

Literature Review—Ports, logistics and canals

This literature review examines Lloyd's Register (LR) Publication Articles, digitised resources and technical papers from the Heritage & Education Centre (HEC) collection, and other online materials and documents considered to be relevant. The risk analysis of ports, logistic systems, and shipping lanes was the focus of the review. Incidents and potential solutions regarding the Suez Canal were chosen as a case study to help the analysis. What can we learn from past experiences? Why has the backlog at sea become a pressing issue in recent years? How can we amend past solutions to improve our own approach and prevent failures from happening in the future? These were the questions I kept in mind when applying the "hindsight perspectives."

The solutions to supply chain disruptions can be expanded by not only tracing back to the possible approaches employed in the past, but by looking at alternative routes in the future. The following sources might be useful in investigating along these lines. Like [my article](#), this review was divided into several parts, helping clarify the approaches mentioned in the article and throwing light on directions for further exploration. Some parts of the abstracts from LR's archives were taken down to explain the documents, while some titles were self-explanatory. Key terms were added to clarify the significance of the sources further.

General history and technical aspects

- Link: marinetraffic.com, a live map of world shipping.
- Watson, Nigel. *Maritime Science and Technology: Changing Our World*. Lloyd's Register Foundation, Heritage & Education Centre, 2017. Barbara Jones. Available from: <https://hec.lrfoundation.org.uk/archive-library/maritime-science-and-technology-changing-our-world>
- Lloyd's Register Foundation HEC online library catalogue. Available from: <https://hec.lrfoundation.org.uk/archive-library/combined-collections-catalogue-online-for-the-first-time>

Possible solutions in the past

Expanding the Suez Canal and adding new channels

Literature from the HEC collections:

Note: The abstracts were from the LR online library, and the relevant parts were noted down for readers' convenience.

- "Around the World - Arab Republic of Egypt." *Annual Report*, 1980.
 - Abstract: The Ismailia exclusive office will deal with the expected increase in survey requests because of the widening and deepening of the Suez Canal.
- "Suez Resurgent." *100A1 October 1984*.
 - Abstract: As the meeting place of two continents, the Suez Canal's strategic importance in war and peace has long been recognised. Ambitious reconstruction plans emphasise its vital role in world trade.

Find out more: [Learning from the past - Hindsight perspectives \(lrfoundation.org.uk\)](https://hec.lrfoundation.org.uk/archive-library/combined-collections-catalogue-online-for-the-first-time)

Online Sources:

- *Suez Canal... A Historical Evolution*. 7-Expanding and deepening the waterway. Available from: <https://www.suezcanal.gov.eg/English/About/SuezCanal/Pages/CanalHistory.aspx>.
 - Key words: two-way traffic system; deepening; bypass; data
- Mohit. *The Suez Canal: A Man-Made Marvel Connecting the Mediterranean and Red Sea*. 2021; Available from: <https://www.marineinsight.com/maritime-history/a-brief-history-of-the-suez-canal/>.
 - A brief history of the canal

The 1967-75 Suez Canal Closure

Literature from the HEC collections:

Note: Literature was placed chronically to gain a better understanding of the event. The abstracts were from the LR online library, and the relevant parts were noted down for readers' convenience.

- "Around the World - Spain." *Annual Report*, 1967.
 - Abstract: The Suez crisis had a marked effect on placing orders with Swedish shipbuilders and the larger yards now have work to last them until June 1970.
- "Around the World - Italy." *Annual Report*, 1968.
 - Abstract: The continuing closure of the Suez Canal seriously affected the number of ships passing through the Mediterranean and, therefore, the volume of repair and maintenance work which showed little improvement during the year.
- "Around the World - South Africa." *Annual Report*, 1968.
 - Abstract: With the Suez Canal remaining closed, South African ports handled an unprecedented number of ships.
- "Around the World - South Africa." *Annual Report*, 1969.
 - Abstract: With the Suez Canal still closed, ports were handling even more ships than previously and are now geared to cope with this extra traffic.
- *100A1 1968-1972*, pp. 55-56.
 - Key words: 1869-1877; Opened the Suez Canal; the China tea trade carried by steamships.
- "Around the World - Arab Republic of Egypt." *Annual Report*, 1973.
 - Abstract: The Suez Canal Authority's Port Said shipyard continued work at their temporary site in Alexandria.
- "Around the World - South Africa." *Annual Report*, 1974.
 - Abstract: Ship repairing activity at all the ports has continued at a high level, but it is expected that there will be some decline when the Suez Canal is re-opened.
- "Around the World - Arab Republic of Egypt." *Annual Report*, 1974.
 - Abstract: The Suez Canal authority has completed one rock bucket dredger, with a second under construction.
- "All Clear at Suez?" *100A1 June 1974*, pp. 9-15.
 - Abstract: The proposed reopening of the Suez Canal
- "Around the World - Arab Republic of Egypt." *Annual Report*, 1975.
 - Abstract: The Suez Canal authority concentrated on the reconditioning of its tugs, dredgers, floating cranes and other equipment. Orders were placed for 56 ships under the current 5-year plan.

Online Sources:

“The movements in trade caused by the closure of the canal provide a natural experiment.” (Feyrer 2009)

- *Choked Off: The Six Day War’s Impact on Maritime Trade*. 2017; Available from: <https://www.winton.com/longer-view/the-six-day-wars-impact-on-trade>.
- Edge, S. *Meet the seafarers who were stranded in the Six-Day War*. 2017; Available from: <https://www.express.co.uk/life-style/life/812599/six-day-war-seafarers-stranded-suez-canal>.
- Feyrer, J. *The 1967-75 Suez Canal closure: Lessons for trade and the trade-income link*. December 2009; Available from: <https://voxeu.org/article/1967-75-suez-canal-closure-lessons-trade>
- Feyrer, J., *Distance, Trade, and Income - The 1967 to 1975 Closing of the Suez Canal as a Natural Experiment*. 2009: NBER Working Papers 15557. Available from: https://www.nber.org/system/files/working_papers/w15557/w15557.pdf
- Khalili, L. *How the (closure of the) Suez Canal changed the world*. 2014; Available from: <https://thegamming.org/2014/08/31/how-the-closure-of-the-suez-canal-changed-the-world/>
- Press, A. *Suez Canal Blockage Adds to Pressure Points in Global Trade*. March 29, 2021; Available from: <https://www.usnews.com/news/business/articles/2021-03-29/suez-canal-blockage-adds-to-pressure-points-in-global-trade>

New Solutions in Recent Years

1. Discussions about increasing the Capacity of Vessels

Literature from the HEC collections:

- Penfold, Andrew. "Long Term Solution Needed for High Cost." *2008 09 Container Ship Focus 05*, p. 11.
 - Key words: Optimum vessel size range
- Marine, Lloyd’s Register. "Principal Dimensions of Future Generations of Ultra Large Container Vessels." p. 5.
- Tozer, David. "Container Shipping Milestones." May 2011.
 - Key words: Mega-container ships; Practical difficulties

2. Negotiating annual shipping contracts

Online Sources:

- "Trade Talks Podcast." 151. *Container shipping costs are through the roof. Who’s paying?* Available from: <https://www.tradetalkspodcast.com/podcast/151-container-shipping-costs-are-through-the-roof-whos-paying/>
 - Part of the deal is to spread the shipping at a fixed price throughout the year rather than introducing a big spike in shipments all at once.

Find out more: [Learning from the past - Hindsight perspectives \(lrfoundation.org.uk\)](https://www.lrfoundation.org.uk/learning-from-the-past-hindsight-perspectives)

3. Land Railway

Online Sources:

- Cox, A. *Egypt to build \$4.34bn 'Suez Canal on rails'*. 2021; Available from: <https://splash247.com/egypt-to-build-4-34bn-suez-canal-on-rails/>.

4. Arctic Navigation

Literature from the HEC collections:

- Barr, William. "History of Arctic Shipping up until 1945."
 - The history of searching for Northwest Passages from 1497 to 1945
- Kish, George. "Discovery of the Northeast Passage: The Voyage of the Vega, 1878-1879." *Geo Journal* 3.3, 1979.
- Upcraft, Desmond and Bridges, Robert. "Historical Developments in the Design and Construction of Ice Strengthened Vessels." *International Ocean and Polar Engineering Conference*, 2018.
 - Historical development of ships used for ice navigation
 - Key words: Icebreakers; Northern Sea Route; North West Passage; Russia; Canada; Exploration.
- Lloyd's Register and Ice Navigation
 - A detailed review of icebreaking ships
- Vie, Charlotte A. "Validation of the Design Temperatures Used in the Provisional Rules for the Winterisation of Ships." LR technology days 2010 Full proceedings, p. 143.
 - Key words: Winterisation - the ability to function at sub-zero temperatures
- T Takamasa; K Kondoh ; H Takagi et al. "The Potential for Transporting Cargo Via the Northern Sea Route on Nuclear-Powered Icebreaking Container Ships." 1995.
 - Key words: Comparative study of Northern Sea Route (NSR) and the Suez Canal route; Nuclear-powered icebreaking container
- "Arctic Transit: Northern Sea Route." *Insight*, no. 4, March 2012, pp. 6-8.
 - Key words: Commercial shipping; Hydrocarbon resources
- Oti, Philip. "Not Going to Happen" *Lloyd's Register in the news*, 07 October 2014.
 - Key words: Arctic route debate; Risk of damaged ships; Gas resources

Online Sources:

- Wichmann, Katie B. et al. "Arctic 2030: Planning for an Uncertain Future." Mossavar-Rahmani Center for Business & Government, 2016.
 - Northern Sea Route (NSR) considerably reduces transit time
 - Diminishing ice cover increased shipping traffic volumes across the Arctic
- Mudryk, Lawrence R. et al. "Impact of 1, 2 and 4 °C of Global Warming on Ship Navigation in the Canadian Arctic." *Nature Climate Change*, vol. 11, no. 8, 2021, pp. 673-679, Available from: <https://doi.org/10.1038/s41558-021-01087-6>
 - Key words: Climate model simulations; Navigability in the Canadian Arctic; Global warming
- Rayess, R. Dead in the water: Northwest Passage will replace Suez as world's transport route. 14 September 2021; Available from: <https://english.alarabiya.net/views/2021/09/14/Dead-in-the-water-Northwest-Passage-will-replace-Suez-as-world-s-transport-route>