issues of sustainability, green shipping, safety, national culture, and dynamic capabilities in the context of shipping and port sectors. His research papers have been accepted or published in various academic journals, including *Maritime Policy and Management*, *Transportation Research Part E: Logistics and Transportation Review*, *Transportation*, *Transportation Journal*, *International Journal of Production Economics*, *Journal of Safety Research*, *Accident Analysis and Prevention*, *European Journal of Operational Research*, *International Journal of Operations and Production Management*, *Transportation Geography*, *Transportation Research Part D: Transport and Environment*, *International Journal of Shipping and Transport Logistics*, *International Journal of Logistics: Research and Applications*, as well as in related fields. He is an Associate Editor for the international journal of *Maritime Policy & Management*, Editorial Board for the *International Journal of Shipping and Transport Logistics*, Guest Editor of the special Issue for the *International Journal of Production Economics*, *Maritime Policy and Management*, *International Journal of Shipping and Transport Logistics*. He has contributed 56 articles to professional journals (include 46 ranked in SSCI/SCI journals), 87 conference papers, 36 research project reports, and 2 textbooks.

- Aupperle, K.E., Carroll, A.B., and Hatfield, J.D. (1985). An Empirical Examination of the Relationship Between Corporate Social Responsibility and Profitability. *Academy of Management Journal*, 28(2), 446-463.
- Bolton, S.C., Kim, C.H.R., O’Gorman, D.K. (2011). Corporate Social Responsibility as a Dynamic Internal Organizational Process: A Case Study. *Journal of Business Ethics*, 101(1), 61-74.
- Economic and Social Commission for Asia and The Pacific (2010). *Corporate Social Responsibility and Business Sustainability. Creating Business and Social Value: The Asian Way to Integrate CSR into Business Strategies*. United Nations Publication. Bangkok: Thailand.
- European Commission. (2012). Guidance on the interpretation of key provisions of Directive 2008/98/EC on waste. Retrieved August 19, 2013, from <http://ec.europa.eu/environment/waste/framework/>
- European Sea Ports Organization. (2012). *ESPO: Green Guide, Towards excellence in port environmental management and sustainability*. Treurenberg: Brussel. Retrieved August 15, 2013, from http://www.espo.be/index.php?option=com_content&view=article&id=294:espo-green-guide&catid=36:highlights&Itemid=104
- Fafaliou, I., Lekakou, M., and Theotokas, J. (2006). Is the European shipping industry aware of corporate social responsibility? The case of Greek-owned short sea shipping companies. *Marine Policy*, 30(4), 412-419.
- International Centre for Advancing the Legal Protection of Seafarers. *Seafarers’ Rights*. Retrieved from August 19, 2013, from https://www.seafarersrights.org/seafarers_subjects/maritime_labour_convention_mlc
- International Organization for Standardization (2011). *ISO 26000 and the Definition of Social Responsibility*. Retrieved August 19, 2013, from <http://www.iso.org/iso/home/standards/iso26000.htm>
- Lu, C.S., Lin, C.C., and Tu C.J. (2009). Corporate social responsibility and organizational performance in container shipping. *International Journal of Logistics: Research and Applications: A Leading Journal of Supply Chain Management*, 12(2), 119-132.
- Oriental Overseas (International) Limited. (2012). *Sustainability Report*. Wan Chai: Hong Kong. Retrieved August 15, 2013, from <http://www.oocl.com/eng/pressandmedia/oilsustainabilityreports/Pages/default.aspx>
- Pacific Basin CSR Report. (2012). *Corporate Social Responsibility*. Central: Hong Kong. Retrieved August 15, 2013, from <http://www.pacificbasin.com/en/about/csr.php>
- Pawlik, T., Gaffron, P., and Drewes, A.P. (2012). *Corporate Social Responsibility in Maritime Logistics*. Song, D.-W., and Panayides, M.P., *Maritime Logistics: Contemporary Issues*, 205-226, UK, Emerald Group Publishing Limited.
- Skovgaard, J. (2012). *Corporate Social Responsibility in the Danish shipping industry*. Presentation on the DRUID Academy, The Moeller Centre at the University of Cambridge.
- Tonya, R. H., and Marcia F.W. (2007). *Wilh. Wilhelmsen Shipping Company: moving from CSR tradition to CSR leadership*. *Corporate Governance*, 9(1), 73-82.
- United Nations Global Compact (2010). *Overview of the UN Global Compact*. Retrieved from August 19, 2013, from <http://www.unglobalcompact.org/AboutTheGC/index.html>
- Wan, S.A., Zinatul, A.Z., Noor, I.Y., and Noridayu, M.K. (2012). *International Journal of Business and Society*, 13(2), 197-208.
- Wu, J.N., and Haasis H.-D. (2013). *Converting knowledge into sustainability performance of freight villages*. *Logistics Research*, 6(2-3), 63-88.

C.Y. Tung International Centre for Maritime Studies

董浩雲國際海事研究中心

Maritime Education | Research | Consultancy

海事 教育 • 研究 • 諮詢

Editors: Dr Xinyu Sun, Dr Girish Gujar, Miss Fang Zhang

編輯：孫新宇、古知新、張芳

4/F, CD Wing

C.Y. Tung International Centre for Maritime Studies

The Hong Kong Polytechnic University

Hung Hom, Kowloon, Hong Kong

香港九龍紅磡香港理工大學董浩雲國際海事研究中心 CD 翼

If you are interested in subscribing an e-alert or you have any inquiry about this Maritime Insight,
please feel free to contact us.

如果您對電子版的《海事洞察》感興趣或有任何其他查詢請隨時聯繫我們。

Tel: (852) 2766 6636 | Email: cyt.icms@polyu.edu.hk | Website: www.icms.polyu.edu.hk