

Strategic maritime management as a new emerging field in maritime studies

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Abstract

Purpose – This study aims to promote strategic maritime management as a new emerging discipline to foster research in strategic maritime issues.

Design/methodology/approach – An existing academic discipline maturity model is adapted by including four phases of dynamic evolutionary paths to evaluate the phase of maturity of a research discipline. The model is validated by means of two matured disciplines: strategic management and maritime economics.

Findings – It is found that the current research of strategic maritime management is at a phase of emergence of discipline and ready to move to the maturity phase. It is also found that the evolution of the path of strategic maritime management resembles the early evolution path of strategic management but lags 30 years behind. Future research directions of strategic maritime management can be referred to the research streams in the maturity phase of strategic management.

Research limitations/implications – The adapted academic discipline maturity model brings in the longitudinal and dynamic perspectives of the evolution of an academic discipline, which helps maritime strategists identify gaps and opportunities and evaluate the appropriateness of applying a strategic management paradigm to a specific research topic.

Originality/value – The adapted academic discipline maturity model brings in the longitudinal and dynamic perspective of the evolution of an academic discipline, which helps maritime strategists define the gaps and opportunities in strategic maritime management research.

Keywords Dynamic capability, Discipline maturity, Internal governance structure, Maritime business strategy, Networked maritime stakeholder, Paradigm evolution

Paper type Research paper

1. Introduction

Most research studies in maritime administration have historically been rooted in economics (Hayuth, 1981; Wang, 1998; Notteboom and Rodrigue, 2005; Woo *et al.*, 2011). One primary research theme for maritime scholars is to adopt the language and logic of economics to investigate economic impacts of the maritime industry (Woo *et al.*, 2011). There are abundant publications in leading maritime journals that explored how a country's or region's maritime infrastructure, including shipping lines, seaports, foreland and hinterland, affects the country or region economic growth or employment (Benito *et al.*, 2003; Langen, 2002; Pallis *et al.*, 2010).

The past two decades have witnessed a significant revolution in the maritime industry, research and writing. The maritime logistics industry has evolved from its traditional role of



facilitating loading and discharging operations to the new role of coordinator, facilitator and integrator in port clusters and global (physical goods) supply chains (Estache and Trujillo, 2009; Verhoeven, 2010; Parola *et al.*, 2015; Notteboom *et al.*, 2017). Facing fierce competition and low-profit margins, maritime logistics firms are prompted to adopt complex corporate or business strategies aiming at improving profitability and survivability (Midoro *et al.*, 2005; Lorange, 2009; Parola *et al.*, 2015; Yuen *et al.*, 2016). In the meanwhile, maritime scholars have started to “borrow” or “reformulate” tools or theories from management disciplines (Woo *et al.*, 2011; Panayides and Song, 2013). By following the unique set of research objectives, theoretical paradigms and theories and frameworks from each management discipline, maritime scholars attempt to understand the impacts of the intrinsic maritime transport market structure on managerial behaviors (Woo *et al.*, 2011; Cariou *et al.*, 2015).

Among the management disciplines that have been followed by maritime scholars, two management disciplines stand out. One is business logistics and supply chain management (Panayides, 2006; Panayides and Song, 2013; Lam and Bai, 2016). Panayides and Song (2013) proposed maritime logistics as an emerging discipline, following the definitions of logistics and supply chain management offered by the Council of Supply Chain Management Professionals (CSCMP) and Liles *et al.*'s (1995) criterion to define a matured academic discipline^[1]. In their view, the emergence of maritime logistics discipline is due to the internal and external environmental changes. Panayides and Song (2013) subtly defined maritime logistics as a discipline that:

[...] would encompass the management of the physical maritime transport flows, the management of information flows, as well as the management of the interfaces between the various actors in the maritime supply chain from manufacturers to the end consumer, [...], (and) should aim at improving performance, [...], improving quality [...], improving the spectrum of operations and processes and enhancing environmental performance, growth and corporate responsibility. (p. 296)

Another one is strategic management (Hawkins, 1997; Cariou *et al.*, 2015; van der Lugt *et al.*, 2013, 2017; Hollen *et al.*, 2013; Notteboom *et al.*, 2017; Satta and Persico, 2015; Pallis and Parola, 2018). For instance, Parola *et al.* (2015) investigated the impact of corporate strategies on the profitability of maritime firms by applying a generic theoretical framework of “strategy performance” in the context of maritime logistics firms. Satta and Persico (2015) and Pallis and Parola (2018), through the theoretical lens of international business (IB) and strategic management, explored the market entry strategies for international (container) terminal operators and private cruise terminal operators, respectively. van der Lugt *et al.* (2014) and Notteboom *et al.* (2017) investigated the co-evolution strategies and port choices within a maritime network or strategic alliance. Lu (2007), Progoulaki and Theotokas (2010), Davarzani *et al.* (2016) and Yuen *et al.* (2018) applied the resource-based view (RBV) theory from strategic management to investigate a variety of resource and capability issues in the context of the maritime logistics industry.

The school of maritime scholars favorable to strategic management has produced prolific research findings. Yet, it is still unclear whether the research stream on strategic issues in the maritime logistics industry is ready to be called as an academic discipline or simply an application of existing strategic management theories and constructs in maritime. This study was set out to clarify this concern. We agree with the statement made by Cariou *et al.* (2015) that:

[...] the uniqueness of this (maritime) industry provides a fruitful empirical groundwork that invites scholars to more advanced research objective. Future outcomes should reach beyond the

boundaries of maritime and port research and contribute to fundamental research and theory building in broader academic disciplines such as management and strategy. (p. 2-3)

We extend this line of the statement by proposing strategic maritime management – the field of research on the management of strategic issues in maritime – as an emerging academic discipline.

A community of scholars represents an academic discipline that shares a common identity and language (Kuhn, 1962) and is strongly influenced by the community members' specialties and norms (Shapin, 1995). Our primary premise is that research in strategic maritime management shares the consensus of strategic management in general but is contingent on the context of the maritime industry. Referring to the definition of the field of strategic management by Nag *et al.* (2007, p. 944), we define strategic maritime management as:

The field of strategic maritime management deals with the major intended and emergent initiatives taken by general managers on behalf of both owners and stakeholders, involving utilization of resources, to enhance the performance of maritime organizations in the global maritime environment.

Our objective in this study is to argue for the legitimacy of strategic maritime management as an academic discipline. We have two specific research questions:

RQ1. How to determine the research stream of strategic maritime management as an emerging academic discipline?

RQ2. Where does the discipline of strategic maritime management come from and where will it go?

One approach to determine the maturity of a research stream is to use a *static* set of evaluation criteria, as what has been done in Panayides and Song (2013). However, this static approach cannot capture the dynamic longitudinal information concerning where the research comes from and where it will go. We thus take a different approach and develop an academic discipline maturity model (ADMM) that incorporates both the *static* and *dynamic* stances.

The dynamic stance of ADMM can be traced to Kuhn's (1962) seminal book, *The Structure of Scientific Revolutions*, one of the 100 most influential books published after the Second World War selected by TLS (*The Times Literary Supplement*). The philosophy of Kuhn's paradigm revolution has been well applied in evaluating the levels of maturity of management disciplines emerged after the 1970s, such as the management information system (MIS) (Culnan, 1986), strategic management (Teece *et al.*, 1997; Nag *et al.*, 2007), logistics (Stentoft Arlbjørn and Halldorsson, 2002) and service marketing (Anderson, 1983; Lovelock and Gummesson, 2004). We adapt the static set of criteria from Barney's comments on the maturity of the strategic management discipline (Barney, 2002), which includes the research objective, unit of analysis, (prescriptive) theoretical paradigm and (predictive) theoretical frameworks. Barney's four criteria are more "quantifiable" than the criteria developed by Liles *et al.* (1995) and the "active research agenda" criterion used by Panayides and Song (2013). We use the four criteria to describe the four phases of the evolution path to be discussed below.

We validate the maturity model with the evolution paths of both strategic management (Barney, 2002; Teece *et al.*, 1997; Teece, 2007) and maritime economics (Heaver, 1995, 2006; Woo *et al.*, 2011). A phase-by-phase comparison justifies the model's validity. We apply this

model to verify if each phase of strategic maritime management satisfies the model requirement and if its path shares the commonalities that both strategic management and maritime economics mutually have. Path-pattern comparison helps us gain a deeper understanding of where the strategic maritime management comes from and where it will go. We find that the strategic maritime management satisfies the criteria to be a mature discipline, and its evolution path matches with the paths that both strategic management and maritime economics had experienced.

The paper is organized as follows. In Section 2, we discuss the development of the maturity model for academic discipline. Then, we validate this model with our review of the evolution paths of strategic management and maritime economics in Section 3. We use this model as the organizing theme to review the literature of research in maritime strategic management in Section 4. Finally, we discuss the results of the comparison between strategic maritime management and the two matured disciplines in Section 5 and make suggestions for future research directions in Section 6.

2. Method: the maturity model approach

This study is basically a qualitative evaluation research (Patton, 1990) in which the development, validation and application of an evaluation scheme are the critical steps. The maturity model approach is deemed appropriate to analyze the current stage of the research in strategic management issues in the context of maritime. A maturity model is a conceptual multistage model that describes typical path-patterns in the development of capabilities in a specific social-economic context (Benbasat *et al.*, 1980; de Bruin and Rosemann, 2005). It usually depicts a sequence of stages that together form an anticipated, desired or logical path from an initial to a target maturity state, either for individual entities or regarding a complete set of institutional capabilities (Poepplbuss *et al.*, 2011). Scholars have applied the maturity model approach to many academic areas or disciplines such as Total Quality Management (TQM), project management, MIS (MIS), business process management (BPM) and knowledge management. In each discipline, scholars evaluate either a specific management framework or the entire knowledge advancement with a customized maturity model. In this section, we will briefly review the literature, discussing the stage of maturity concerning the accumulated knowledge base for a particular discipline.

2.1 Perspectives on academic maturity

There are two perspectives on determining whether an active research area is mature enough to be an academic discipline: the *static* view and the *dynamic* view. The static view examines the characteristics of the “snapshot” of a research area *status quo*, while the dynamic perspective takes the longitudinal view by looking at the historical evolution of a research area. Liles *et al.*'s (1995) approach represents the static perspective. When they argued *Enterprise Engineering* as an academic discipline, they referred to six characteristics including the “focus of study,” “worldview,” “reference disciplines,” “principles and practices,” “active research agenda” and “education and professionalism” (for a detailed discussion, see Liles *et al.*, 1995, p. 5). Panayides and Song (2013) chose one criterion, *an active research agenda*, to define the maturity level of maritime logistics as an (emerging) academic discipline. They operationalized the criterion of active research agenda with three indicators: the research topic stands the test of time, the research topic is complex and substantial enough to be subdivided into different research directions and multiple fundamental questions/approaches are raised and formulated to guide research in the area (p. 303). Barney (2002) used the “focus of study” to describe the maturity of the discipline of strategic management. He operationalized the criterion of focus of study with four

indicators: objectives, unit of analysis, theoretical paradigm and representative theoretical framework. Each of the four criteria will be discussed thoroughly in the next section. Barney's perspective of defining the emergent of strategic management reflects the school of arguments that an emerging academic discipline is a self-sustained research paradigm (Furrer *et al.*, 2008). Such a paradigm is ready to shift from descriptive research to prescriptive research (Doz and Prahalad, 1991).

The dynamic view identifies critical phases that the research area has historically experienced. In the domain of management, many studies with the longitudinal perspective reveal four distinct phases that a research area has to go through and becomes an emerging and then a mature academic discipline. The four phases are the *early creative thoughts*, *convergence of objectives*, *descriptive* and *prescriptive*. In the "early creative thoughts" phase, research topics are scattered around with little consensus about research objectives. The "convergence of objectives" phase characterizes a period in which the diversified objectives of many studies start to converge to a single one. In the "descriptive" phase, researchers either empirically describe management practices or conceptually develop management frameworks from the lens of an established discipline (e.g. early management and social research use economics as the theoretical lens). This stage signals the emergent of an academic discipline. The "prescriptive" phase represents the period that many researchers start to utilize multidisciplinary angles to generalize findings that come to develop a research paradigm with a commonly accepted theoretical framework. This phase marks the maturity of an academic discipline. We will discuss these four phases with examples in the following literature review section.

The static criteria can be viewed as the "gatekeepers" between phases. These criteria represent the accumulated outcomes (or knowledge) along the evolution of a research stream. Liles *et al.*'s (1995) six characteristics of an emerging discipline are the outcomes of the historical evolution of a research area (enterprise engineering). Panayides and Song's (2013) criterion, "stands for a long time", emphasizes the historical advances of an emerging research discipline. Barney's (2002) four criteria on the emergent and maturity of strategic management operationalize the indicators for stages. These criteria provide a set of measurable indicators to evaluate the status of a research area. The dynamic perspective helps make an analogy between matured disciplines and an emerging one. By comparing the theoretical advances across evolutionary phases of a matured discipline, researchers can make predictions of the future for the emerging discipline. Also, the operationalized indicators of the criteria to define an emerging discipline help researchers to concentrate their efforts on the key areas to evaluate. To take advantages from both perspectives, we develop an organizing scheme of literature to discuss the emergent of strategic maritime management as an academic discipline.

2.2 Academic discipline maturity model

Based on the previous discussion, we proposed an academic discipline maturity model (ADMM) from the dynamic perspective. The model is composed of two dimensions. One dimension uses Barney's four criteria to define the maturity of an academic discipline in the case of strategic management and another dimension depicts the four phases of the dynamic evolution of the academic discipline, as shown in Figure 1. The non-dotted cells define the scope of our selected literature. The dotted cells, on the other hand, represent literature that falls outside the scope of this study.

Specifically, we searched literature in two steps. First, we searched the literature on strategic management and maritime economics from leading academic journals in each field and extended to all journals where such papers were published (Woo *et al.*, 2011). The

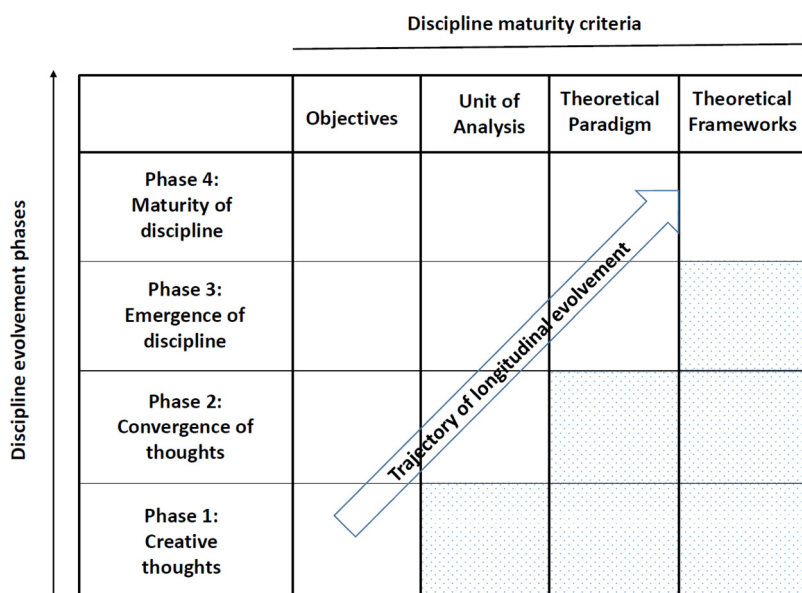


Figure 1.
Academic discipline
maturity model

leading journals for strategic management include the *Strategic Management Journal*, *Academy of Management Journal*, *Academy of Management Review* and *Administrative Science Quarterly* (Nag et al., 2007), and that for maritime economics are *Maritime Policy and Management* and *Maritime Economics and Logistics* (Woo et al., 2011). We used keywords such as “maritime”, “economics”, “strategy”, “policy”, “management”, “administration”, “history”, “longitudinal”, “evolution”, “competitiveness” and “productivity.” The keywords “seaport”, “shipping”, “hinterland and “water transport” were later used to substitute the keyword “maritime” to find more papers on the subjects of interest. We also searched the internet and digital databases such as Google Scholar, Business Source Premier and ABI/Inform Complete (Business) with these keywords being contained in titles or abstracts.

Second, we differentiated papers on strategic maritime management from maritime economics based on five research contents identified by Nag et al. (2007)[2] in their survey of the consensual definition of the field of strategic management. The five content areas that are implicitly agreed upon by many strategic management scholars include “strategic initiatives”, “top management”, “resources and capabilities”, “performance and competitiveness” and “firm and organization” (Nag et al., 2007, pp. 942-943). These five research contents reflect the fundamental differences between strategic management and economics (Nag et al., 2007). Readers who are interested in the arguments about the differences between strategic management and economics are referred to Barney (1990, 2002), Rumelt et al. (1991) and Nag et al. (2007).

Because there is no academic journal dedicated to strategic maritime management, we looked at both maritime and logistics/transportation journals (e.g. *International Journal of Logistics Research and Applications*, *Transportation Research: Parts A-E*). We also traced the publications of some maritime scholars who are active in the research of strategic issues in maritime (e.g. Mary Brooks, Trevor Heaver, Theo Notteboom, Photis Panayides, Dong-Wook Song, Roy van den Berg, Larrisa van der Lugt, Francesco Parola and Kum Fai Yuen).

While our review of the literature is not exhaustive, these sampled publications are representative of the phases in ADMM to be discussed in Sections 3 and 4.

3. Model validation

In this section, we validate the ADMM with strategic management and maritime economics, the two disciplines highly relevant to the strategic maritime management, and propose it to be an emerging discipline. We overview the literature along the evolution paths of both disciplines and positioned relevant seminal work in each phase in the ADMM.

3.1 Evolution of strategic management

The discipline of strategic management has evolved through all four phases. Phase 1 is represented by papers published during the Second World War and 1950s. During this period, many scholars brought up their creative thoughts regarding how to develop and implement policies to cope with business challenges faced by managers at that time. Scholars and managers used the term *policy*, but later replaced it with the term *strategy*. In this phase, scholars developed concepts of strategy (von Neumann and Morgenstern, 1947; Drucker, 1954), but their strategic objectives varied regarding the need for the abilities to anticipate change, to take advantage of new opportunities and to take timely actions to avoid threats to firms (Bracker, 1980). The differences among their objectives reflect their different needs for the breadth of strategy, the component of the strategy and the process of strategy formation. The unit of analysis used during Phase 1 spans from industry to individual. Most studies were narrative and descriptive based on the observations of individual industries or firms. There was no effort to explain management endeavors from any theoretical lens.

Phase 2 happened in the 1960s, as exemplified by the following three works: *Strategy and Structure* (Chandler, 1962), *Corporate Strategy* (Ansoff, 1965) and *Business Policy: Text and Cases* (Learned *et al.*, 1965, the textbook of Harvard Business School). The latter was rewritten in another book, *The Concept of Corporate Strategy* (Andrews 1971, c.f. Bracker, 1980). Diversified objectives that emerged in Phase 1 converged into specific objectives such as: how a company handles a management problem and what the best practice is to handle a problem in the industry. Scholars developed a research stream on strategic choice, meaning that management deterministically picked up a strategy that they thought it would be the best. The unit of analysis is either corporate or industry. Findings mainly come from in-depth case studies of single firms or industries, and the results of these studies are hardly generalizable (Hoskisson *et al.*, 1999). By the end of Phase 2, researchers started to shift from a deterministic one-best-way approach to a contingent perspective where organizations need to adapt to their external environments, as discussed below for Phase 3.

Phase 3 represents the period in the 1970s, in which the majority of studies emphasized the issues of generalizability of case study-based theories with common or similar objectives. One of the research objectives – the relationship between the external environment and the industry where a firm should operate – stood out as the primary research objective for most scholars in the area of strategic management (Barney and Hansen, 1994). Two different research streams based on very different ontological and epistemological perspectives emerged and developed during this phase. One stream pursued a “process” approach, which consisted essentially of descriptive studies on how strategies were formed and implemented. This research stream resembled a theoretical paradigm of behavioral theory and contributed to more realistic conceptions of the strategy-formation and or strategy-implementation process by observations of actual organizational decision-making and action-taking (Quinn, 1980; Mintzberg and Waters, 1985). At the same time,

another stream pursued a “strategy-performance” approach. Strategic scholars later acknowledged this approach as the (industry) structure–conduct–performance (S-C-P) theoretical paradigm that had been dominant in the literature of industrial organization (IO) economics (Porter, 1980; Barney, 2002). The objectives of this stream extended to incorporate the stakeholders’ perspective, in addition to the equity-holders’ perspective dominant in previous phases. There were some other creative thoughts developed in Phase 3, but they did not evolve as independent research streams. For instance, the contingency theory (Hofer, 1975) had gained significant development during this period, but it did not grow into a prolific research stream (Van de Ven *et al.*, 2013).

Phase 4 represents studies conducted in the 1980s. In this phase, strategy research developed into two different directions. One direction kept the focus on industry (i.e. industry structure) as a unit of analysis, represented by Porter’s (1980) book *Competitive Strategy*. The primary objective of this research direction is to determine how a firm can position itself in the industry to gain competitive advantages (Barney, 2002). The primary theoretical paradigm that supports this stream of research is still IO economics. This research stream later became the “competitive-advantage” theoretical paradigm. The other direction used *firm* as the unit of analysis, and drawn theoretical paradigm(s) from economics or organizational theory, or both (Barney, 1991). This stream later evolved to the “resource based view (RBV)” theoretical paradigm. The main objective of this stream of research is to determine how a firm can develop and deploy resources to gain competitiveness. Three sub-streams with the RBV perspective were emerged later, each emphasizing one of the three different aspects of a firm, namely internal structure, resources and capabilities.

3.2 Evolution of maritime economics

In this section, we follow the discussion by Heaver (2006), “the evolution of the study of shipping and ports reflects the history of the maritime industry (p. 11).” We will limit our literature review on the international shipping and seaport industries.

Phase 1 represents maritime studies published between the 1950s and 1960s, which is a gestation period of maritime economics (Metaxas, 1983). After the Second World War, three publications laid down the foundation on maritime studies, including *Shipping Economics* (Svendson 1950s, cited from Heaver, 2006); *Essays on Maritime Economics* (Gross, 1968, c.f. Metaxas, 1983); and *Supply and Demand of Water Transport* (Thorburn, 1960, c.f. Metaxas, 1983). In these two decades, research objectives and topics were dispersed, covering issues such as economics, politics, sociology, management, strategy and operations (Metaxas, 1983). Research methods also varied. Some studies applied tools of economic analysis to the maritime sector (Robbins, 1975), while others tried to optimally allocate scarce resources within the maritime sector and between the maritime sector and other sectors (e.g. total cost minimization, Thorburn, 1960).

Regarding to the unit of analysis, most studies used the ocean shipping industry (Svendson 1950s), whereas a few studies used the relationship between shipping and seaports (Thorburn, 1960). Meanwhile, Svendsen’s objective was the relationships between various inputs/outputs for shipping and the throughput for ports. On the contrary, Thorburn’s objective was the relationship between the supply and demand for water transport by viewing ocean shipping and ports as an integral (maritime) industry. While these publications chose different research methodologies and took different objectives, their theoretical paradigm was economics, specifically transportation economics (Metaxas, 1983). Thorburn’s argument on the relationship between cost (i.e. port investment) and benefit (e.g. to better serve the shipping industry) was later acknowledged as the first

theoretical framework of maritime studies (Goss, 1967). The cost–benefit argument led to research objectives on strategic issues such as whether to invest, how to invest, when to invest and where to invest (Goss, 1967).

Phase 2 represents the studies published in the 1970s. Influenced by the container revolution in the 1960s, many studies in the 1970s focused on cargo containerization and shipping, and the impacts on ports (re)construction for new container ships (Athur D. Little Ltd., 1970; Heaver, 2006). The unit of analysis remained at the industry level but at the level of sub-sectors (bulk shipping, container shipping, general cargo port, and specialized port, etc.) There were three sub-streams with different research objectives. One sub-stream focused on the relationship between the external environment and maritime structure, bringing more perspectives from IO economics (Goss, 2002). Scholars in this stream had the objectives of choosing a strategy to gain the best cost–benefit tradeoff (Metaxas, 1983). The second sub-stream continued to focus on the relationship between the costs of shipping and their impacts on port investment. The primary research objectives were the choice of ship (i.e. between bulk and containerized), the likely evolution of ship itineraries (i.e. the change of ship routing due to containerization) and aspects of container terminal operations (i.e. the changes on the port layout, equipment to be used and interfaces with carriers) (Gilman *et al.*, 1977). The third sub-stream focused on the effect of geographical locations of ports on the global logistics service network (Bird, 1971). The objective of this school of research was to understand how changes in both shipping and freight handling in shipping and seaport would change the competitive dynamics of trade volume within the network of hinterlands and ports (Bird, 1971). The theoretical paradigm was transportation economics.

Phase 3 is the 1980s and 1990s, representing the emergence of the discipline of maritime economics. In this phase, researchers started to apply a variety of theories derived from transportation economics or IO economics to explain specific management phenomenon in the maritime sector. The primary objectives further converged to the policy and management for port and international shipping (Heaver, 1995). They focused on defining what maritime economics (e.g. the arbitrary nature of port economics) is and how to develop it (e.g. the important role of institutions and individuals in the development of port economics). In this phase, the unit of analysis and research objectives was affected by the research methodologies (descriptive vs prescriptive) and the dynamics of the external environment (e.g. the maritime market worldwide) and internal environment (e.g. the reforms of organizational structures of shipping and ports). Later on, researchers' objectives were shifted to develop “new, relevant, and correct hypotheses concerning the exogenous and endogenous factors which regulate the functioning of the main maritime markets and the world shipping industry.” (Metaxas, 1983, p. 147) More studies tended to use an individual maritime organization or a specific relationship as the unit of analysis and both descriptive and prescriptive research methodologies were used in this phase. For instance, Jansson and Shneerson (1982) described the functions of seaport as the results of evolutions of a variety of port activities, and prescriptively applied production theory on port services and queuing theory on the cost of congestion.

In Phase 4 (during the 2000s and 2010s), research on maritime economics became mature. Its maturity is characterized by both the concentrations of research on a few unique sets of objectives and the research efforts in developing context-dependent theories that are originated to maritime (e.g. how PAs' multiple faces affect their roles of management). Both industry leaders and scholars realized that they need to develop new skills and knowledge with multidisciplinary perspectives to deeply appreciate societal needs, understand the true base of company productivity and collaborate across profit and non-profit boundaries (van der Lugt *et al.*, 2013). In this phase, the unit of analysis used in most of the maritime studies

has completely shifted to the level of individual organization or individual interface. Research objectives were concentrated more on efficiency and competitiveness, which are mostly influenced by the angles of theoretical paradigms that researchers take. More maritime research adopted a multidisciplinary research approach since 2000 (Woo *et al.*, 2011).

Literature shows multidisciplinary impacts on maritime studies (Midoro *et al.*, 2005; Martin and Thomas, 2001; Panayides, 2006) because maritime scholars have referred to concepts and theoretical constructs from matured management areas such as strategic management, organization studies and logistics and supply chain management (Panayides and Song, 2013). Also, researchers who follow a specific discipline channel their studies to a direction different from researchers following other disciplines. For instance, port reforms make maritime organizations more “business-like.” Consequently, maritime scholars reexamined the “governance-performance” relationship from the perspective of strategic management (Brooks and Pallis, 2008), reevaluated the networked organizational structure in line with organizational studies (Rodrigue and Notteboom, 2009) and redefined the logistical relationship roles of the port from the lens of logistics and supply chain management (Song and Panayides, 2008). While these researchers’ research objectives were all motivated by the same environmental change and their units of analysis were all focused on individual organizations or processes, they are different from each other in terms of the underlying theoretical paradigms and proposed theoretical frameworks.

As maritime economics gets mature, three research areas are emerging as discernible research streams, including maritime logistics (as proposed by Panayides and Song, 2013), strategic maritime management (as proposed by this study) and operations management in the maritime industry (a potential future research topic). The first research stream of maritime logistics has evolved faster than the other two streams, partially due to the nature of the maritime (transportation) industry. The maritime industry offers a rich research environment in which many strategic logistics issues can be better explored through the lens of strategic logistics management, a matured academic discipline. The second research stream represents studies in the recognition and exploration of the strategic issues in maritime studies (Woo *et al.*, 2011; van der Lugt *et al.*, 2013, 2017). Many issues are relevant to management, such as business models (e-market), strategic positioning, competitive advantages, co-opetition strategies, agility (flexibility), leanness, service quality and social responsibility (Woo *et al.*, 2011). The third research stream consists of the studies of strategic or tactical issues of operations management in maritime. In general, operations management concerns “decisions and plans involving the developing, positioning and aligning managerial policies and needed resources so that they are consistent with the overall business strategy” (Boyer *et al.*, 2005), and tactical planning or operational control (Anthony, 1965). Some maritime studies have their primary objectives falling within the scope of operations management we just mentioned. As the maritime studies in operations management are beyond our research scope, we leave the review and discussion of the research on maritime operations management to others.

In summary, our proposed ADMM is valid regarding its content, criterion and construct validities. The way we classify an evolution path into four evolution stages present four mutually exclusive stages. The criteria used to determine the level of maturity represent different aspects of a research stream. While both the *evolvement phase* dimension (a *construct* of the ADMM) and the *maturity criteria* dimension are arguably correlated, the combination of both provides a vivid picture of the origin of a research stream, the path it evolves and the future it will go.

4. Evaluating the maturity of strategic maritime management with ADMM

Phase 1. Phase 1 of maritime strategic management represents publications of the management of strategic issues in the maritime industry in the 1980s. In 1982, the Inter-Governmental Maritime Consultative Organization (IMCO) was renamed as the International Maritime Organization (IMO). This event was the result of the changes in the maritime environment, such as international maritime traffic, load lines and the carriage of dangerous and shifting maritime attention from governmental collaboration to IB. The post-war growth of international trade had made it clear that the port industry had become the bottleneck of international trade and the ship/port interface posted a significant challenge for the entire maritime industry.

Maritime scholars' response to the market dynamics was to study how to balance the demand with supply in the maritime industry. They chose *policy* and *strategy* as their key research objectives. Most studies used industry as the unit of analysis. For instance, some researchers applied IO economics theories such as the productivity function to analyze the structure of the port (Kim and Sachish, 1986). Kim and Sachish's objectives were to understand the impact of an individual port's pricing on both the port-choice decision by a shipping line and the investment decision by the port authority, a research topic raised by Bennathan and Walters (1979). The majority of maritime research studies in this stream chose the unit of analysis at the industrial level. Although in this period the strategic management discipline had evolved into Phase 3 as an emerging discipline, maritime scholars did not choose their research objectives as competitiveness (the research objectives of strategic management in Phases 3 and 4). As noted by Goss (1979), in the late 1970s, most principle seaports worldwide were government entities. Therefore, maritime scholars preferred to analyze most strategic and administrative issues at the macro level, through the lens of shipping or port economics. A variety of creative thoughts were delivered in this phase, such as the port structure (Goss, 1979), separation of ownership and executive team (Suykens, 1985) and efficiency and productivity (Kim and Sachish, 1986). However, in line with the shipping literature on strategy, Harvey (1987, c.f. Hawkins, 1997) found only two papers citing shipping strategies and practices. Moreover, we found only one paper that emphasized the use of firm as the unit of analysis in exploring key strategic issues in strategic planning and the planning process (Frankel 1989).

Phase 2. Publications of strategic research on maritime issues in the 1990s can better represent Phase 2 of strategic maritime management. Globalization triggered unprecedented capacity expansions by major shipping lines, resulting in a trend of mergers and acquisitions and fierce price competition on the shipping market (Brooks and Ritchie, 2006). Port reforms had changed the way port authorities used to run their port business (Goss, 1990; Baird, 1995). Topics related to competitive advantages had converged as the key research objectives in this strategic research stream (Haezendonck *et al.*, 2000; Panayides and Gray, 1999). Such convergence can be explained as the impact of the matured *strategic management* on maritime scholars' thinking (Sletmo and Holste 1993; Fleming and Baird, 1999).

In this phase, description is the primary research methodology. For instance, Goss (1990) described five frontiers of completion in the port industry worldwide and proposed a typology consisting of four maritime strategies. He suggested port authorities should make the "right choice" of strategy in response to industrial competitiveness. Brooks *et al.* applied descriptive research methodology to analyze the associations between (maritime) environment and (maritime) strategy and the association between strategy and performance (Brooks, 1998; Brooks and Button, 1996). Other maritime strategists descriptively explored the *process* of how strategy is formed and executed in the maritime setting (Coeck *et al.*, 1997). The common usage of descriptive research methodologies marked those studies as

the representatives of Phase 2. The unit of analysis started to shift from the industry level to a mix of industry and organization.

It is worth mentioning that Jeffery Edward Hawkins (1997) is one of the first maritime scholars who systematically reviewed the field of strategic management and its applications in the different industries. In his dissertation, *A Strategic Choice Model for Asia-Pacific Shipping*, he mentioned that while there were calls for more strategic research into ports and shipping (Holste, 1993), the writing on maritime strategy research had been “fragmented and dispersed, with no coherent base, which severely limits widespread use (of the approach of strategic management (Hawkins, 1997, p. 63).” Based on his holistic review of the two prevailing theoretical paradigms in strategy management in that time – content and process[3] – Hawkins recommended three directions for future research in maritime strategy research: the content of strategy, the link between content and process and a more eclectic, interdisciplinary approach for theory building and research (p. 88).

Phase 3. Phase 3 of strategic maritime management started in the 2000s. In this phase, the critical research objectives in this stream of research remained to be competitiveness, but most maritime scholars chose a strategic theoretical paradigm to buttress their arguments. Two theoretical paradigms emerged as the primary theoretical lens that most maritime strategists used, the S-C-P paradigm and the RBV paradigm. Each strategic theoretical paradigm leads to an independent research stream. The S-C-P stream viewed the maritime (sub) industry as the unit of analysis and emphasized external impacts and resources. This stream followed Goss’s (1990) reasoning on competition and introduced new frontiers of competition to maritime administration, such as the competition between shipping lines and stevedoring companies (Midoro *et al.*, 2005), competitions between port authorities and terminal operators (Song, 2003) and competition between shipping lines and ports (Heaver *et al.*, 2000).

The RBV stream of strategic maritime management, on the contrary, used an individual firm or organization as the unit of analysis, and it focused more on the perspective of *internal structure* or *resources*, which followed the “strategy-structure-performance” theoretical paradigm (Brooks and Pallis, 2008; Jenssen, 2003; Lu, 2007; Yang *et al.*, 2009a). In this phase, maritime scholars identified and acknowledged new sources of competence in maritime along key managerial functions (Lu, 2007) or organizational processes. For instance, human resource management has been recognized as a key capability for the maritime industry for success and to survive (Lu, 2007; Theotokas and Progoulaki, 2007). Innovation and knowledge management are the critical organizational routines, treated as internal resources, to develop competitive capabilities (Yang *et al.*, 2009b).

Most studies in both research streams still descriptively explained the strategic maritime management phenomenon, but some scholars started to develop predictive theories in the context of the maritime setting. For instance, Jenssen (2003) and Jenssen and Randøy (2006) tested the generic theory on the link between innovation and firm performance in the context of Norway shipping industry. They found that the core capabilities are human skill, networking and strategic assets. Human skill and networking can be viewed as a maritime organization’s internal and external capabilities, respectively. They concluded that both internal and external capabilities must be played together with strategic assets to create “a competitive profile” and an innovation-friendly culture and structure seem to be a necessity to “develop and maintain distinctive capabilities and strategic assets (p. 101)”.

Phase 4. Phase 4 represents the status of strategic maritime management in the 2010s. The research objectives remain to be competitiveness but shift to individual competitive priorities. The governance (i.e. internal structure) theoretical paradigm continues to be used as a theoretical paradigm, but some studies choose the “resource and capabilities”

theoretical paradigm to develop new theories and frameworks (Brooks and Pallis, 2012; Song and Parola, 2015). On the one hand, new theoretical constructs are introduced to classical theoretical frameworks to verify or prescribe managerial behaviors in the maritime context. For instance, Yang (2012) proposed the moderating effect of the innovation capability on the link between logistics capability and firm performance for ocean freight forwarders.

On the other hand, existing constructs are modified with the inclusion of maritime-specific contents. Axaroglou *et al.* (2013), for instance, added the time dimension to the construct of flexibility and explored the interplay between time-varying flexibility and resource allocation. Mason and Nair (2013) extended the generic flexibility construct by developing a typology specific to a carrier's internal supply-side flexibility, including speed flexibility, capacity flexibility, communication flexibility and ownership flexibility. Other competitive dimensions such as safety, reliability and security (Yang *et al.*, 2013; Talley, 2013), as well as corporate social responsibility, sustainability and resilience (Yuen *et al.*, 2017; Justice *et al.*, 2016), are evolving rapidly in Phase 4 as new research streams of maritime management capabilities.

As the outcomes of maritime strategists' scientific endeavours, a few context-specific theoretical frameworks emerge, including maritime cluster evolution theory (Zhang and Lam, 2013), hub-spike (hinterland) institutional network theory (van den Berg and De Langen, 2011; Lam, 2016), conflict theory in seaports (Parola and Maugeri, 2013) and networked stakeholder theory (Notteboom *et al.*, 2015). These new theoretical propositions are developed surrounding the intrinsic maritime market structure which is unique to the maritime context. We argue that the (mid-range) theories have the potentials to continue to evolve as the general theories to contribute to the stream of internal organizational relationship (IOR) in the field of strategic management.

It is worth noting that two emerging areas might become future research streams. One is the process-oriented strategic maritime management research (Robinson, 2015; Borch and Bataalden, 2015). A typical business process has three elements – input, process and output. The process-oriented research helps remedy the impact of complexity on a maritime service environment. For instance, Dinwoodie *et al.* (2012) recognized strategic, tactical and operational processes in their study of the sustainable development of maritime operations in ports. Notteboom *et al.* (2017) extended the “port of choice” research stream from the process perspective by exploring how changes of organizational routines (i.e. alliance formation and vertical integration) will affect the port of choice in intercontinental shipping networks.

Another area is the interface between maritime corporate (business) strategy and operations (functional) strategy (Schwarze and Voß, 2015; Wang *et al.*, 2017; Ng *et al.*, 2018). There has been a growing interest in theorizing the interface between corporate strategies and operations strategies in the 2000s and 2010s (Song and Parola, 2015). Coopetition, a new competition frontier in the port and shipping industries, represents well the simultaneous pursuit of competition at the strategic level and collaborate at the operational level (Song *et al.*, 2015). The intertwined corporate and operations strategies provide new challenges and opportunities to researchers and practitioners to redesign their organizational and operations processes to align with corporate strategies (Dinwoodie *et al.*, 2012; Wang *et al.*, 2017). Research on developing innovation and knowledge management capabilities across maritime supply chains also represents the scientific endeavor in understanding the interface between organizational routines (e.g. the strategy formation and implementation) and operations processes (e.g. the execution of operations strategy).

In summary, by the evaluation results, we conclude that strategic maritime management has evolved as an academic discipline. Literature reveals that extant research in strategic maritime management meets the criteria to be an emerging academic discipline. Maritime strategists root their research to the strategic theoretical paradigms and develop new theories and frameworks contingent on the maritime context, making strategic maritime management to be more mature.

5. Findings and discussions

Figure 2 summarizes the evolution paths for the three academic disciplines, strategic management, maritime economics and maritime strategic management. Each phase is denoted as an “S” curve, simply to reflect an accumulated learning experience of a given academic community in a phase. The S-curve is derived on the basis of the arguments on scientific revolution (Kuhn, 1962) and can be viewed as the product of the number of “primary” or “hot” research topics and the number of publications per topic in a given time. The low end of an S-curve indicates a small number of emerging hot issues with fewer publications on each issue. The middle section of an S-curve indicates that a few research topics become the main research streams and the number of publications per each stream becomes proliferated (in a given time unit). The high end of an S-curve means that researchers’ interest in a research stream is diminishing so that the productivity on the research stream is slowing down. The interaction between two adjacent curves indicates that the discipline is transitioning from a lower phase to a higher one. Phase 4 of strategic maritime management is depicted as a dotted curve, indicating that this discipline is still evolving at this stage.

There are three commonalities among their evolutionary paths. First, the (internal or external) environment dynamics drive a discipline to update phases. New business realities always challenge scholars to look at new ways to explain and predict management behaviors. Second, all three disciplines start to change their dominant theoretical paradigms during Phase 3. Literature indicates that the new paradigm adapted during Phase 3 is more effective to nurture new research directions. These new directions have high potentials to

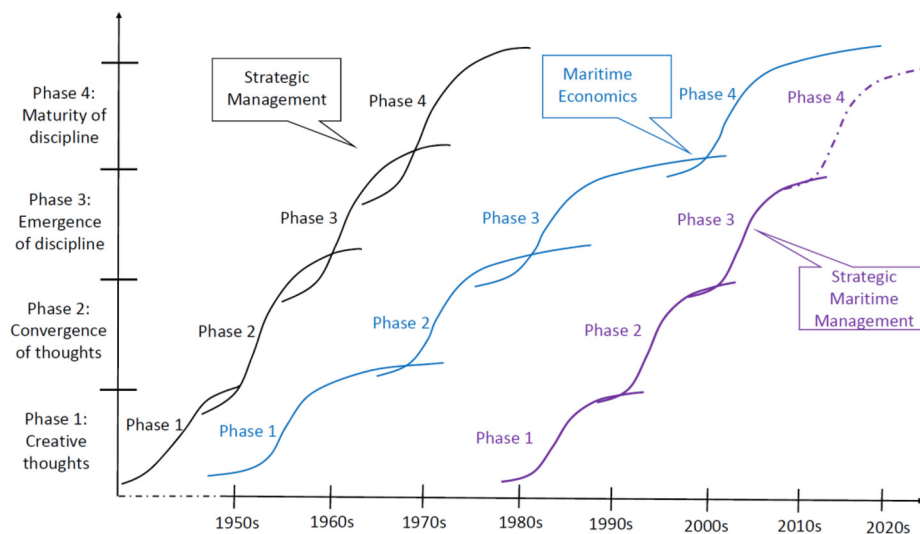


Figure 2.
Three evolution paths

become new outstanding research streams. Third, it takes about 20 years or so for a research topic to become an outstanding research stream or a prominent theoretical paradigm. For instance, it takes about 20 years for the topic of *competition* to be the competitive advantage theory (Porter, 1980), *resource* to be the resource-based theory (Barney, 1991), *capability* to be the dynamic capability theory (Teece *et al.*, 1997), *cost-benefit* (Thorburn 1960) to be the (maritime) productivity theory (Jansson and Shneerson 1987), *regional port network* (Van Klink, 1998) to be the maritime cluster evolution theory (Zhang and Lam, 2013) and *multiple stakeholders in ports* to be the networked stakeholder theory (Notteboom *et al.*, 2015). Such a long cycle reflects the notion that an active research agenda stands for time.

From Figure 2 we have three interesting observations. First, strategic maritime management resembles the evolution path of strategic management in both shape and slope but lags 30 years behind. Maritime scholars' research methodologies mirror the paradigm shift in strategic management. For instance, Brooks *et al.*'s early studies on port governance structure took the IO paradigm, but in their later publications, they switched to the internal structure paradigm (a branch of RBV). The paradigm switch indicates that the latest knowledge advancement in strategic management has a positive influence on maritime strategists.

Second, the first three phases of strategic maritime management show hyper-similarities with that of strategic management. In other words, strategic management has predominantly influenced the trajectory of the evolution of strategic maritime management. Phase 4 of strategic maritime management shows the tendency of adopting prominent theoretical paradigms or adapting the theoretical frameworks from strategic management. It is expected to see more prescriptive theoretical research to be done in Phase 4. However, we are also expecting the adaptation rate to slow down, similar to the stagnated evolution rate of maritime economics in its fourth stage.

Third, most of the high-impact publications in strategic maritime management are conducted and led by a limited number of seasoned maritime strategists. The small body of maritime strategists may hinder the adoption speed of the latest theoretical advances carried out by strategic scholars and restrict the potentials of generating new prescriptive management theories to the maritime research community and the entire strategic management community. It is the time for maritime scholars to consider how to develop the strategic maritime research community. High educational institutions should take the lead to develop doctoral programs with the concentration on strategic maritime management. A new generation of maritime strategists is crucial to the future of strategic maritime management.

There are two potential areas for future research. One is to continue the *internal (governance) structure* research stream with more emphasis on the network perspective. A few theoretical frameworks have been developed to prescribe the governance structure at different levels of maritime networks and their relationships with external stakeholders (Mclaughlin and Fearon, 2013). The network of maritime stakeholder is multi-tiered. It spans from a territorial seaport (e.g. the Port of Houston) and a regional cluster to an extended network consisting of both a focal seaport and its hinterland network (e.g. the Port of Rotterdam). The network can also be a group of extended hub-hinterland networks that run by the same port operator (e.g. DP World) and shipping line (e.g. Maersk). The tiered network structure in maritime is unique, offering abundant opportunities for maritime strategists to conduct theoretical research.

Another future research direction is how to develop strategic capabilities for (networked) maritime organizations to support long-term competitiveness (Yang, 2010; Yuen *et al.*, 2016). A few maritime scholars have made remarkable efforts to investigate a variety of strategic

capabilities. These strategic capabilities include *innovation* (Jenssen, 2003; Yang *et al.*, 2009a, 2009b; Yang, 2012), *flexibilities* (Mason and Nair, 2013; Mileski and Honeycutt, 2013), *process management* (Borch and Batalden, 2015), *quality* (Thai, 2008; Yuen and Thai, 2015; Pantouvakis and Psoimas, 2016), *knowledge management* (Lee and Song, 2010; Lambrou, 2016) and *integration* (Panayides and Song, 2009; Lam and Zhang, 2014). These studies highlight the potentials that the *capability* research stream can have to advance strategic maritime studies. It is undoubtedly that the long-term strategic competitiveness and sustainability of a maritime ecosystem depends on how well it develops and deploys its resources and how fast and appropriate it can respond to the market dynamics with insurmountable strategic capabilities.

6. Conclusion

In this study, we propose that the research stream in strategic maritime management has matured to be an emerging academic discipline. The maritime industry has become more “business-like”, and the industry is expecting maritime-specific strategic theories and frameworks. However, our academic community is not ready to provide a reality-based yet theoretically robust curriculum to meet the industry’s demand. This study aims to make the first effort to promote strategic maritime management as an emerging discipline to foster research in strategic maritime issues.

To evaluate the level of maturity of the research in strategic maritime issues, we developed an academic discipline maturity model. This model encompasses two dimensions. One is a set of maturity criteria, and the other consists of four evolution phases. Both dimensions are theoretically grounded in the literature. The four distinct phases describe the evolution path that an academic discipline will experience to become mature: creative thoughts, convergence of thoughts, emergence of discipline and maturity of discipline. The set of maturity criteria includes the (scope of) research objectives, unit of analysis, theoretical paradigms and theoretical frameworks. We first validated the model with the evolution paths of strategic management and maritime economics. Then we applied the model to evaluate the maturity level of the research in strategic maritime issues. Literature shows that strategic maritime management is qualified to be an emerging discipline, and it is still evolving in its maturity phase.

Research in strategic maritime management reflects how maritime scholars respond to the external forces of globalization and technological advancements, and internal changes of port reforms and shipping line mergers and acquisitions. We found that strategic maritime management resembles the evolution path of strategic management very well, yet with a lag of 30 years. Concerning the evolutionary trajectory of strategic maritime management, we propose two future research opportunities. Both follow the RBV theoretical paradigm, with is one following its *internal structure* stream and the other one following the stream of *strategic capabilities*. Some pioneering works have illustrated the prosperity of adapting the RBV theoretical paradigm in the maritime industry. For instance, with the recognition and justification of key resources and capabilities in the shipping (Lu, 2007) and port industries (Notteboom and Winkelmanns, 2001), researchers can either continue to introduce new dimensions to existing theoretical constructs in strategic capabilities or develop new context-specific or generalizable constructs and theoretical frameworks.

We contribute to the maritime research community in four ways. First, this paper presents an approach to evaluate the levels of maturity of other research streams in the field

of maritime studies, such as the research rooted in management science/operations management, MISs and marketing. We outline how dominant theoretical paradigms in strategic management affect the evolvement of strategic management and how the outstanding research streams and theoretical frameworks emerge. The roadmap of strategy management we outlined in the paper provides a guideline for maritime strategists to choose their research methodologies.

Second, the academic discipline maturity model we developed provides a systematic and structured approach to guide literature review and facilitate analysis. It can be applied to evaluate not only an entire academic discipline but also a research stream that has been evolving for years (say, about 20 years). It can also be used to determine if a strategic theoretical paradigm (say, *competitive advantage* paradigm and *agency theory*) is appropriate to a specific strategic maritime research project. A maritime scholar can check if the unit of analysis she uses complies with the unit of analysis required by the theoretical paradigm.

Third, this study reveals that two RBV-based research areas, internal structure and strategic capability, in the context of maritime industry, have higher potentials to spin out as independent research streams. Moreover, it is promising to see that the research on maritime networking takes the RBV perspective to investigate how a maritime cluster or network utilizes resources within a maritime network and develop strategic capabilities to compete with other maritime networks. This potential area of study may refer to the latest theories and concepts from the research stream of inter-organizational relationship in strategic management or organizational studies.

Last, but not least, we recognized two potential research streams in the field of strategic maritime management – process-oriented management and the interface between maritime (business) strategy and maritime operations management. The interface between maritime strategy and operations represents the new frontier of completion because the industry structure and primary markets for demand and supply are not differentiable in many aspects. The maritime industry is dominated by a limited number of players in each sub-industry such as shipping, port operators and technology and equipment suppliers. Critical competitive advantages may only come from the effective perspective: how a maritime organization or network can run their business at low operating cost and high service quality. Process-oriented research, in general, has been viewed as an emerging management paradigm, in contrast to the function-oriented management paradigm (as in the disciplines offered by business schools). As maritime is basically characterized as a service-process-oriented industry, we recommend developing new doctoral programs in maritime business administration to explore new research contents, constructs, theories and paradigms.

Notes

1. According to Liles *et al.* (1995), the existence of an active research agenda is revealed if there exist three main characteristics: it stands the test of time; it is complex and substantial enough to be subdivided into different research directions; and multiple fundamental questions/approaches are raised and formulated to guide research in the area.
2. Nag *et al.* (2007) identified six content areas. The sixth content area is the context of external environment, which is the maritime industry in our study.
3. Since the mid-1990s, the debate between the two strategy management research paradigms have given the way to the debate between the IO economics and RBV.

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