

Innovations in Shipping

Innovations are dramatically changing the traditionally conservative global ocean shipping industry as it works to become more efficient and more sustainable. Academic and former shipping company owner Peter Lorange is best placed to make sense of how to approach and keep ahead of these changes. This book explains what the key innovations are, how to ensure a return on investment, the barriers to innovation, and how to overcome them. Drawing on a number of specialist case studies, Lorange outlines the specific analytical and decision-making steps to consider, and actions to take to arrive at a new strategic blueprint for modern shipping companies. This book is invaluable for practicing shipping company executives, advanced students of shipping, logistics, port management, and maritime economics, and investors deciding whether to invest in a particular shipping firm.

Peter Lorange is Chairman of the Lorange Network, Zurich, and was the Nestlé Professor of Strategy and Kristian Gerhard Jebsen Professor of International Shipping at IMD in Lausanne, Switzerland, as well as former President of both IMD and the Norwegian School of Management. A former owner of and investor in several shipping companies, his industry and academic credentials make him a widely respected expert on the global shipping industry.





Innovations in Shipping

Peter Lorange

President Emeritus, IMD





CAMBRIDGEUNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi $-\,110025,$ India

79 Anson Road, #06-04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781108424875 DOI: 10.1017/9781108347945

© Cambridge University Press 2020

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2020

Printed in the United Kingdom by TJ International Ltd, Padstow Cornwall

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Names: Lorange, Peter, author.

Title: Innovations in shipping / Peter Lorange, Zurich Institute of Business Edication.

Description: New York : Cambridge University Press, 2020. | Includes bibliographical references and index.

Identifiers: LCCN 2019042279 (print) | LCCN 2019042280 (ebook) |

ISBN 9781108424875 (hardback) | ISBN 9781108347945 (epub)

Subjects: LCSH: Shipping – Technological innovations | Shipping – Management.

Classification: LCC HE571 .L667 2020 (print) | LCC HE571 (ebook) |

DDC 387.5-dc23

LC record available at https://lccn.loc.gov/2019042279

LC ebook record available at https://lccn.loc.gov/2019042280

ISBN 978-1-108-42487-5 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.



Content

	List of Figures Preface	page vi ix
l	Introduction	1
2	The Shipping Industry: A Status Report	9
3	Commodity and Specialized Shipping	33
1	The Role of Innovations in Shipping	61
5	Important Shipowners	105
Ó	Case Studies - Western Bulk (A) - Western Bulk (B) - DHT Holding - TORM - BBC Chartering and Briese Shipping - Costamare Inc. - Danaos Corporation - Seaspan (A) - Seaspan (B) - Seaspan (C)	117 119 122 125 131 135 141 144 150 156
	 TOTE Jotun – Hull Performance Solutions (HPS) A.P. Moller-Maersk Marsoft and Asset Play 	162 166 171 177
7	The Shipping Industry in the Future	181
	Appendix: Glossary of Ship and Charter Types References Index	199 201 205

v



Figures

1.1	China's slowdown in context	2
1.2	Growth in GNP per capita (China, Germany, India, Japan,	
	Korea)	2
2.1	Cycle intensity in shipping – huge swings in returns	10
2.2	Freight rate fluctuations	11
2.3	Largest ship classes in service (in meters), 2015	12
2.4	Chinese iron ore imports	12
2.5	World economic outlook	13
2.6	Panamax (74,000 t.d.w.), one-year tc rates	13
2.7	VLCC spot market earnings	14
2.8	Product tanker one-year tc rates	14
2.9	Floating storage	15
2.10	Cyclical vs. industrial strategies	19
2.11	Four strategic shipping archetypes	21
3.1	Conceptual model for shipping strategies	36
3.2	The world's largest container lines	37
3.3	Container lines' service frequency – weekly Asia-Europe	
	service	38
3.4	Four archetypes of specialist firms	42
3.5	Specialist movements within the shipping industry	44
3.6	Owning, using, and operating steel	45
4.1	Several smaller innovations become one, large, disruptive	
	(enabling) innovation	62
4.2	Train links between Germany and China	69
4.3	Timing of investments in innovation, at various stages of the	
	freight rate curve	79
4.4	Net profits of A.P. Möller-Maersk (in Danish Kroner) –	
	(1 Danish Krone = 6.84 US\$)	85
4.5	Volatility of freight rates	89
4.6	Prediction of conversion to gas propulsion	98
4.7	Geographic areas with strict emission control – current and	
	planned (as of 1 January 2016)	99

vi



	List of figures	vii
5.1	Gearbulk revenues and income (US\$ million) 1992–2010	112
6.1	Supramax and small Hardymax one-year T/C rates	122
6.2	Baltic Supramax Index	123
6.3	DHT's fleet (October 2015)	127
6.4	DHT – financials	128
6.5	DHT – stock price	129
6.6	TORM – product tanker freight rates 2015	131
6.7	Main risks associated with TORM's activities	134
6.8	TORM top risk map	134
6.9	TORM's key financial figures	135
6.10	Costamare financial highlights, 2011–14	142
6.11	Development in Costamare's EBITDA	143
6.12	The largest independent container shipping firms (lines	
	A and owners B)	145
6.13	Danaos' board members	146
6.14	Danaos' operating revenues, 2006–15	146
6.15	Danaos' EBITDA, 2006–15	146
6.16	Danaos' stock price	147
6.17	Freight rates, large container ships	150
6.18	Seaspan's stakeholder-based portfolio strategy	152
	Seaspan's customer mix, 2012	153
6.20	Seaspan's strategy – a summary	153
6.21	Seaspan's SAVER fleet, August 2015	157
6.22	An overview of Jotun's organization	167
6.23	Development of sales and EBITDA, Jotun	168
6.24	Sales, Jotun's marine coatings	168
6.25	Maersk Line's newbuildings order book (July 2015)	172
6.26	Expected risk-adjusted returns for various ship classes	177





Preface

There is a lot of discussion these days about traditional industries becoming less prominent, or even disappearing. The advent of new technology, particularly the Internet, seems to be the key driver behind this.

Traditional shipping companies are an example of this trend. In their place, we are seeing the emergence of logistics companies, of which sea transportation is only one part. Land transportation, warehousing, even packaging and the distribution of goods to the end consumer, are key features of these new-style companies. This has been made feasible through the development of closer and faster links between the players in a value chain. The traditional roles in such value chains are also changing. For example, many European manufacturers have now outsourced these to low-cost countries in Asia.

Another factor that has fundamentally changed the shipping industry is access to capital. Capital has always been a scarce resource in shipping. Banks specializing in providing capital to traditional shipping companies in this generally capital-intensive industry have been integral factors in the shipping industry. Now, all of this has changed. Capital is now more freely available through new sources such as venture funds, various governmental funding institutions, private investors new to the shipping industry, and better-developed capital markets (for raising share capital, bond financing, etc.). As a result, we see the emergence of large groups that can consist of several publicly incorporated entities, where the key entrepreneur behind such agglomerations might not have absolute control over all firms in the network, despite holding a major stockholding position. The best example of this is John Fredriksen, a citizen of Cyprus of Norwegian descent who operates out of London. Fredriksen controls the world's largest VLCC tanker group (Frontline/Ship Finance) as well as one of the world's largest large bulk carrier firms (Golden Ocean), and has many other controlling interests, such as offshore drilling (Seadrill), salmon farming (Marine Harvest), etc. A key feature of Fredriksen's approach is the emphasis on dividend payments to the large number of independent shareholders and strict adherence to servicing debits.

ix



x Preface

Financial stakeholders are key to what might be called the Fredriksen Group.

Shipping has been a central focus for me for more than four decades, both as a field of research as well as managerially – I was on several shipping company boards (Seaspan, Royal Caribbean Cruise Lines, Knud I. Larsen), and was a shipowner as well (S. Ugelstad), and an independent investor in shipowning projects (primarily through Sole Shipping). I have also been involved in teaching shipping for several decades, both to executives (at IMD, the Lorange Institute, The Norwegian School of Management, Copenhagen Business School, Frankfurt School of Finance and Management, Nanyang University Singapore), and I was a cofounder and am a minority shareholder of Marsoft, Boston, with which I still cooperate. Finally, and perhaps most significantly, I have been active in research on shipping-related issues for more than 45 years, having published or edited three books and around a dozen articles on the topic.

Several people have offered inputs and insights to this book, some of them significant. While I cannot mention them all here, I must highlight a few: Dr Arlie Sterling, President of Marsoft, has been a central inspirational force. Others include Nils Smedegaard Andersen, Svend Andersen, Costas Badjis, Rolf Briese, Robert Brinberg, Evangelos Chatzis, Sai Chu, Peter Curtis, Jan Willian Denstad, Paul Eckbo, Raymond Fisch, Morten Fon, John Hatley, Jens Ismar, Kristian Jebsen, Chris Jephson, Jacob Meldegaard, Henning Morgen, Trygve Munthe, Victor Norman, Graham Porter, Ian Robinson, Didier Salomon, Marcel Saucy, Sören Skou, Peter Sulzer, Stig Tenold, Eirik Uboe, Gerry Wang, and Gregory Zikos.

I must also thank the many executives who contributed their time through interviews, especially in connection with the case studies included here. Finally, I have benefited a great deal from discussions with my son-in-law, Frode Lervik, and my son, Per F. Lorange. The preparation of this manuscript, including typing – at times tedious – was very ably done by Patricia Bähr and Leda Nishino. Sally Simmons provided invaluable editorial support, as did Valerie Appleby at Cambridge University Press.

It goes without saying, however, that I alone take full responsibility for the content of this book.