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Original article

A Delphi Study on the Potential Benefits and Obstacles of Interstate Short Sea Shipping in Archipelagic Southeast Asia *

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Abstract

The aim of this paper is to identify the potential benefits and obstacles of the interstate Short Sea Shipping (SSS) operation in the archipelagic Southeast Asia sub-region. Although literature has addressed a myriad of benefits and obstacles that were caused by the SSS operation as an alternative mode to unimodal land transport, it has been recognised that each SSS corridor may have its own peculiarities. Therefore, the identification of the potential benefits and obstacles through a Delphi survey among sub-regional expert respondents is expected to inform the countries of Southeast Asia on how to direct their limited resources to address the obstacles identified in order to enable a viable interstate SSS operation. The initial review of the benefits and obstacles of SSS operations will focus on case studies performed in Europe as the breadth of literature on SSS outside Europe is still limited. Hence, this study addresses the gap in the literature by focusing on SSS in archipelagic Southeast Asia particularly those involving interstate Ro-Ro operations and extending the usage of Delphi technique to the realm of interstate SSS.

Keywords: Archipelagic Southeast Asia (ASEA); Delphi technique; Qualitative Content Analysis; Ro-Ro; Short Sea Shipping (SSS).

I. Introduction

Southeast Asia is a region within Asian continent located with the Pacific Ocean to the East, and the Indian Ocean to the West and the South. The region also shares its northern land boundary with China. The countries that are situated in the region are Brunei Darussalam, Cambodia, East Timor, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The region could be further divided into two sub-regions namely mainland Southeast Asia and archipelagic Southeast Asia (ASEA). The states of Cambodia, Laos, Peninsular Malaysia, Myanmar, Thailand and Vietnam formed mainland Southeast Asia whilst all the other countries together with the eastern part of Malaysia are considered as ASEA. Although Singapore is an island nation, its close proximity to Peninsula Malaysia with efficient road and rail connections through a causeway and a bridge means it is considered as more of a continuation of mainland Southeast Asia rather than ASEA. The Asian Development Bank (ADB) has characterised ASEA as a unique sub-region with more than 24,000 islands with long distances between them that demands a special approach to physical connectivity (ADB, 2010). The location of the Southeast Asian countries can be seen from Figure 1.

Until now, there is no strict definition of short sea shipping (SSS) from the aspects of the types of vessel used, distance travel or types of cargo or passenger transported. However, from the official definition adopted by the European Commission and the Maritime Administration (MARAD) of the United States (U.S.), the focus of the SSS concept in both the European Union (E.U.) and the U.S. is for the movement of cargo whilst at the same time the services could be utilised for the efficient movement of passengers through coastal waters and inland waterways (European Commission, 1999; MARAD, 2014). However, gleaning through the literature on SSS, it can be generally defined as "the movement of goods and people within internal and coastal waters that does not involve a transit through the ocean". From the preceding definition, SSS services may involve all types of vessels such as feeder container vessels, tug and barge system, Roll-on Roll-off (Ro-Ro) vessels, passenger ferries, handy size bulk carriers and tankers as well as other suitable vessels.

Figure 1: Southeast Asian Countries
Source: Aseanup (2016)

II. Aim

This study aims to identify the potential benefits and obstacles for a viable interstate Ro-Ro SSS operation in the ASEA sub-region from the perspective of its prospective stakeholders. This would enable SSS investors along with the local authorities of the countries involved to identify its benefits and utilise their limited resources to address the identified obstacles in ensuring the success of their SSS undertakings.

III. The European Experience in SSS

The European Commission (EC) has been supporting SSS under its common transportation policy initiatives since as early as 1992. In Europe, short sea projects have been financially supported under the Pilot Actions for Combined Transport (PACT), a program designed to foster innovative actions that could improve the competitiveness of combined transport. Since its inception in 1992 until 2000, the PACT program financed a total 167 intermodal projects, with 92 of them funded after 1997 (Commission of E.C., 2002). Regardless of the preceding efforts, by 2001, SSS had only 40% of the total ton-km, while road freight transport had a share of 45%. Using cargo tons alone, road transport is still the dominant mode of freight transportation with about 80% of the total freight tons. European SSS is deployed mostly on longer routes of an average distance of 1385 km as compared to trucks that have an average distance of 100 km,while rail has only a small share of freight transportation in Europe (European Commission, 1999; Commission of E.C., 2004).

In spite of the lower than expected results, the EC has continued to be committed in its support of the SSS (Commission of E.C., 2004 & 2006). A major boost for the promotion of SSS in Europe was the establishment of the Marco Polo program in 2001, that succeeded the PACT program, which had the the broad objective of enhancing intermodality. The program was implemented between 2003 and 2006, with a budget allocation of 100 million Euros. Among the activities implemented in the program were the establishment of sixteen national promotion centres, the development of more accurate statistical cargo data, the reduction of paper work and improvement in port infrastructure (Commission of E.C., 2004). The serious efforts put forth by the European Union have enabled the SSS to maintain its position as the only mode of transport able to challenge the fast growth of road transportation. Between 1995 and 2004, the tonne-km performance of SSS in the EU-25 countries grew by 32%, while road performance grew by 35%. SSS performs 39% of all tonne-kilometres in the EU-25 while the share of road is 44% (Commission of E.C., 2006).

In 2004, the EC continued with the expanded Marco Polo II program that included new initiatives such as the Motorways of the Sea (MoS) concept in four European corridors namely Baltic Sea, Western Europe, Southeast Europe and Southwest Europe (Aperte & Baird, 2013). The new program which had a budget of 400 million Euros for a period of seven years from 2007 to 2013, has also been extended to countries bordering the E.U. (Commission of E.C., 2004). From 2003 to 2009, it was reported that 125 projects involving more than 500 companies have

received funding from the Marco Polo program in the form of an outright grant. The grants cover the share of costs associated with the launch and operation of a new modal shift project and provide financial support in the crucial start-up phase of a project before it pays its way to viability (European Commission, 2012). Overall, the PACT as well as the Marco Polo I and II together with other well-funded European initiatives have invested more than 750 million Euros in the re-development of SSS and its associated network with the objective of bringing forward SSS as a competitive alternative to land transportation (Suarez-Aleman et al., 2014).

In addition to the emphasis given by MoS policy, the success of Ro-Ro services in Europe is also affiliated to the respective national policies. For instance, the Italian government's national policy called the "Ecobonus" scheme, that has been providing aid for lorry drivers, transport companies or trucking associations that use maritime transport as an alternative to road since April 2006 (Aperte & Baird, 2013, p.22). While the TEN-T funding for SSS is mainly used to fund the development of port infrastructure and equipment, the Marco Polo funding helps to support towards subsidising the costs incurred by the initial provision of MoS/SSS services. In spite of the significant increase in funding, this is still considered as insufficient because new SSS start-ups normally involve slow development process of three to five years before their actual potential could be realised, exposing operators to financial risk (Baird, 2008). The program also anticipates that private investors will finance a larger part of at least 65% of the project costs thus enhancing private investments in the European SSS market (Baird, 2007). However, such incentives can still be considered as a demonstration of the European Union's continuous commitment to shifting cargo from the motorways on land to the MoS. In retrospect, the commitments given by the E.U. and individual countries in Europe are expected to spur on the realisation of the benefits of SSS in other parts of the world particularly in the ASEA sub-region in which due to its archipelagic nature, maritime transport is seen more as a requirement rather than a choice.

IV. Barriers to Successful SSS

In spite of the success stories, Baindur and Viegas (2011) have identified the barriers to the success of SSS and MoS concept and have grouped them into four categories namely regulatory, technical, commercial and environmental. Regulatory barriers originate from laws issued by authorities concerning pollution, safety and security considerations where the lack of uniformity in methods, standards and effectiveness of inspection measures employed among ports and across the various facilities within a port has resulted in an increased administrative burden and costs on carriers. Technical barriers seem to focus more on the differences of the freight distribution system involving Euro-pallets and ISO containers. Commercial barriers deal with the high investment cost of new Ro-Ro ships that dissuade many companies from entering the SSS business unless there is adequate and sustaintable demand. Finally, environmental barriers address the issue of high dependency of maritime transport on the weather and climate condition compared to other modes of transport (Baindur & Viegas, 2011). It is expected that the same

barriers would have to be overcome in order to implement a sustainable SSS operation in the ASEA sub-region. The regulatory barrier would be more complex because the proposed Association of Southeast Asian Nations (ASEAN) Nautical Highway (ANH) would involve cross-border shipping operations. Similarly, to identify the technical barrier would require the identification of various types of cargo that would dominate the various routes within the ANH network that may range from agricultural products, dry-bulk and containerised cargo. The commercial and environmental barriers for SSS in the ASEA sub-region are expected to be significant as well.

Paixao Casaca and Marlow (2007) argue that, the economic viability of the SSS operation is dependent on the right mix of ship type, cargo to be carried and speed because as the speed increases, the fuel consumption grows exponentially. Additionally, Suarez-Aleman et al. (2014) argue that the time spent by SSS in port is a major issue when compared to deep sea shipping, where difference in port time may not be as relevant. In evaluating the strengths and weaknesses of SSS in Europe, Paixao and Marlow (2001) discovered that the weaknesses are mostly related to the port environment and the quality of service that SSS can provide. They have also identified the barriers to the SSS expansion that involved the lack of efficient port operations, unreliable vessel schedules, excessive paperwork and administrative costs. However, they have also identified the advantages of SSS such as its environmental benefits, lower energy consumption, economies of scale and the lower costs needed for infrastructure expansion (Paixao & Marlow, 2001). Musso et al. (2010) look at the competitiveness of SSS by examining its different markets and its advantages and disadvantages. These conditions define the critical thresholds for the optimal trip distances and the corresponding costs, under which SSS is more competitive than the other land modes. Although it appears to be a simple methodology, the interaction of transportation costs along with trip distances is worthy of note. The authors considered that SSS's competitiveness depends directly on the sea-leg distances They also proposed that both the internal and external costs, such as the environmental and social costs, should be considered as the actual cost of transportation. Similarly, Grosso et al. (2008) through their survey among Italian Ro-Ro SSS operators and freight forwarders, discovered that competitiveness in the market is the most important element affecting the final price of the forwarding service. It was also identified that the two most important costs in the operations of SSS are the fuel costs and the charter rate or ownership cost (Grosso et al., 2008). On the other hand, although the distance of the SSS route from Helsinki to Tallinn of around 80 km is much shorter than the European average distance of 1385 km, SSS services along this route has prospered since 2004 (Tapaninen et al., 2012). Besides a longer alternative route on land, the success of SSS along this route has been contributed to by the implementation of a Ropax concept where cargo and passengers are transported in the same vessel to enable an economically profitable solution (Tapaninen et al., 2012). In another study conducted on the competitiveness of SSS in combination with trucks in transporting containerised cargo vis-à-vis long distance road hauliers, it was found that the combination of SSS and trucks was more competitive when SSS occupied a higher percentage of the route and also when cargo is moved within coastal or their surrounding regions. Through a simulation on the transportation

of containers in Northern Europe on four different routes using container vessels, it was proposed that a unimodal road haulage is competitive until 1100 km whilst SSS will be competitive from 1100 km until about 2500 km (Ng, 2009).

Looking from the supply chain point of view, SSS is just one of the modes to transport goods from one port to another. Generally, these ports are neither the points of origin nor the points of destination for the freight. Hence, if SSS is to be used, the goods involved should be mostly moved by trucks from the point of origin to the loading point and from the point of discharge to the point of destination (Becker, Burgess, & Henstra, 2004). As a result, the qualities in the reliability of delivery, capacity and high service frequency will be expected from the transport chain where shippers and forwarders determine the transport mode on the basis of the total logistics costs and the degree of urgency (Becker et al., 2004). In this regard, it has been argued that the requirement for a High Speed Vessel i.e. a vessel with a speed higher than a conventional vessel (> 23 knots) for the European environment is not critical for the movement of cargo (Becker et al., 2004). Through their analysis, Becker et al. (2004) discover that investment in cargo handling in European ports may yield a much higher return than investment in ship propulsion for higher speed (Becker et al., 2004). From the supply chain perspective, it has been argued that (1) intensive promotion of SSS, (2) growth of cargo volume, (3) level of cooperation between parties active in port, (4) efficient and effective multi-modal network, and (5) standardisation of port infrastructure and port interfaces are the key determining factors for a successful SSS network in Europe (Becker et al., 2004). Similarly, Trujillo et al. (2011) argue that SSS acts both as a substitute and/or a complement of other transport modes such as road or rail services. Nevertheless, it is a competitor when providing alternative transport services in the same point-to-point market already served by road transport, conventional rail services or even air transport services (Trujillo et al., 2011). The main drawbacks of SSS as identified by Trujillo et al. (2011) are related to the frequency of services, insufficient integration with other transport modes, difficulty in meeting just-in-time requirements, and the non-competitive process. They argue that SSS also suffers from a perception problem and as a result, is very slow to gain acceptance from shippers due to their unfamiliarity of the full range of available services. For them, SSS is not always a viable option and the applicability of SSS is considered on a case by case basis because each corridor has its own peculiarities (Trujillo et al., 2011).

In his study on SSS in the South Baltic Sea, Wonexius (2012) argues that in designing or employing Ro-Ro SSS, the decisions made must be subjected to trade-offs ranging from platform with specialisation versus flexibility to other technical and operational trade-offs. These trade-offs would have implications for transport accessibility, time and price. It was found that all the 28 Ro-Ro ferries that operated in the South Baltic had almost similar sizes, but the ferry lines decided that the trade-offs between ro-ro decks involving the truck, car and rail metres and the passenger compartments were not similar (Woxenius, 2012). In a case study, it was discovered that a decision to cruise at 14 knots on a 20,000 GT vessels involved the consumption of only 1.25 tons of fuel/hour vis-à-vis a normal cruising of 18-20 knots of the competitors that consumed an average of 2.3 tons/hour (Woxenius, 2012). The speed versus fuel consumption trade-off may

be effective on-board Ro-Ro vessels that focus on the transportation of freight ,as it has been argued that many stated preference analyses have shown that forwarders prefer precision over short transport time (Woxenius, 2012). Hence, when a lower speed is used a service precision could be ensured to adjust the vessel's speed when delays may occur.

Looking at intra Great Britain coastal shipping in a multi-modal chain, four important determining factors have been identified as imperative for the success of the domestic SSS operation i.e. the competitiveness of shipping companies, intermodalism involving integration into the supply chain, marketing and ports competitiveness (Saldanha & Gray, 2002). A two-round Delphi survey conducted with 11 expert panels comprising of the management of shipping and related companies has revealed a strong emphasis on the importance of intermodalism with 83.2% consensus among experts. This is followed by Marketing (75.6%), Port Efficiency (69%) and Ports Competitiveness with 68.9% consensus (Saldanha & Gray, 2002). Based on the discussions of the benefits and obstacles experienced through more than two decades of SSS operations in Europe, 14 groups of determinants have been identified through the process of qualitative content analysis. The identified determinants that are considered as important for ensuring a successful SSS operations are (1) Adequate port facilities and equipment; (2) Large payload or shipment volume; (3) Balance payload or shipment volume; (4) Promotion of SSS; (5) Coordinated administrative and CIQS formalities; (6) Port efficiency; (7) Good intermodal links; (8) Regional agreement to relax restrictions; (9) Good Port Access; (10) SSS service quality; (11) Government assistance at initial period; (12) Suitable ship's type; (13) Harmonisation of procedures among ports; and (14) Weather and meteorological conditions.

V. The Delphi Technique

The Delphi is a method that requires knowledgeable and expert contributors to individually respond to questions through a repeated interview or questionnaire who then submit the results directly to the coordinator who would process the answers looking for central tendencies and their rationales (Dalkey & Helmer, 1963; Linstone & Turoff, 1975; Grisham, 2009;Gordon, 2009). This technique was first developed by the RAND Corporation in the U.S. in 1950s. However, it was only initiated by Dalkey and Helmer in 1963 as a technique for assessing variables that are intangible or covered in an uncertainty by drawing on the knowledge and abilities of a diverse group of experts through anonymous and iterative consultations. It is hereby useful in a situation whereby individual judgments must be tapped and brought together in order to address a lack of agreement or in a situation where there is an incomplete state of knowledge on the research area (Powell, 2003). Four key features that need to be adhered to in the Delphi procedure are the anonymity of Delphi panels, iteration that allows panellists to refine their views, controlled feedback and statistical aggregation of group response that allows for quantitative analysis and the interpretation of data (Rowe & Wright, 1999).

The Delphi technique has been described as a method well-suited for consensus-building through the use of a series of questionnaires delivered using a multiple iteration process to collect

data from a panel of selected experts (Hsu & Sandford, 2007; Grisham, 2009). It is considered as a qualitative, long-range forecasting technique by some or a mixture of both qualitative and quantitative techniques by some others. Since it was first introduced, the Delphi has been successfully applied in various fields involving program planning, needs assessment, policy determination and resource utilisation (Hsu & Sandford, 2007). It has been described "to have filled a deep need of academics and practitioners for structured ways of assessing and combining human judgments" (Rowe & Wright, 2011, p.1489). Rowe and Wright (2011) in their study on the past, present and future prospects of Delphi, discovered that in many cases it seems to be a method that enables researchers to ask and answer questions that they did not know how to address previously. Hence, the Delphi technique is arguably most suitable to be used for this study that focuses on identification of the potential prospects and obstacles for a viable interstate SSS operation within the ASEA sub-region. Unlike other data gathering techniques, Delphi employs a multiple iterations technique that allows the respondents to re-assess their initial judgments (Grisham, 2009; Skulmoski et al., 2007).

VI. The Delphi Survey

A two-round Delphi survey has been used to identify the potential benefits and obstacles for the operation of interstate SSS in ASEA by giving their qualitative opinions to the four questions in Section 3 of the questionnaire. The main channel for the transmission of the survey questionnaire was through email with a follow-up phone call or short messaging service (SMS) where necessary. However, for respondents who preferred to have a face-to-face interview session, necessary arrangements were made where practicable. Where a face-to-face interview session was not practicable due to a high travelling cost, a phone interview was arranged as an alternative. The Round 1 (R1) Delphi questionnaire has been divided into three parts. Part I deals with their personal details including their name, present position, present company and their number of years of experience in the maritime industry or maritime research. This was to ensure that the respondents that participated fulfilled the criteria as an expert as required by the Delphi technique. It would also allow the researcher to segregate them into the respective sectors particularly government, industry and academia to enable a collection of a balanced perspectives from a wide range of stakeholders. Part II involves the provision of the 14 determinants that have been analysed through a qualitative content analysis made to enable the respondents to be aware of the determinants that have been discussed in contemporary literature. Part III involves open-ended survey questions seeking opinions on the likely benefits that could be gained from interstate Ro-Ro SSS operations and obstacles that may hinder the success of such operations in ASEA.

Subsequently, the Round 2 (R2) questionnaire summarised the outcome of R1 survey and encouraged the respondents to propose additional benefits and obstacles that they perceived as important in addition to those that had been shortlisted. A brief summary of the number of questionnaires returned from a total of 36 questionnaires delivered, as well as the breakdown of the respondents through the purposive sampling method are tabulated in Table 1 below:

Table 1: R1 Delphi Questionnaire Returned to Researcher

Country	Academia	Maritime Transport Practitioners	Others	Total
Brunei	0	1	0	1
Indonesia	1	2	0	3
Malaysia	2	8	0	10
Philippines	2	4	0	6
TOTAL	5	15	0	20

What we can glean from Table 1 above, is that from 36 questionnaires sent to potential respondents, 20 were returned giving a percentage of 55.56% which can be considered as a satisfactory response figure. The respondents from academia were selected with regard to their published work in maritime and integrated transport as well as that on the logistical field within the sub-region. Those identified have at least published in journals or presented at least 10 papers on the relevant topics. On the other hand, the maritime transport practitioners are those who are working or have worked in the shipping and port sectors within the ASEA sub-region at a decision making level with at least 10 years experience

VII. The Benefits of Interstate Ro-Ro SSS

All respondents agreed that the establishment of Ro-Ro SSS services to connect the ports of different member countries is important for the sub-region due to a various reasons particularly in improving maritime connectivity, enhancing trade, supporting the economic integration of ASEAN, stimulating economic growth in the less-developed areas and providing a cheaper alternative for passenger travel. In order to qualitatively process the comments into suitable themes, a qualitative content analysis was utilised. The content analysis is the process of condensing and making systematically comparable interviews, field notes, and various types of unobtrusive data through the application of an objective coding scheme to the notes and data (Berg, 2007). It is also “a research method for the subjective interpretation of the content of text data through the systematic classification of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p.1278). Based on the conceptual analysis that allows text to be divided using the coding system, all the qualitative comments have been divided into 12 groups as Table 2 below:

In summary, most respondents believed that an interstate SSS operation in the ASEA sub-region would be able to enhance sub-regional trade, commercial partnerships and investments (Group B). The judgments to support the preceding benefit were given by 15 respondents.

Table 2: Grouping of benefits expected from interstate Ro-Ro SSS

Group	Title	Total Respondents
A	Promotion of sub-regional integration and cooperation	7
B	Enhancement of sub-regional trade, commercial partnership and investment	15
C	Enhancement of sub-regional mobility and promotion of legal cross-border movement	8
D	Promote movement of cargo/trade and expand new routes for transhipment cargo	7
E	Promote growth in shipping and port related sectors including their supporting infrastructure	4
F	Stimulate economic activities and development and facilitate intra-ASEA economic cooperation	13
G	Enhance employment opportunities and job creation	4
H	Establish a sustainable and competitive multi modal transport and logistic network	9
I	Facilitate in the development of local tourism industry and tourist movement	7
J	Facilitate towards regional peace and stability and strengthen political ties between countries	9
K	Contribute towards market liberalisation and a more competitive price of goods	6
L	Opportunity for harmonisation of sub-regional shipping standards, port regulations and CIQS procedures	7

The benefit that received the second highest response recorded from 13 respondents is the stimulation of economic activities and development and the need to facilitate economic cooperation (Group F). Two other groups received 9 responses; i.e. Group H - Establish a sustainable and competitive multi modal transport and logistic network and Group J - Facilitate towards regional peace and stability and strengthen political ties. The top four responses reflect the respondents' expectations for the enhancement of trade and the economic opportunities that could be brought about by the interstate SSS. In addition, they reflect their expectations on the opportunity to enhance the sub-regional multimodal transport system that will make transport services overall more efficient and competitive. Ultimately, the respondents hope that the interstate SSS connection will be one of the most important avenues to potentially enhance peace and stability as well as strengthen political ties among sub-regional countries.

Besides the four groups that have received comments from the highest number of respondents, the two groups that received comments from the lowest number of respondents are Group E – Promote growth in shipping and port related sectors and supporting infrastructure and Group G – Enhance employment opportunities and job creation. Both groups received comments from only 4 respondents. As for Group E, it is believed that most respondents prefer to look at transport in a multimodal perspective which is related to Group H. Similarly, for Group G which is employment, it should have been covered under the enhancement of economic activities and development (Group F) that would automatically trigger new employment opportunities. The number of respondents that responded to the other six groups ranges from 5 to 7 which signifies the almost equal importance of those factors.

VIII. Obstacles That May Hinder the Success of Interstate SSS in BIMP-EAGA

In addition to identifying the benefits that could be brought by interstate SSS, expert respondents were also requested to identify up to ten obstacles that may hinder the success of interstate Ro-Ro operations. The responses to this question are important in enabling the researcher to confirm their similarity with other factors that have been deduced through the literature. Similarly, through the responses given, the researcher would be able trace other important factors for the success of the interstate SSS operation that may be peculiar to the ASEA sub-region. Similar to the earlier analysis done, all the comments received have been separated into suitable themes using the qualitative content analysis technique. All the qualitative comments have been divided into 17 groups as per Table 3 below:

Table 3: Obstacle that may hinder the success of interstate Ro-Ro SSS

Group	Title	Total Respondents
A	Poor SSS service quality	6
B	Poor and inadequate promotion of SSS	5
C	Poor security perception and safety of surrounding waters	5
D	Inadequate port facilities and equipment including CIQS facilities	13
E	Competition with other modes of transport and other types of shipping service	11
F	Inefficient government bureaucracy and unethical practices	7
G	Poor commitment from national/local authorities and lack of political will	15
H	Capital intensive mode of transport operation	9
I	Insufficient and imbalance payload and shipment volume	5
J	Lack in government willingness to relax shipping restriction	5
K	Ro-Ro safety/Weather and Meteorological condition	8
L	Poor intermodal links	3
M	Lack in harmonisation of administrative procedures among ports and countries	3
N	Poor cooperation among member states	5
O	Avenue for smuggling activities	1
P	Poor private sector participation	5
Q	Unavailability of expert manpower	4

From the 17 groupings identified, 13 groupings are similar or almost similar to the 14 important determinants that have been identified through the literature. However, four of the groups formed from the feedback received are new and deserve to be further analysed for potential inclusion into the R2 Delphi questionnaire. Those groupings are Group C (Poor security perception and safety of surrounding waters), Group F (Inefficient government bureaucracy and graft practices), Group O (Avenue for smuggling activities) and Group Q (Unavailability of expert manpower). Upon further examination, it is concluded that Group C that received

comments from five respondents and Group F with comments from 7 respondents should be considered for inclusion in a further assessment in the subsequent Delphi round. "Avenue for smuggling activities" which received feedback from one respondent is no longer considered as an important factor for a viable interstate SSS operation. On the other hand, although the "Unavailability of expert manpower" could be an important element for the success of interstate Ro-Ro operation, it could be addressed by hiring expertise from outside the region at the initial stage. Hence, it is not surprising that the feedback to issues under Group Q is only given by four respondents.

The responses from the Round 2 Delphi survey has retained the earlier consensus achieved in Round 1 with proposed additional benefits and obstacles. Nevertheless, only one additional consensus on the benefits of SSS was accepted in Round 2 and can be grouped under the heading of "Promoting a quality and competitive maritime transport services in ASEA sub-region". However, an analysis on the suggested obstacles that may hinder the success of SSS in ASEA discovered that only 18 out of 23 suggestions given can be accommodated under the obstacles identified based on the consensus achieved in Round 1 Delphi survey. On the other hand, five new suggestions did not achieve the sufficient consensus that was set at a minimum of 25% (5 respondents). In conclusion, only one new benefit has been identified in Round 2 Delphi survey. On the contrary, no suggestion has received the required consensus to be accepted as a new obstacle in this round of survey.

IX. Conclusion

In retrospect, the main benefits that could be derived from the interstate SSS operations in the ASEA sub-region gathered from the expert respondents reflect their expectations on the enhancement of trade and economic opportunities that could be brought about by the SSS connection. In addition, they also anticipate the opportunity to enhance the sub-regional multimodal transport system that will make the transport service more efficient and competitive overall. Ultimately, the respondents hope that the interstate SSS connection will be one of the important avenues for enhancing peace and stability as well as in strengthening political ties among sub-regional countries. As for the expected obstacles that may hinder the success of SSS operations, two new obstacles that are peculiar to ASEA have been identified through the responses received over and above the obstacles that could be traced through the European experience. Those obstacles are "security perception and safety of surrounding waters" and "inefficient government bureaucracy and graft practices". Further research is required as to why there is such a perception as to security. Prima facie, ASEA does indeed take security seriously. For example, there are security and security related framework agreements such as the Treaty on the South East Asia Nuclear Weapons Free Zone, the ASEAN Convention on Counter Terrorism, the Treaty on Mutual Legal Assistance on Criminal Matters and ASEAN Petroleum Security Agreement. Hence, it would be necessary for the relevant authorities to address all the 15

obstacles identified in order to ensure a viable interstate SSS operation that could bring economics benefits, improve security and enhance connectivity within the ASEA sub-region.

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References

Aperte, X. G. & Baird, A. J. (2013), Motorways of the sea policy in Europe, Maritime Policy & Management, Vol. 40, No.1, pp. 10-16.

Aseanup (2016), Available at: http://aseanup.com/free-maps-asean-southeast-asia (Retrieved: June 27th, 2016).

Asian Development Bank (2010), Bridges Across Oceans: Initial Impact Assessment of the Philippines Nautical Highway System and Lessons for Southeast Asia, ADB & Asia Foundation.

Baindur, D. & Viegas, J. (2011), Challenges to implementing motorways of the sea concept – lessons from the past. Maritime Policy & Management, Vol.38, No.7, pp.673-690.

Baird, A. J. (2007), The economics of Motorways of the Sea. Maritime Policy & Management, Vol. 34 No. 4, pp. 287-310.

Baird, A. J. (2008), Motorways of the Sea, Logistics & Transport Focus. January, UK: CILT, pp. 28-32.

Becker, JFF, Burgess, A & Henstra, DA. (2004), No need for speed in Short Sea Shipping. Maritime Economics & Logistics, Vol. 6, No. 3, pp.236-251.

Berg, Bruce L. (2007), Qualitative Research Methods for Social Sciences. Sixth Edition. Boston MA: A&B.

BIMP-EAGA (2012) Implementation Blueprint 2012-2016, BIMP-EAGA Secretariat.

Commission of The European Communities (2002), Results of the Pilot Actions for Combined Transport (PACT Programme), COM (2002) 54 final, Feb. 2, Brussels.

Commission of The European Communities (2004), On Short Sea Shipping, COM (2004) 453 final. July 2nd, Brussels.

Commission of The European Communities (2006), Mid-Term Review of the Programme for the Promotion of Short Sea Shipping, COM (2006)

380 final. Jul 13th, Brussels

Dalkey, N. & Helmer, O. (1963), An Experimental Application of the Delphi Method to the Use of Experts. Management Science, Vol. 9, No.3, pp.458-467.

European Commission (2012), Transport – Marco Polo. Available at: http://ec.europa.eu/transport/marcopolo/about/index_en.htm (Retrieved: Oct. 12, 2012).

European Commission (1999), The Development of Short Sea Shipping in Europe: A Dynamic Alternative in a Sustainable Transport Chain, Second Two-yearly Progress Report..

Gordon, T. J. (2009), The Delphi Method in Glenn, J.C & Gordon, T.J. (ed). Futures Research Methodology. Version 3.0. Rockefeller Foundation.

Grisham, Thomas (2009), The Delphi technique: a method for testing complex and multifaceted topics. International Journal of Managing Projects in Business, Vol. 2, No.1, pp.112-130.

Grosso, M., Lynce, A-R., Silla, A. & Vaggelas, G.K. (2008), Short Sea Shipping, Intermodality and Parameters Influencing Pricing Policies in the Mediterranean Region. A paper presented at Research and Logistics Conference, Feb 2009, Istanbul.

Hsieh, Hsiu-Fang & Shannon, Sarah E. (2005). Three Approaches to Qualitative Content Analysis, Qualitative Health Research, 15, pp. 1277-1288.

Hsu, Chia-Chien & Sandford, Brian A. (2007), The Delphi Technique: Making Sense of Consensus, Practical Assessment, Research & Evaluation, Vol.12, No.10, Available at:http://pareonline.net.

Linstone H. & Turoff M. (1975), The Delphi Methods: Techniques and Applications. MA: A-W.

Maritime Administration (MARAD), U.S. Department of Transportation (2014), America's Marine Highway Program. Available at www.marad.dot.gov(Retrieved : June 19, 2014).

Musso, E., Paixao Casaca, A. C., & Lynce, A. R. (2010), Economics of Short Sea Shipping in Grammenos. C. T. (Ed.), The Handbook of Maritime Economics & Business, 2nd Ed., London, Lloyd's List, pp.391-429.

Ng, Adolf Koi Yu. (2009), Competitiveness of short sea shipping and the role of port: the case of North Europe, Maritime Policy & Management, Vol.36, No.4, pp.337-352.

Paixao Casaca, Ana C. & Marlow, Peter B. (2007), The Impact of the Trans-European Transport Networks on the Development of Short Sea Shipping. Maritime Economics & Logistics, Vol. 9, No. 4, pp. 302-323.

Paixao, A. C. & Marlow, P. B. (2001), A Review of the European Union Shipping Policy. Maritime Policy & Management, Vol. 28, No. 2, pp.187-198.

Powell, Catherine. (2003), The Delphi technique: myths and realities. Journal of Advanced Nursing, Vol. 41, No. 4, Blackwell Publishing Limited, pp. 376-382.Rowe, G. & Wright, G. (1999), The Delphi technique as a forecasting tool: Issues and analysis. International Journal of Forecasting, Vol. 15, No.4, pp. 353-375.

Rowe, G. & Wright, G. (2011), The Delphi Technique: Past, Present & Future Prospects. Technological Forecasting & Social Change, Vol. 78, No. 9, pp. 1487-1490.

Saldanha, J. & Gray. R. (2002), The potential of British coastal shipping in a multimodal chain. Maritime Policy & Management, Vol. 29, No. 1, pp. 77-92.

Skulmoski, G. J., Hartman, F. T. & Krahn, J. (2007), The Delphi Method for Graduate Research. Journal of Information Technology Education, Vol. 6, No.1, pp. 1-21.

Suarez-Aleman, A., Trujillo, L. & Cullinane, K. P. B. (2014), Time at port in short sea shipping: When timing is crucial, Maritime Economics & Logistics, Vol. 16, No. 4, pp. 399-417.Tapaninem, U., Sundberg, P. & Posti, A. (2012), Short Sea Shipping in the Gulf of Finland – Case Helsinki-Talinn, A paper presented at Short Sea Shipping 2012 Conference on April 2-3, 2012, Lisbon.

Trujillo, L., Medda, F. & Gonzalez, M. M. (2011), An analysis of short sea shipping as an alternative to freight transport in Cullinane, K. (Ed.). International handbook of Maritime Economics, Cheltenham:

Edward Elgar, pp. 284-300.

Woxenius, J. (2012), Flexibility Vs. Specialisation in Ro-Ro Shipping in the South Baltic Sea, Transport, Vol 27, No. 3, pp. 250-262.

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