

A New Breed Of Port Managers: Is There A Role For IAMU Institutions?

Shashi KUMAR

Maine Maritime Academy
Loeb-Sullivan School of IBL, Castine, ME 04420, USA
skumar@mma.edu

ABSTRACT

Seaports are an unavoidable node in global supply chains. Besides their fundamental role of facilitating seaborne commerce, they have played a remarkable role in the history of humankind through such varied functions such as being centers of economic activity to being gateways for new opportunities. The port sector has received considerable attention in recent years for a number of reasons. New research raises several questions related to ports and their operations, organization, and management. Many ports are privatizing some or all of their traditional functions, and private terminal operators are becoming huge multinational entities. Ports are re-thinking their own operations and future planning, primarily driven by the carriers' operational strategies that are also in a constant state of flux. These are further complicated by the introduction of new mandates such as the recently adopted Maritime Transportation Security Act (in the U.S.) and the International Ship and Port Security (ISPS) Code amendment to the SOLAS Convention.

The changing dynamics in port operations and management mandates a new breed of port managers as well. Accordingly, contemporary port managers should build a skill set far superior to that of traditional port managers, and it should encompass non-traditional areas such as information technology, port security, and real estate and coastal zone management. The old approach based on learning fundamental business functions supplemented by maritime operations knowledge is no longer sufficient to meet these added functions and responsibilities. Furthermore, there is significant turnover in the port sector especially among top executives. There is an urgent need for restructuring the education of future port managers and for radical reengineering of existing curricula. A case can be made that high caliber maritime universities such as IAMU member institutions are ideally suited to provide leadership for educating better prepared port managers. Accordingly, the paper will highlight new research in port operations and management. It will also advocate IAMU institutions broadening their mission and embarking on a reengineered curriculum for preparing contemporary port managers. Indeed this might be a growth opportunity for maritime universities because of seafarers' increasing proclivity toward life-long learning and pursuing alternative career options.

1. Introduction

The management of ports has received considerable attention in recent years. In many parts of the world, ports are dealing with a plethora of issues, including operational, organizational, environmental, political, and of late, security-related aspects. The role of port managers today is highly complex in light of the multitude of challenges posed to them. Management of purely maritime activities is a relatively minor part of their function today whether in

developed nations, or in underdeveloped nations. The very scope of seaports and the activities they undertake have undergone a radical change in the last few decades. The current rapid turnover among high level port executives in countries such as the U.S. is indicative of the very demanding environment in which they operate.

Another good indication of the increasing complexity in port operations and management is the increasing number of industry/trade journals that report these developments from various parts of the world and also the availability of dedicated scholarly journals such as the Journal of Maritime Economics and Logistics (formerly, the International Journal of Maritime Economics) and the Maritime Policy and Management journal. Approximately one-half of all articles published in these two scholarly journals are related to port operations and management.

There are many educational institutions that offer specialized port management programs at the baccalaureate, post-graduate and doctoral levels today. This includes top tier research universities in addition to traditional maritime colleges and institutions. The Association of American Port Authorities (AAPA), a trade association of port authorities in North and South America, offers its own post-graduate program culminating in professional port manager (PPM) certification. However, there has been very little published research that deals with the educational preparation of contemporary port managers, or an identified common core of knowledge deemed essential in contemporary port management education. It is the objective of this paper to make a contribution in this regard, and begin a dialog among interested stakeholders, in particular the IAMU institutions, about educating future port managers.

The paper begins with a literature survey and analysis of port operating environment in general. This is followed by a discussion of traditional educational preparation of port managers and is contrasted by what they ought to learn to function effectively in contemporary port operating environment. The author's primary survey of IAMU institutions in regard to port management education at their respective campuses is discussed next followed by structural and curricular recommendations for preparing a new breed of port managers.

2. Background and literature survey

The emergence of a global economy has had immense impact on the shipping industry, and simultaneously by its very nature, the shipping industry has played a valiant role in facilitating globalization (Kumar and Hoffman 2002). Their work provides useful extension to the contributions of other economists such as Thompson (2000) and Pedersen (2001) that give a heightened level of respect for transportation cost in economic analysis. Recent empirical analysis by Limao and Venables (1999) concludes that halving transportation cost increases the volume of trade by a factor of five. Micco and Perez (2001) and Sanchez et al (2002) analyze the impact of port reform on transport costs. One of the conclusions of Hummels (2000) is that "each day saved in shipping time is worth 0.5% ad-valorem, approximately 30 times greater than costs associated with pure inventory holding." This would only be possible if the port operations are smooth, and facilitate seamlessly the expeditious movement of cargoes to or from the interior points.

Kumar and Hoffman (2002) document the diffusion of the contemporary value chain across the oceans resulting in the evolution of global supply chains. According to them, the stimulants for this include decreasing barriers to trade as well as the apparent diminution of

ideological conflicts between leading nations of the world (46). Thus, although shipping has been a global business ever since time immemorial, it has rarely had it so good until the last year. This is despite momentous exogenous shocks such as the September 11, 2001 tragedy in New York that temporarily halted the commercial activities of the world's largest trading nation. Yet, three years thereafter, shipping markets have reached new levels of euphoric growth and optimism, rivaling the golden 1970s albeit driven by the unprecedented growth of one single economic powerhouse, viz., the Chinese economy (Kumar 2004). Analogous to the dependence of the shipping industry on global economic conditions in general, changes affecting the global shipping industry have a direct impact on the port sector. The dynamics of the port industry today is such that in most cases, it is at the receiving end, constantly adapting to changes in the far wider exogenous environment that constitutes not only the ship operators and their agents, stevedores, and other port workers, but also an expanding subset of other stakeholders that now includes local, state, and national governments, a multitude of governmental agencies that include off-shore and on-shore law enforcement agencies as well as dedicated anti-terrorism agencies, local residents, public policy makers, and a long list of accessorial service providers. It is these developments that make the role of a contemporary port manager rather thorny and complex.

A paradigm shift in the role of ports given the supply chain orientation of today's leading businesses was dealt in greater detail by Robinson (2002). His discussion (2002, 242-245) of the historical paradigm of ports is paraphrased below:

- ✚ Ports are places that handle ships and cargo
- ✚ Ports are operating systems that handle ships and cargo with operational efficiency
- ✚ Ports are economic units that handle ships and cargo within an economic efficiency framework
- ✚ Ports are administrative units that handle ships and cargo within efficient administrative and policy frameworks

The gradual transformation of ports from their historical paradigm to one of being an efficient channel member was recognized by many others (see Kumar 1993). This line of thought evolved from Christopher (1992) who forecasted the evolution of competing supply chains in future years rather than competing independent business entities. The role played by the port sector in such a dynamic environment is anything but stable and is discussed briefly.

2.1 Changing dynamics of the port environment

There are numerous changes affecting the port industry today which have a direct bearing on those who are responsible for managing those entities. The most radical of these changes evolve from the increasing specialization in international shipping operations. The traditional definition of a port as a place where cargo of various types is exchanged between the ship and the shore is of limited relevance today. Whereas a typical port in previous years handled all types of cargoes, liner as well as dry and liquid bulk, it is very common to find modern ports building a niche in a particular market segment, and in many cases, extending that specialization to sub-markets specializing in roll-on roll-off traffic or liquefied natural gas operations etc. Apart from this, all ports face the dilemma of increasing ship sizes which leaves the ports constantly on the defensive. If they do not upgrade their facilities and infrastructure, or do not have the draft to accommodate the bigger ships, this would mean a loss in market-share, benefiting its competitors. This leaves all ports in a perpetual race with the others as seen in North America or in Western Europe. Indeed a similar outcome may happen among ports in the same country as documented in the U.S. case (Kumar 1999).

The stakes are even higher among the ports that specialize in liner cargo operations. This is primarily because of the regulatory liberalization of the liner industry in major trading nations and the relative diminution of power of the traditional conference system. New statistics indicate that close to 90 percent of the U.S. foreign commerce now move on contract basis (Kumar 2002). Thus, with contractual agreements between shippers and carriers driving the trade, the choice of port-of-call for the liner operator is often driven by the need to establish the most efficient channel rather than maintaining the historic geography-driven symbiotic relationship between a port and the trading community located in its immediate hinterland. The evolution of containerized shipping initially and its gradual progression toward inter-modal bridge movements have been a continuing challenge for the ports and their managers. Competition exists today among ports in the same region as well as between port-regions located as far away as on the opposite coast (Kumar and Rajan 2000). From a managerial perspective, this has left the ports in a perpetual struggle to retain their status as an efficient channel member, failure of which could result not only in the loss of high profile shipper clientele but also direct port calls by major liner operators.

Given the various pressures on ports today, and the increasing propensity on the part of governmental agencies to seek private capital as well as operational efficiency, many ports have privatized one or more of their basic functions, adding another dimension to the role of port managers. Baird (2000) uses three key port elements for classifying various port privatization options, these being port regulation, port ownership, and port operation. There are published studies that critique the privatization process (see Kumar 1997) as well as extensive surveys of privatization trends in ports world-wide (see Baird 2002, IAPH 2000). These studies show that although private operators may provide many port services including various value added options, the traditional functions still remain with the public body. So, port managers, whether working in the public sector or the private sector, have to be equally conversant in all aspects of port management today including the need to liaise with each other.

There is a plethora of other equally demanding issues that face a port manager today. These include maintaining technological sophistication in cargo handling and information system management, complying with various regulatory requirements related to the environment and pollution prevention, liaising with policy makers and elected officials to lobby for their port, negotiating contracts with their employees, and more recently, complying with the increasing number of regulations related to port and terminal security that went into effect world-wide from July 1, 2004 (Kumar and Vellenga 2004). Over and above all these is the perpetual problem of port finances, a highly sensitive issue (Luberoff and Walder 2000). Whereas most ports are typically struggling to keep their finances in the black, it is not unusual to find the city or state tapping into the port resources to fund their non-port activities. In summary, a port manager today needs to be proficient in far too many tactical and strategic aspects of management that would not be ordinarily considered in a management education curriculum.

3. Skill sets for contemporary port managers

The workplace in general has undergone significant changes in organizational structure and management during the last two decades in particular (Kumar 2003). Similar to other businesses, ports find themselves in a highly competitive world as discussed earlier. The availability of competent entry-level management employees with the right skills is essential for their sustainable competitive advantage in today's global economy. Maritime universities

in particular are ideal campuses for imparting such skills to future port managers. Unlike the earlier years, these employees must be multi-skilled and able to contribute effectively as team players besides being current in their own field. Simultaneously, as in other businesses, they should be able to accomplish their tasks based on broad organizational guidelines and under very little supervision. They should be proficient in managing people and resources efficiently and have the big picture of port operations and management at all times while performing any task. Accordingly, adapting a US government report (1992) to the port environment, the new breed of port managers must build a portfolio of basic, technical, organizational, and port-specific skills to be successful.

Evers, Rush, and Berdrow (1998) argue that to be successful in the workplace, college graduates today must possess not only specific skills and knowledge in their areas of expertise but also certain core foundational skills and proficiency in general knowledge and cultural diversity. Thus, the learning outcomes of today's college curricula must facilitate the creation of generalists with specialized knowledge and skills who are also blessed concurrently with a repertoire of foundational skills that serve as the basis for lifelong learning and employability. The foundational competencies they identify and their descriptions are shown in Table 1.

Table 1: The Four Bases of Competence

Category	Description	Skill Sets
Managing self	Maximizing ones' ability to deal with uncertainties	Learning Personal organization and time management Personal strengths Problem-solving and analytic
Communicating	Facilitating the gathering, integrating, and conveying of information in many forms	Interpersonal Listening Oral communication Written communication
Managing people and tasks	Accomplishing tasks by planning, organizing, coordinating, and controlling resources and people	Coordinating Decision making Leadership and influence Managing conflict Planning and organizing
Mobilizing innovation and change	Conceptualizing, initiating, and managing change	Ability to conceptualize Creativity, innovation, change Risk taking Visioning

Source: Evers, Rush and Berdrow (1998)

The authors argue that the bases of competence they identified would create a model of general skills essential to “thrive in the workplace and serve as the foundation for lifelong learning”. Port managers are ideal candidates for life-long learning as their operating realm is in a constant state of flux, and the model has exceptional validity in their education. Primary research (through surveys) by Evers, Rush and Berdrow revealed that the first two competencies are usually well developed in the case of college graduates but not the latter two. There is usually no provision within a traditional university environment for graduates to build their abstract skills related to managing people and tasks, or mobilizing innovation and change. However, Kumar (2003) argues that maritime universities are strategically better

placed in imparting these upper level competencies than their traditional counterpart universities. The following sub-section discusses IAMU institutions' involvement in port management education, and how it ought to be structured in a university environment.

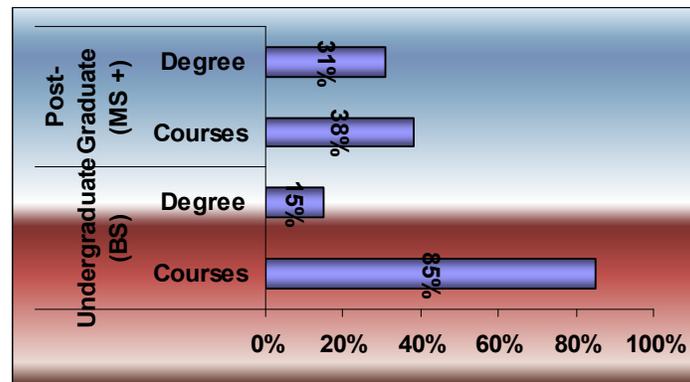
4. IAMU Institutions and Port Management Education

Although port management education can be imparted in any academic environment, maritime institutions are best suited for such programs. The reasons for this include not only the natural "fit" with the mission of a typical maritime college or university but also its proclivity toward experiential learning at a far superior level than that at traditional universities.

4.1 Port management education at IAMU institutions

The author conducted primary research to explore the current level of port management education at baccalaureate and post-graduate levels in IAMU institutions, and ascertain future plans of those institutions in this regard. A simplified one-page questionnaire (see Appendix A) was e-mailed to the contact person at each IAMU institution (36 member universities and 15 candidate universities) with a cover letter requesting feedback by e-mail or fax in two weeks. 14 universities responded to the request for participation (see Appendix B), giving a response rate of 27%. One of the responses was discarded as it did not answer the questions asked. Survey responses are presented in Figures 1 and 2.

Figure 1. Port management education currently available at responding IAMU institutions



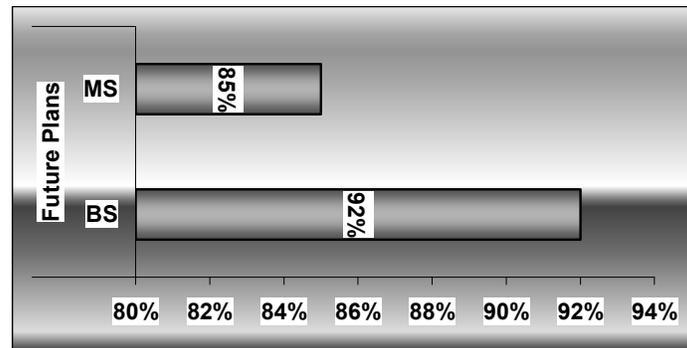
Source: Author's survey, 2004

As shown in Figure 1, 15 percent of the responding institutions currently offer baccalaureate degree in port management, and 31 percent offer post-graduate degree at the MS/MSc level. A significantly higher number of the respondents offer academic courses related to port management as shown in the figure, viz., 85 percent offer undergraduate-level courses and 38 percent, post-graduate level courses.

Figure 2 presents the future plans of respondents with regard to port management education. As shown, there may be a six-fold increase in the number of maritime universities planning to offer undergraduate degree, and 124 percent increase in the number planning to offer post-graduate degree in one or more aspects of port management education. This confirms the author's position that most maritime institutions presently teach port management and operations in some fashion, or will do so even more in future years. The following sub-

section discusses the author's philosophy of curricular structuring for a new breed of port managers.

Figure 2. Future port management education plans at responding IAMU institutions



Source: Author's survey, 2004

4.2 Restructuring port management education

As discussed earlier, a contemporary port manager must be multi-skilled and proficient in many areas to rise up to the challenges of modern port management. Proficiency in general management along with good technical knowledge of maritime operations is no longer sufficient to meet the demands of contemporary port management. Yet, the fundamental reading, writing, and mathematical skills contributing toward critical thinking capability are essential for port managers today as in the past (Sherman pers. comm., 2004). Such skills would come through a strong liberal arts educational background. It is argued that such courses must constitute at least 50 percent of the undergraduate curriculum of a future port manager. These should be supplemented by courses in economics “the mother science of business”, and the functional areas of business such as accounting and finance, marketing, organizational behavior, human resource management, operations management, and information systems, constituting approximately 25 percent of the curriculum. The remaining 25% should be structured to deal with port specific issues such as coastal zone and real estate management, pollution prevention and mitigation issues, legal environment of port operations, contract negotiations, lobbying and public speaking, maritime business, and port security management.

Experiential learning must be a significant component of the curriculum and would be one way to impart the upper level competencies identified by the Evers, Rush, and Berdrow (1998) model to be lacking in traditional university graduates. This could come through mandatory internships during the holidays each year. Ideally, they should spend each summer in a different port, and hold increasingly more responsible positions. It is the author's position that such a candidate will possess the knowledge as well as the experience base to contribute effectively as an entry level port manager. Selection of candidates for such a program must be rigorous. While the demand for port managers is expected to increase in future years especially from the fast growing private port and terminal operators, supply of future port managers should be monitored so as not to flood the market.

Although the above model is primarily for the baccalaureate level of education, it can be easily altered to meet the rigors of post-graduate level of education and prepare middle-managers for the port sector. Ideal recruits for such a program could be seafarers, especially

given the high level of wastage that exists among seafarers (Kumar 2003). In this regard, maritime universities are once again at an advantageous position as the departing seafarers might have the natural inclination to return to a maritime college for post-graduate education. The post-graduate curriculum must include the critical thinking and communication components as well as core and elective courses related to port management discussed for the undergraduate education. The experiential learning component in this case could be a four month-long capstone project with a port, dealing with a specialized project pertinent to the student's choice of specialization. The entire experience can be packaged in a one-year (12 months) time-frame.

An essential ingredient for the success of this curricular restructuring is the ports themselves. Unless the port industry and their trade associations are willing to collaborate with maritime universities such as the IAMU members heading in this direction, all these efforts would be fruitless. Ports, regardless of where they are located, should be willing to co-operate with the interested universities in shaping their curriculum, providing advice and services of field experts, and also in providing internship and capstone opportunities for students.

5. Conclusion

The paper examined the changing dynamics in port operations and management as a result of ongoing structural and strategic changes in the industry. A case is made that a new breed of port managers, capable of doing more with less while also concurrently satisfying multiple stakeholders with competing interests is required to manage modern ports and their operations. Essential competencies for functioning effectively in the 21st century based on published research were identified.

Author's primary research shows that a good number of maritime universities are either presently offering port management related courses and degrees, or are planning to do so in future years. Maritime universities are ideally suited for such education given their fundamental ethos of experiential learning, very essential for successful seafarer education. A curriculum that stresses basic critical thinking skills supplemented by functional and integrative knowledge in port business is also proposed at the undergraduate and post-graduate levels. However, the need to establish links with the port industry is paramount as stressed by the author. Maritime universities must build a partnership with their neighboring ports and collaborate with them in this venture through seeking expert advice, and internship and capstone opportunities for their students. In the absence of such industry support, even the most relevant curriculum offered at the most capable maritime university may be fruitless.

REFERENCES

- Baird, A.J. (2002): Privatization trends at the world's top-100 container ports. *Maritime Policy and Management* 29.3: 267-280.
- Baird, A. J. (2000): Port privatization: objectives, extent, process and the U.K. experience. *International Journal of Maritime Economics* 2.3 (2000): 177-94.
- Christopher, M. L. (1992): Logistics and supply chain management. NY: Pitman Publishing.
- Evers, F. T, Rush, J. C., and Berdrow, I. (1998): The bases of competence. San Francisco: Jossey-Bass.
- Hummels, D. (2000): Time as a trade barrier. Working Paper, Purdue University.

IAPH (2000), Institutional Reform Working Reform Group, Final Report. *Proceedings of the the IAPH World Ports Conference*. Kuala Lumpur, Malaysia.

Ircha, M.C. "North American Port Reform: The Canadian and American Experience." *International Journal of Maritime Economics*. 3.2 (2001): 198-220.

Kumar, S. (2004): U.S. merchant marine and maritime industry in review. *Naval Institute Annual Review Proceedings* May.

Kumar, S. (2003): Enriching seafarers in the 3rd millennium and IAMU options. *Proceedings of the 4th IAMU General Assembly*. Alexandria, Egypt.

Kumar, S. (1999): Container port dilemma on the US east coast: an analysis of causes and consequences" in Meersman, H., Van de Voorde, E., and Winkelmans, W. *World Transport Research Proceedings 8WCTR*. Vol. 1, pp. 87-100.

Kumar, S. (1998): The Indian port privatization model: a critique. *Transportation Journal* 37.3: 35-48.

Kumar, S. (1993): Intermodal Transportation: Need, Strategies and Competitive Ramifications. Working Paper, Maine Maritime Academy.

Kumar, S. and Hoffman, J. (2002): Globalization and the maritime Nexus in the Handbook of Maritime Economics and Business. Grammenos, C. ed. London: Lloyd's of London.

Kumar, S. and Rajan, V. (2002): An analysis of intermodal choices for Pacific-Rim imports to the U.S. Northeast. *Journal of Transportation Management* 13.1 (2002): 19-27.

Kumar, S. and Vellenga, D. (2004): Port Security Costs in the U.S.: A Public Policy Dilemma. *Proceedings of the IAME Annual Conference*. Izmir, Turkey.

Limao, N. and Venables, A. J. (2000): Infrastructure, Geographical Disadvantage, and Transport Costs. Washington, DC: World Bank Working Paper 2257.

Luberoff, D. and Waller, J. (2000): U.S. Ports and the Funding of Intermodal Facilities: An Overview of Key Issues. *Transportation Quarterly* 54.4 (2000): 23-45.

Micco, A. and Pérez N. (2001): Maritime Transport Costs and Port Efficiency. Washington, DC: Inter American Development Bank.

Pedersen, P. O. (2001): Freight Transport under Globalization and Its Impact on Africa. *Journal of Transport Geography* 9.2: 85.

Robinson, R. (2002): Ports as Elements in value-driven chain systems: the new paradigm. *Maritime Policy and Management* 29.3: 241-252.

Sánchez, R. J., Hoffmann, J., Micco, A., Pizzolitto, G., and Sgut, M. (2002): Port Efficiency And International Trade. Conference Proceedings, IAME Annual Conference, Panama City, Panama.

Sherman, R. (2004): Telephone interview. Washington, DC: AAPA.

Thompson, R. (2000): "The Role of Transportation in the Global Food System" in: Technological Changes in the Transportation Sector – Effects on U.S. Food and Agricultural

Trade. William Coyle and Nicole Ballenger (eds.). United States Department of Agriculture, Miscellaneous Publication Number 1566.

United States (1999): 21st Century Skills for 21st Century Jobs. Washington, DC: GPO.

APPENDIX A

Port Management Education at IAMU Institutions

The purpose of this survey is to identify IAMU institutions that offer port management education at the undergraduate and/or graduate levels, and gather relevant information that will be presented at the next Annual General Assembly in Tasmania. Survey recipients are requested to kindly answer the questions and e-mail or fax their responses by June 21, 2004.

1. Institution:
2. Do you offer Port Management education at your institution/university: YES/NO
 - If "NO", please proceed to question #5
3. Please provide following details regarding undergraduate (BS/BSc degree) level port management education offered at your campus:

Criterion	Yes	No
Offer degree in Port Management?		
Offer courses in Port Management?		
How many courses are offered in Port Management?		
Please list the names of courses offered and hours of instruction		
Do you periodically evaluate your port management curriculum? If so, when was its last evaluation?		
If you have a web page with relevant information on your port management program, please provide the web address: http://		

4. Please provide following details regarding post-graduate (MS/MSc/Doctoral degree) level port management education offered at your campus:

Criterion	Yes	No
Offer degree in Port Management?		
Offer courses in Port Management?		
How many courses are offered in Port Management?		
Please list the names of courses offered and hours of instruction		
Do you periodically evaluate your port management curriculum? If so, when was its last evaluation?		
If you have a web page with relevant information on your port management program, please provide the web address: http://		

5. Do you plan to offer (or continue) port management education in future?
 - i. Undergraduate level YES/NO
 - ii. Post-graduate level YES/NO

Please attach additional pages for your comments if necessary; kindly send your responses by e-mail (skumar@mma.edu) or fax ([011 1 207 326 2411](tel:01112073262411)) by June 21, 2004. Thank you for your kind participation.

APPENDIX B

Responding Institutions

1. Arab Academy of Science and Technology
2. Baltic Fishing Fleet State Academy
3. Canadian Coast Guard College
4. Constantza Maritime Academy
5. Estonian Maritime Academy
6. Fachhochschule Oldenburg/Ostfriesland/Wilhelmshaven—University of Applied Sciences, Department of Marine Studies at Elsfleth
7. Hochschule Wismar—University of Technology, Business and Design—Maritime Studies
8. Istanbul Technical University
9. Kobe University
10. Maine Maritime Academy
11. Texas A&M Maritime Academy
12. Tianjin University of Technology
13. University of Plymouth