Knowledge-Sharing within Strategic Alliance Networks and its impact on Firm Performance in the Liner Shipping Industry

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Abstract

Following the proliferation of globalization and the knowledge-based economy, there is widespread consensus amongst researchers in the field of strategy that knowledge – an invaluable resource – enhances the competitiveness of firms. Strategic alliances between firms – a pervasive phenomenon in the field of business today – are increasingly employed as instruments for knowledge-sharing, whilst the consequent formation of alliance networks is progressively becoming rampant and prominent. In recent years, the effect of alliance networks on individual firm performance has become a vital subject of study for both industry practitioners and scholars. While there has been increased growth in literature on the knowledge-based view, strategic alliance and alliance networks in recent years, research in these areas within the maritime industry has been limited. Nevertheless, as strategic alliances are common phenomena in the maritime industry, especially in liner shipping, it is important to examine the knowledge dynamics within alliance networks in the context of the liner shipping industry. Utilizing a qualitative research approach based on in-depth face-to-face interviews with high level executives from liner shipping firms embedded in alliance networks, this study sheds light on the mechanisms of knowledge-sharing within alliance networks, illustrates how knowledge-sharing amongst strategic alliance partners leads to improved firm performance, as well as depicts the limited positive moderating effects of the co-location of alliance firms within clusters on the former relationship. The results of this study provide significant practical insights to senior executives of liner shipping firms in their strategic decision-making process pertaining to the management of knowledge and relations within ‘co-petitive’ strategic alliances, as well as the consequent implications on firm performance. In addition, this study also contributes academically by illustrating how knowledge management theory applies in the context of the maritime industry.

Keywords: strategic alliance networks, knowledge-sharing, cluster theory, liner shipping

1. Introduction

Strategic alliances, undoubtedly a pervasive phenomenon in the field of business today, are generally defined as voluntary cooperative arrangements between firms which encompass the exchange, sharing, or co-development of capital, technology or firm-specific resources (Parkhe, 1993; Gulati, 1998). It is extensively acknowledged that strategic alliances provide significant means to firms for customer value creation and competitive advantage augmentation, such as access to new markets and technologies, enhanced product development, and economies of scale and scope (Mariti and Smiley, 1983; Hagedoorn, 1993), whilst the consequent formation of alliance networks is progressively becoming rampant and prominent. Following the proliferation of globalization and the knowledge-based economy, there is widespread consensus amongst researchers in the field of strategy that knowledge, viewed as an invaluable resource, is instrumental for the success and competitiveness of
firms (Grant, 1996; Boisot, 1998). Consequently, it is unsurprising that strategic alliances are increasingly employed by firms as instruments for knowledge access and acquisition, while research interest in the area of knowledge sharing amongst strategic alliances has also grown tremendously (Simonin, 2004; Grant and Baden-Fuller, 2005).

In recent years, the effect of alliance networks on individual firm performance has become a popular subject of study for both industry practitioners and scholars (Dyer and Singh, 1998; Gulati et al., 2000; Koka and Prescott, 2002). It has been suggested that the performance and conduct of firms can be more meaningfully comprehended by studying the network of relationships within which they are embedded (Gulati et al., 2000; Molina-Morales and Martinez-Fernandez, 2010). While there has been burgeoning literature on knowledge sharing within strategic alliance networks in recent years, studies which empirically examine the specific mechanisms of knowledge sharing in horizontal alliances and assessing their resulting impact on the performance of firms embedded within alliance networks are limited. Furthermore, research in the aforementioned areas within the maritime industry is also relatively scant despite strategic alliances and alliance networks being pervasive phenomena, especially in liner shipping. Hence, it is meaningful both in terms of academic and practical implications to study and explore these concepts in the context of the liner shipping industry.

In essence, this study seeks to identify the relevant knowledge sharing mechanisms and their impact on firm performance within strategic alliance networks. The moderating effects of the co-location of alliance partners within an industrial cluster in the context of the liner shipping industry would also be examined. This paper consists of five main sections, with the next section comprising of a discussion of the general theories related to the topic examined, namely the knowledge-based view, cluster theory, as well as strategic alliances in the liner shipping industry. The third section then follows by introducing the proposed conceptual framework and research methodology. The fourth section consists of research findings, discussion of the implications of this study and the opportunities for future research, while the final section concludes this paper.

2. Related Theories and Strategic Alliances in the Liner Shipping industry

2.1. What is Knowledge?

Morone and Taylor (2010) have classified and summarized several knowledge types as follows: 1) ‘know-what’; 2) ‘know-why’; 3) ‘know-how’; and 4) ‘know-who’. ‘Know-what’ encompasses knowledge pertaining to facts and is strongly linked to the concept of information, while ‘know-why’ comprises of ‘the scientific knowledge of principles and laws of motion in nature, in the human mind, and in society’ (Lundvall and Foray, 1998). ‘Know-how’, on the other hand, refers to the skills and capability to accomplish something, which usually reside in individuals and firms. Finally, ‘know-who’ involves information regarding ‘who knows what and who knows how to do what’ (Lundvall and Foray, 1998). With reference to above classification, knowledge and information are evidently inter-related concepts, but are nevertheless distinctly different. As proposed by various scholars, information consists of the structured arrangement of data which makes its conveyance through physical channels relatively easy, while knowledge is derived via cognitive processes and procedures through which an array of information are intermixed and expressed (Davenport and Prusak, 1998; David and Foray, 2002). Thus, as Howells (2002) aptly defines, knowledge is ‘a dynamic framework or structure from which information can be stored, processed and understood’. Conclusively, knowledge functions as a critical means to comprehend and utilize information, which would be ineffective and futile for any kind of economic application in the absence of the necessary prior knowledge.

In addition, knowledge was broadly also differentiated into two main epistemological dimensions namely, explicit (or codified) knowledge and tacit knowledge (Polanyi, 1967; Nonaka and Takeuchi, 1995). Explicit or codified knowledge is basically recorded and formalized in a specific language which can be transferred and communicated in the form of manuals, instruction booklets and etc. On the other hand, tacit knowledge is characterized to be abstract, informal, internalized and experiential,
and is mainly acquired through direct experience and vigorous participation in the learning process (Polanyi, 1967; Nonaka and Takeuchi, 1995). Explicit knowledge fundamentally forms the basic building blocks in the learning mechanism, while tacit knowledge involves the cognitive connection and integration. Moreover, while explicit knowledge is entrenched within standardized routines and procedures, tacit knowledge is normally transferred and established within context-specific non-standardized regimes (Martin and Salomon, 2003). While tacit knowledge is widely debated to be of more value, explicit knowledge can be obtained and utilized more straightforwardly and promptly in comparison (Polanyi, 1967). By and large, knowledge in the form of quantifiable and recorded procedures, routines and technologies are considered to be explicit and relatively easier to transfer. In contrast, managerial, organizational and marketing expertises, which are intrinsically complex and difficult to codify in handbooks or formulas, are deemed to be more tacit as compared to technological knowledge (Shenkar and Li, 1999).

Following the studies of Polanyi (1967), the two-prong dimensions of explicit and tacit knowledge have actively been acknowledged and applied in research for various fields, including strategic management, knowledge management, organizational management and etc. Inevitably, these distinct concepts of explicit and tacit knowledge have profound implications on the mechanisms and dynamics of knowledge sharing.

2.2. The Knowledge-based View of Collaboration

The knowledge-based view of the firm, derived from resource-based theory (Barney, 1991), emphasizes knowledge as a critical resource necessary for sustained competitive advantage and highlights the importance of the ability of firms to access, create and assimilate knowledge (Grant, 1996; Grant and Baden-Fuller, 2004). Similarly, the knowledge-based view of collaboration, which entails the acquisition and access of knowledge as a resource via strategic alliances, stems also from the resource-based view (Barney, 1991) and resource-dependence theory (Pfeffer and Salancik, 1978). This is evident in the increasing number of strategic alliance studies which have uncovered knowledge sharing, which entails the transfer of know-how, organizational capabilities, technology and etc, as a primary intent for collaboration (Khanna et al., 1998; Dyer and Nobeoka, 2000; Simonin, 2004). As economies become more globalized and knowledge-based, knowledge creation and learning are increasingly becoming more crucial for firm competitiveness and performance. In order to innovate and remain competitive, firms generally go through learning processes involving the utilization of existing knowledge, as well as acquisition and creation of new knowledge. Many scholars have also identified that inter-organizational learning, through collaboration with other firms coupled with the subsequent monitoring and imitating of their practices, is crucial for firm competitiveness (Levinson and Asahi, 1996; Powell et al., 1996). Often, innovation also entails the exchange of mutually beneficial learned knowledge, which implies that knowledge sharing is inherently a socially-driven process (Berger and Luckmann, 1966) that plays a critical role in the mechanism of learning.

Grant and Baden-Fuller (2004) argue that alliances possess a fundamental advantage of knowledge access as compared to other firms, and have revealed in their study that alliances enhance efficiency in knowledge utilization and integration of applicable knowledge into complex product and service offerings. Collaboration networks within strategic alliances are thus essentially effective conduits which can be exploited for knowledge access and exchange for mutual benefit by alliance partners. These conduits for knowledge flows can take the form of legal contracts governing the collaboration, as well as social relations between alliance partners. While legal contracts specify the obligations and confines of alliance partners, social relations go further by helping to foster trust and shared identities, which encourage the free flow and exchange of knowledge as well as decrease transaction costs (Dyer and Nobeoka, 2000). Generally, trust provides confidence and security that the knowledge shared will not be abused and subject to opportunism, while shared identities facilitate learning and overcome obstacles. When appropriate knowledge is shared amongst alliance partners and effectively utilized to enhance the efficiency, flexibility, as well as service quality and offering of the respective strategic alliance, the individual firm performance is expected to improve.
2.3. **Cluster theory**

Nevertheless, the relationship between knowledge sharing and firm performance is expected to be significantly enhanced by a firm’s co-location with alliance partners within an industrial cluster. This is because the incidence and tendency of knowledge sharing is generally acknowledged to be augmented by clusters, which are defined as ‘geographic concentrations of inter-connected companies and institutions in a particular field’ (Porter, 1998). Subsequently, presuming that the relationship between knowledge sharing and firm performance is positively linear, an increased level of knowledge sharing would essentially lead to a proportionate increase in firm performance.

Clusters typically embody the notion of geographical proximity, which encourages the formation of strong local networks (Saxenian, 1994; Maillat et al., 1997; Porter, 2000) amongst alliance partners in the event of co-location. These strong local networks forged amongst co-located alliance partners in turn facilitates dynamic social interactions (Henry and Pinch, 2002), thereby generating ‘untraded interdependencies’ (Storper, 1995) – informal exchanges and arrangements – that can function as effective conduits for knowledge or information flows. Furthermore, knowledge sharing is believed to be enhanced by relations established on reciprocity and trust, which stem from being a part of communities of practice (Brown and Duguid, 2001) or epistemic communities where actors share similar education and skill-sets (Wilson and Spoehr, 2010). Moreover, geographical clustering is widely proposed to enrich the exchange of spatially ‘sticky’ and difficult to articulate tacit knowledge between the proximate firms (Gertler and Wolfe, 2005), as opposed to remote firms. Therefore, the co-location of alliance partners in a cluster fosters the stimulation of dynamic knowledge flows – both tacit and explicit – within the alliance network via the effects of the cluster’s ‘local buzz’ (Bathelt et al., 2004) or ‘industrial atmosphere’ (Marshall, 1927). According to Storper and Venables (2003), ‘buzz’ is generated through parties being physically co-located and refers to the wide-ranging settings conducive for both purposeful and accidental face-to-face meetings that give rise to myriad forms of knowledge exchanges.

2.4. **Strategic Alliances in the Liner Shipping Industry**

Following the illustrations of relevant theories in the previous sections, this section discusses whether the respective theories are applicable in the context of the liner shipping industry. As most liner shipping routes are dedicated to the shipment of containers, the strategic alliances and networks discussed in this study shall be confined to the containerized liner shipping sector. Horizontal in nature, strategic alliances amongst liner shipping firms are operationally-driven and revolve mainly around collaborative agreements with competitors encompassing vessel pooling, space purchase and space exchange. While it is widely accepted and understood that strategic alliances in the liner shipping sector are essentially forged for the purposes of risk-sharing, cost minimization, attainment of economies of scale, plugging resource-based gaps, service network integration and market penetration (Slack et al., 2002), the persistent challenges posed by the current volatile and uncertain business climate, coupled with the perennial low profitability of liner shipping firms calls for a shift in paradigm towards a knowledge-based view for collaboration. The knowledge-based approach for collaboration involves alliance firms establishing an effective knowledge sharing network within the strategic alliance, whereby relevant knowledge vital for alliance competitiveness and sustainability flow freely for the benefit of the alliance network as a whole. With the increase in accessibility of knowledge, coupled with its subsequent appropriate application and integration, the liner shipping firms’ performance is expected to improve.

Liner shipping firms operate in an extremely volatile and uncertain environment, with demand and supply being highly dependent on the state of the global economy and trade. Demand for shipping is fundamentally driven by the world economy and seaborne commodity trades, and is primarily recognized as ‘derived demand’. Shipping demand in turn influences freight rates, which would consequently impact the supply of ships in the shipping market (Stopford 2009). In addition, the shipping cycle, which is depicted by relatively short peaks and extended troughs, characterizes the
vulnerability of liner shipping demand and supply, especially during periods of economic uncertainty or random economic shocks. This can be illustrated by the fact that freight rates for Asia – Europe routings plunged to zero and even negative freight for certain routings when the global financial crisis struck in 2008, whereby global trade drastically slowed to a crawl. During this period, the liner shipping firms participated in massive price wars and slashing of freight rates in a bid to retain their market share, which unfortunately led to massive industry-wide financial losses and bankruptcies. The liner shipping industry was thereafter plagued with a high level of overcapacity, which led to massive vessel lay-ups and scrapping.

Nevertheless, the issue of overcapacity and financial woes of liner shipping firms appear to be perpetual problems up till today. Most liner shipping firms are still deeply entrenched within a quagmire of hefty financial losses, seemingly mindless pursuit for market share at the expense of bottom-lines, and the extensive ordering of mega-size ships – more than 18,000 TEUs in capacity – in the relentless race to attain economies of scale. The apparent mismanagement of capacity and unsustainable rate levels offered by liner shipping firms indicates a blatant disconnect with the oversupply situation afflicting the industry. Hence, it is undeniably critical and beneficial for liner shipping firms within alliance networks to share relevant market-specific and firm-specific knowledge and/or information necessary to achieve a more balanced alignment of collective capacity within an alliance with that industry demand levels. Appropriate knowledge and information, when integrated and applied to the relevant strategic alliance would aid alliance partners in making more sound decisions, on the strategic and pricing basis, both collectively as an alliance and individually. This would also enable the strategic alliance to function operationally in a more nimble manner, maintain its schedule integrity, adapt its service standards and capacity readily to changes in demand and supply levels, as well as seize relevant business opportunities like breaking into new markets and service routes when they arise. As proven empirically by Lee (2010) in a case study targeting Korean maritime firms, knowledge, namely market-specific and firm-specific, is vital in mitigating environmental uncertainty and aiding firms’ flexibility in adapting to environmental challenges. Therefore, as liner shipping firms within alliance networks collectively engage in learning and knowledge-sharing, the individual firm performance, in terms of capacity management, operational efficiency, service quality and overall profitability is expected to improve.

With prolonged commitment and engagement in knowledge sharing amongst alliance partners, ‘social capital’ in the form of trust and reciprocity accumulates within the strategic alliance, which would further reinforce the former relationship. In addition, based on findings reported in cluster literature as discussed previously, the incidence of knowledge sharing is likely to increase and be facilitated by geographical proximity and social ties when firms are co-located within an industrial cluster (Henry and Pinch, 2002). Hence, liner shipping firms belonging to alliance networks embedded in industrial clusters are expected to share knowledge and information more frequently and intensely, through the fostering of closer relationships and dynamic interactions, with their spatially proximate partners. This increased knowledge sharing consequently leads to a better understanding of and response to the market situation and operational environment, hence boosting firm performance.

In general, there is a dearth of empirical literature on knowledge sharing within horizontal alliance networks and its impact on firm performance especially in the context of liner shipping despite the increasing prominence of the knowledge economy, as well as the pervasiveness of horizontal alliances in the industry. Hence, in an attempt to fill above literature gap coupled with the preceding theoretical discussions, this research paper seeks to answer the following research questions (RQs):

RQ1: What are the mechanisms of knowledge sharing amongst liner shipping firms within an alliance network?
RQ2: What is the impact of knowledge-sharing within alliance networks on a liner shipping firm’s performance?
RQ3: Does the co-location of alliance partner firms within an industrial cluster moderate the relationship between knowledge-sharing within alliance networks and a liner shipping firm’s performance?
3. Methodology

3.1. The Conceptual Framework

The conceptual framework of this research revolves mainly around three areas, namely 1) knowledge sharing within liner shipping alliance networks, 2) the impact of knowledge sharing on firm performance, and 3) cluster effects derived from alliance partners’ co-location within an industrial cluster. In order to develop this framework, a broad review on literature was conducted to a) identify the categories and dimensions of knowledge, the relevant knowledge sharing dynamics amongst strategic alliance partners, the relevant indicators of firm performance; b) determine the relationship between knowledge sharing and firm performance, and c) the effects of co-location within an industrial cluster. Figure 2 provides an illustration of abovementioned conceptual framework.

First and foremost, to operationalize the above conceptual framework for this study, the two-pronged categorization of maritime logistics knowledge as specified by Lee (2010), namely i) market-specific knowledge and ii) firm-specific knowledge, is utilized and adapted in the context of the liner shipping industry. This is because Lee (2010) is one of the few maritime-related studies for which the knowledge-related indicators are available and deemed suitable by the authors. Lee (2010) described market-specific knowledge as valuable know-how and information of the maritime industry and market, and firm-specific knowledge as operational and technological, which comprises of organizational capabilities as well as employee experience and know-how. The details of these two knowledge categories are found in Table 1. With the knowledge indicators clearly identified, the relevant knowledge sharing mechanisms can then be empirically examined in line with the first research question.

<table>
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<th>Table 1: Categories of knowledge for liner shipping</th>
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<tr>
<td><strong>Market-specific knowledge</strong></td>
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<tr>
<td>General information about the liner shipping industry, e.g. shipping trends, market practice, governmental regulations, etc.</td>
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<tr>
<td>Customer-related information.</td>
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<tr>
<td>Competitors’ strategy and behaviour.</td>
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<tr>
<td><strong>Firm-specific knowledge</strong></td>
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<tr>
<td>Operational know-how and expertise, e.g. knowledge of regulations of fuel type and engine failures, vessel and schedule management, etc.</td>
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<tr>
<td>Internal expertise to manage employees and the organization.</td>
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<tr>
<td>Internal firm management and IT systems, e.g. data systems, stowage planning, etc.</td>
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Source: Adapted from Lee (2010).

After the knowledge sharing mechanisms are determined, the relationship between knowledge sharing and firm performance would be explored. Pertaining to firm performance, it has been widely
recognized by scholars that the selection of firm performance measures is often complicated and subjective (Venkatraman and Ramanujam, 1986), while strategic management scholars have conceptualized firm performance to broadly encompass financial and operational (non-financial) performance measures. However, appropriate financial data, which are confidential and sensitive, are often not accessible especially with privately-held firms or are inevitably intertwined with corporation-wide data with business conglomerates. This has consequently led scholars to utilize perceptual measures of firm performance, which are based on the perceptions and opinions of participants, when objective financial data is absent (Dollinger and Golden, 1992; Rhodes et al., 2008). Although perceptual measures may be criticized for possible bias and inaccuracy, there is robust empirical evidence supporting and demonstrating that a strong correlation exists between perceptual and objective performance measures at the firm level (Dess and Robinson, 1984; Venkatraman and Ramanujam, 1987). Furthermore, it is also held in literature that operational performance, which is deemed a different construct from financial performance, mediates the relationship between organizational conduct and financial performance (Venkatraman and Ramanujam, 1986; Combs et al., 2005; Molina-Azorín et al., 2009). Hence, it can be deduced that operational performance indicators affect and plausibly improve financial performance. Considering that liner shipping firms engaged in strategic alliances are generally large conglomerates for which obtaining valid financial data is a difficult and complex process, this study thus focuses on perceptual non-financial performance measures comprising of market and operational performance. The relevant performance indicators obtained from reviewed literature are summarized in Table 2.

Table 2: Categories of firm performance indicators

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<th>Firm Performance Measures</th>
<th>Performance Indicators</th>
<th>Sources</th>
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<tr>
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<td>Sales volume &amp; growth</td>
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<td>Market development</td>
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<td></td>
<td>Reputation &amp; image</td>
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<td></td>
<td>Customer satisfaction</td>
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<td></td>
<td>Responsiveness</td>
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<td></td>
<td>Flexibility</td>
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<td></td>
<td>Cost reduction</td>
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<tr>
<td></td>
<td>Dependability</td>
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<td></td>
<td>Technological efficiency</td>
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Source: The authors, adapted from various sources.

Finally, with regard to cluster effects – the proposed moderator between knowledge sharing and firm performance – the relevant indicators encompasses geographical proximity, trusting relationships, frequent interactions, trust and reciprocity, as well as common values, identity, practices and cultures, and these have been discussed in section 2.3 accordingly.

3.2. Method of Data Collection and Sampling

As this research is a preliminary exploratory study for a future research scheme of a larger scale, the authors adopted face-to-face in-depth interviews as the primary method of data collection with the purpose of acquiring in-depth and thorough insights of the research questions discussed. The sample of this study consists of two senior executives and an ex-senior executive from prominent liner shipping firms, located in Singapore, which are deeply entrenched in strategic alliances. The respective participants were shortlisted based on their immense wealth of experience in the liner shipping industry and their active involvement in liner shipping strategic alliances.

In preparation for abovementioned in-depth interviews, a questionnaire comprising of questions tailored to answer the three research questions was designed for verbal administration to the relevant
research participants. The questionnaire was also fine-tuned successively at the discretion of the authors after each interview to enhance the effectiveness and efficiency of the data collection process.

3.3. Administration of Research Tools

The face-to-face interviews were arranged and conducted at the respective offices of participants by the authors, during which, questions from the designed questionnaire were rigorously discussed. Audio recordings of interviews conducted were also made with the approval of the participants. Upon the completion of the interviews, the audio recordings were transcribed and reviewed by the authors for the extraction of relevant and valid data.

4. Findings and Discussion

4.1. Mechanisms of Knowledge Sharing

All interviewees were asked if knowledge or information sharing exists within the strategic alliances that their respective companies were engaged in, and if so, to elaborate on the mechanisms through which the sharing takes place. According to preliminary findings gathered through the interviews, the levels of interaction and sharing varies with the types of alliances or consortia companies are engaged in, which range from contractual slot-swops for which interaction is minimal to integrated alliances which requires closer cooperation and coordination, and these arrangements differ in accordance to specific trades and loops. Thus, for the purpose of this research, focus is placed on integrated strategic alliances in which interaction and knowledge sharing are more evident and meaningful.

Based on research findings and concurring responses obtained from virtually all interviewees, it was confirmed that market-specific knowledge and information, encompassing freight rates, customer-related information and other commercial issues, are considered taboo in the liner shipping industry due to strict anti-competition laws and regulations and can potentially lead to heavy penalties if discussed or exchanged. This unique situation is blatantly depicted in below excerpt quoted by an interviewee as follows:

“You can’t share information amongst the lines, that’s taboo now. They can talk about operational stuff, but when it comes to anything else on marketing information, even in terms of talking about how many TEUs you (an individual shipping line) are carrying in this market, you can’t share...You can’t talk about rates or customer-related information...You can’t even talk over the phone or over coffee....The moment they’re found discussing all these, there are hefty fines....Lines are getting worried, they can’t talk about anything, and they’re worried that the moment they talk, they might leak out something and be seen as sharing information.”

On the other hand, it was generally conceded by interviewees that knowledge and information sharing from an operational perspective, which is in line with firm-specific knowledge indicators as shown in Table 1, is a necessity to ensure smooth running of day-to-day operations. As ships assigned for specific loops are generally operated by an individual firm but with space onboard shared by the entire strategic alliance, close coordination and sharing of operational information and knowledge amongst alliance partners such as stowage plans, vessel assignment and scheduling, as well as problem-solving expertise in events of engine failures are vital to ensure operational safety and service integrity, as quoted by one of the interviewees as follows:

“When it comes to them (firms embedded in a specific strategic alliance) as a grouping versus another alliance, of course they will want to share certain things in terms of port coverage, loops, scheduling because they are all together. Their vessels are operating in loops and each one contributes certain vessels. They want to try to maintain schedule integrity and vessel safety, and do share information where they can ensure on-time vessel calling and port efficiency.”
Thus, there is generally close cooperation amongst operations personnel within strategic alliances, and common issues such as regulations of fuel types, new building plans, environmental issues, operational efficiencies and engine failures, consisting of a mix of both explicit and tacit knowledge (Michael Polanyi, 1967), are openly discussed.

Within integrated liner shipping strategic alliances or consortia, one of the main mechanisms through which operational-based knowledge sharing occurs is through formal structural set-ups of committees of various levels, such as principle committees, steering committees, regional operational committees and a series of other support committees. The principle, steering and regional operational committees meet face-to-face via official meetings that take place half yearly and/or quarterly, subject to operational requirements. The support committees however, where necessary, interact on a daily basis via video conferences, electronic mails and telephone calls. These committees effectively form the knowledge network within which operational knowledge flows within the alliance network. In addition, joint operational centres or offices are also set up for major alliances for which closer and more complex coordination is vital.

4.2. Impact of Knowledge Sharing on Firm Performance

Following the revelations pertaining to the regulatory restrictions and mechanisms of knowledge sharing within liner shipping strategic alliances, the benefits of operational knowledge sharing are hence apparent only on the operational basis. Based on interview findings, the sharing of operational knowledge within strategic alliances or consortia indeed improves a liner shipping firm’s operational performance, which includes improved operational efficiency and innovation, as well as enhanced service quality (vessel and cargo safety) and reliability (schedule integrity) for the alliance as a whole. This result reinforces the study by Grant and Baden-Fuller (2004), which illustrates the advantage of alliances in enhancing efficiency in knowledge utilization and integration of applicable knowledge into complex product and service offerings. Nonetheless, apart from common benefits, private benefits (Khanna et al., 1998), which includes the fine-tuning of internal systems, are inevitably conferred to liner shipping firms through learning and knowledge spillovers from partner firms. This is supported by an example provided by one of the interviewees, whereby liner shipping firms learn from partners and upgrade their internal IT systems from that which requires manual data inputs to that of XML (extensive markup language) and EDI (electronic data interchange) formats, which in turn improves internal firm efficiency. This supports the notion of inter-organizational learning through collaboration, whereby monitoring and imitating of partners’ practices leads to firm competitiveness (Levinson and Asahi, 1996; Powell et al., 1996).

In addition, when interviewees were asked if knowledge or information sharing would improve firm performance, the responses gathered were generally positive and consensual. Moreover, apart from confirming the relationship between the former constructs, one of the responses received strongly implied that the prohibition of information sharing has dire consequences on firm performance and subsequently the entire liner shipping market, as follows:

“Yes, it will impact the whole industry. That will be very helpful. If they can really share information, they can improve their performance. Lines can then plan their capacities, better moves in terms of inter-modalism and whatever.... Things now are different from the early days of the conferences when they were able to free discuss these things. Personally I felt that back then, they were able to better plan by sharing information, like this is the total trade, this is the total capacity, where are we in terms of disparity. Then can we now do something, like reduce supply or bring up some rates or where can we reduce rates to get more market share? And that helped to balance; it wasn’t as bad as what’s happening now. Now they’re in the dark, this guy does something and doesn’t know what is happening at the other side. All are just bringing in capacity and the whole market is just collapsing, I’ve never seen anything like this before...”
Although strict anti-competition laws presently restrict the sharing of market-related information or knowledge, which nullifies any possible assessment of the impact of market-related knowledge sharing on firm performance for this research, it was however evident in the days when liner conferences were legal that there was generally greater stability and cooperation in terms of vessel capacity and freight rates as compared to the volatility currently observed in the industry. This strongly implies that the market performance of a liner shipping firm would in fact improve if market-related knowledge sharing is legally permitted.

4.3. Moderating Effects of Co-location within a Cluster

Regarding the moderating effects of co-location of alliance firms within an industrial cluster, it was by and large established through the interviews conducted that physical co-location of liner shipping alliance partners is not a necessity. This can be attributed to the fact that the liner shipping industry is by-and-large global in nature, with firms possessing vast international networks of branch offices or agencies which can plausibly be utilized as conduits of knowledge sharing and operational implementation. Furthermore, with the proliferation of technological advancement in electronic and virtual communications, interaction can take place via virtual platforms with relevant information and knowledge codified and disseminated via the networks of branch offices and agencies. Nonetheless, the interviewees did comment that co-location within a cluster, though not imperative, does help in terms of reduced travelling time and distance when circumstances call for face-to-face meetings where tacit information and knowledge is usually shared. Furthermore, the existence of physically co-located joint operational centres for prominent consortia involved in dominant trades substantiates the benefits of the geographical proximity conferred by co-location within a cluster. These are summarized in a quote made by an interviewee as follows:

“There is no necessity to actually be physically located next to each other. It probably helps if there is some geographical clustering going on because it makes the travel easier...... I think the need to cluster is not an essential ingredient, it is a helping ingredient but it’s not essential. But I would say one point in the case of the most consortia-heavy type of alliance, they may in that situation make a decision to have a joint operations centre.”

When alliance partners are physically co-located, knowledge sharing and interaction takes place at higher frequency with reduced delays, which leads to more efficient and nimble decision-making and problem-solving when the relevant need arises. Hence, it can be suggested that co-location within a cluster indeed moderates the relationship between knowledge sharing and a firm’s operational performance but nevertheless to a limited extent.

This is because there is a common consensus derived from the interviews conducted that there is an apparent lack of common identity and culture, as well as limited common values within strategic alliances in the liner shipping industry. According to one of the interviewees, consortia arrangements are deemed to be operational and transactional partnerships of convenience, as opposed to concepts of untraded dependencies (Storper, 1995), communities of practices (Brown and Duguid, 2001) or epistemic communities (Wilson and Spoehr, 2010) found in cluster literature. Hence, it can be deduced that dynamic interactions, facilitated by geographical co-location, amongst firms embedded in clusters (Henry and Pinch, 2002) is not applicable in the context of strategic alliances in the liner shipping industry.

4.4. Discussion and Opportunities for Future Research

This research has revealed that knowledge sharing within strategic alliances within the liner shipping industry revolves mainly only around firm-specific or operational knowledge or information. The exchange of market-related knowledge or information is presently prohibited by anti-competition regulations, which imposes extremely heavy penalties if breached, causing personnel in the liner shipping industry to be exceptionally cautious and guarded to the extent of completely avoid even the remotest hint of market-related discussions. Through the interviews conducted, it was discovered that
the mechanisms of operational knowledge sharing revolves primarily around the setting up of formal structured committees and/or joint operational centres comprising of all relevant alliance members. Within these formal structures and arrangements, interactions which facilitate knowledge sharing within the alliance networks takes place via face-to-face meetings and virtual forms of communication. Nevertheless, through examining only the sharing of firm-specific or operational knowledge, the results of this study suggest that a positive relationship indeed exists between knowledge sharing within strategic alliances and firm performance. In the case of the liner shipping industry, firms have reaped improved operational firm performance in terms of enhanced efficiency, innovation, service quality and reliability. Pertaining to co-location within a cluster as a moderating effect between the former relationship, it is found that physical co-location within a cluster brings about convenience but is nonetheless not considered essential. This implies a positive moderating effect on the former relationship but albeit to a limited extent, since there is an apparent dearth of dynamic interactions which are necessary conduits for knowledge flows.

Consequently, the results of this study provide significant insights to senior executives of liner shipping firms in their strategic decision-making process pertaining to the management of knowledge and relations within ‘co-petitive’ strategic alliances, as well as the consequent implications on firm performance. This paper also contributes to the field of cooperative strategy and maritime research with regard to non-equity based alliances governed by contracts and agreements from a knowledge-based perspective within the liner shipping industry. Moreover, research on the maritime industry from strategic management and knowledge management perspectives is limited, and this study contributes academically by illustrating how knowledge management theory applies in the context of the maritime industry.

Nevertheless, the authors acknowledge that there are methodological limitations in this study involving the sample size and data collection method. Considering that only three in-depth face-to-face interviews were conducted, the results of this study are insignificant with regard to generalizability and reliability. Hence, future research should encompass a larger sample size and quantitative surveys to address generalizability and reliability concerns. Furthermore, while this study explores the knowledge sharing mechanisms amongst liner shipping alliance partners, it does not take into account the dilemmas and opportunism within the ‘co-petitive’ arrangement. It would hence be meaningful to examine the dynamics of competition and cooperation between the alliance partners for future research, and explore the tensions which arise when the respective alliance partners juggle between reaping private and common benefits (Khanna et al. 1998). In addition, while strategic alliances in the liner shipping industry provide a good example of non-equity based alliances, there is an issue on generalizability across other industries as the liner shipping strategic alliance phenomenon is rather unique to this industry. Hence, future research could seek to explore the significance of knowledge sharing on firm performance in non-equity strategic alliances in other non-shipping industries or other shipping sectors, like shipping pools in bulk shipping industry.

5. Conclusion

In conclusion, this study establishes that knowledge sharing positively impacts firm performance, while co-location within a cluster moderates the former relationship within the liner shipping industry, despite unique industry-specific regulatory constraints. The results of this study provide significant practical insights to senior executives of liner shipping firms in their strategic decision-making process pertaining to the management of knowledge and relations within ‘co-petitive’ strategic alliances, as well as the consequent implications on firm performance. In addition, this study also contributes academically by illustrating how knowledge management theory applies in the context of the maritime industry.

References


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Appendix

<<Interview Questionnaire>>

Mechanisms of knowledge sharing:

1) What are the means of communication between your firm and alliance partners? (Email, phone calls, face-to-face meetings, conference calls?)

2) Could you please describe the nature of the relationship between your firm and that or alliance partners? (Tie strength – weak or strong, Frequency of face-to-face communication, level of informal communication, level of trust, spontaneity in knowledge sharing)

3) What kind of information/data/knowledge do your firm and alliance partners share with each other (market-specific, firm-specific, explicit, tacit)? How are above shared and exchanged?

4) Is there any motivation to share knowledge/data/knowledge amongst alliance partners? If yes/no, why?

5) Could you please advise what types of information/data/knowledge are deemed to be confidential and what are for public sharing amongst partners?

Impact of knowledge-sharing on firm performance:

1) Do you think that the sharing of information/data/knowledge with alliance partners is beneficial for your firm? Does it impact the performance of your firm? If yes/no, how and why? If yes, what types of information/data/knowledge contribute more to benefit your firm and in what way?

2) Does the sharing of information/data/knowledge with alliance partners improve the ability of the firm and alliance as a whole to adapt to the volatile environment? If yes, what types of information/data/knowledge and how?

3) Does the sharing of information/data/knowledge with alliance partners improve your firm’s market access and market share? If yes, what types of information/data/knowledge and how?

4) Does the sharing of information/data/knowledge with alliance partners bring about improvements in your firm’s organizational procedures, routine, culture, environment apart from the alliance arrangements? Are the knowledge gained internalized and assimilated into your firm? If yes, what types of information/data/knowledge and how?
Moderating effects of co-location within industrial cluster:

1) In your opinion, is being closely located to your alliance partners beneficial for knowledge sharing and does it facilitate communication? How?
2) Does being closely located with your alliance partners increase the frequency of face-to-face meetings and the fostering of friendships beyond that of work?
3) Do frequent meetings and stronger ties bring about a greater level of trust?
4) Do the members of the strategic alliance to which you belong share a common identity/camaraderie/culture? If yes, does it improve the quality of knowledge sharing? If yes, how? Does the improved quality of knowledge sharing improve firm performance?
5) Beyond that of work, do employees from different firms within the alliance network spend time networking with each other?
6) Does the management of your firm encourage employees to socialize with employees of alliance partners? Why or why not?