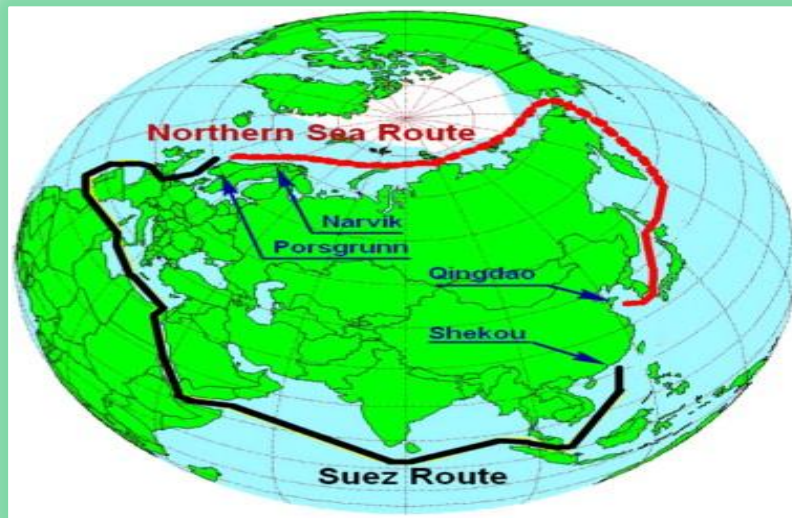


A Study North Sea Route and Its Success Factors as a Emerging Global Transport Option



Captain Mohammad Abdullah Abu Sayed¹

Ship Master P'S Maritime, Mumbai, India.

maasayed74@gmail.com

Co-Author

Alifa sayed²

Don Bosco School and College, Uttara, Dhaka- 1230.

alifa.sayed3740@gmail.com

Abstract:

This article analyses freight volume and NSR growth. The project aims to determine what affects NSR freight and offer improvements. The research developed an endogenous-exogenous paradigm. Model variables: Endogenous variable Y is NSR freight tonnage; exogenous variables include competitive conditions and socio-economic indicators, such as RFAZ's socio-economic growth index, and factors impacting cargo transportation efficiency. The Suez Canal and Trans-Siberian Railway competed for cargo. This contains RFAZ's population (in thousands), gross regional product (in million rubles), monthly wages, and fixed asset investments. The yearly Brent crude price determines shipping efficiency, the number of Russian-operated icebreakers, and the minimum Arctic ice cover in square kilometres. Most relevant were freight transportation factors. The icebreaker fleet service tariff is the most significant based on \$/ton, the number of Russian icebreakers, and the million-square-kilometre minimum Arctic coverage.

Keywords: The Northern Sea Route, Success factor, Emerging Options, Global transport,

1. Introduction:

History. Adolf Erik Nordenskjöld's 1878–79 Vega expedition conquered the passage. Arctic shipping routes include the Northern Sea Route. Russian law defines the Northern Sea Route

and NP between the Atlantic & Pacific Oceans. From Murmansk on the Barents way to Bering Strait and Southeast Asia as well far-east. The Soviet Union and Russia developed and maintained waterways in the most difficult sections. South Atlantic Oceanic Route has multiple routes. This route connects the US with SA. All of the passage's paths pass via Canada. 1.NAO. 2. Med roads. Cap-of-Good-Hope route. Pacific Ocean Oceanic Route. Route 5 PACIFIC Oceanic routes. None exists. NSR research as a Suez Canal alternative is inconclusive.



Figure-1 Scenario of Northern sea route Ice Navigation.
(Source Arctic.lio.com)

This study uses a two-stage Delphi approach to elicit expert feedback on what the Nordic countries¹ may do to prepare for NSR and earn trading gains. This study found that NSR cooperation can lower logistical costs by identifying an effective way to acquire skills. We merged FMA and DCT and applied it to global transportation and logistics. First step. The second portion shows how Nordic nations can use NSR benefits. First-mover advantage, Nordic countries, DCT, and Delphi approach. Arctic sea ice shrinkage could enable shipping shortcuts. The NSR between Europe and Asia has become more popular. Due to many causes, the NSR lacks continuous economic activity and regular maritime services. These reasons led to NSR's current position. We use DEMATEL to explore the interdependencies between these parameters. Experts say that extreme climate, politics, and sea ice hamper Arctic NSR growth. These features and policy ramifications could affect the shipping business and government policy..

2. Problem:

Major logistics businesses and brands won't use the NSR in 2019. Terminals/ports. Need help? (SAR). Hydrography/navigation Icebreaker. Improve international freight transit Air and rail expansion. Network safety. Infrastructure-aided power generation. Arts education. Arctic shipbuilding. Environmentalism.

3. Literature Review:

NSR research as a Suez Canal alternative is inconclusive. The Delphi method gathers qualitative advice from experts on what Nordic states should do to prepare for NSR and gain from trading in global transport networks. This study found that NSR cooperation can lower logistical costs by identifying an effective way to acquire skills.



Figure -2-Ice weather at North sea route in Winter.

(Source Arctic.lio.com)

By combining FMA and DCT, our paper advances worldwide transportation and logistics understanding. This also shows how countries along the NSR, especially the Nordic countries, may harness its benefits. First-mover advantage includes dynamic capabilities, Delphi, and Nordic countries. Plymouth University School of Transport Engineering, Dublin, Ireland Karamperidis Valantis-Kanellos Each of the various steps has Ministry and a deadline. The proposal boosts NSR's competitiveness. The Arc7 is headed to Yamal LNG. IOL photo. Pave and Sabetha will reopen in 2020 and 2021. When finished, Sabetha's port will be year-round. SAR has 19 safety measures. By 2020, SAR and oil spill legislation will be reviewed. Arctic extractors may support rescue coordination centres. Pevek, Sabetha, Dixon, and Tiksi must plan a rescue coordination centre by 2020. By 2020, we'll know if a state agency is needed to deepen the NSR seafloor. Eleven SAR vessels will be built by 2024. By 2022-2023, 13 new navigational and hydrographic vessels will be developed, and SAR will be prioritized. Five new class icebreakers will be introduced between 2022-2024, and three Lider class icebreakers between 2027-2030 and 2032. Several strategies can improve international shipping. By 2020, Murmansk and Petropavlovsk-Kamchatsky might become worldwide cargo hubs. Russian containership operator ice-class ships reduce unpredictability. By 2021, NSR will investigate possible government subsidies to increase global competitiveness. The NSR's digital logistics will boost the country's market position. Japan-U.S. Northern Sea Route Illustration from the article author. More airports and railways will increase the NSR network. Share your knowledge and ignorance. NSR communication problems are critical. By 2024, four geostationary satellites will strengthen NSR satellite communications. Launching six space modules by 2024 will speed up the NSR's AIS. By

2025, GEO satellites will provide hydrometeorological data for more accurate weather forecasts. Ice forecasting increases safety. A single operational control centre will be needed by 2021 if NSR shipping continues year-round. LNG-based expansion alternatives for ports will be considered. The approach considers the need for more qualified personnel, especially doctors. The government subsidizes NSR containerships. The idea requires innovative technologies to reduce marine pollution. Russian Federation's 2020-2022 budget allocates RUB 2.9 billion (EUR 42 million) for Northern Sea Route navigation and hydrographic enhancements. Future budgets will reflect the strategy's full cost. Several NSR issues require a costly strategy. Solution-filled map. The content concentrates on SAR, maritime safety, communications, ecology, weather, and ice forecasts in response to the NSR's criticism and ambiguities. The document contains unrealized solutions. Global trade relies on the scale, timing, and efficiency. Business routes have been altered to save days, weeks, and even hours. Suez and Panama canals facilitated this. Global changes generate business opportunities. As Arctic ice disappears, global trade can become more successful while lowering CO2 emissions. This new route might cut thousands of kilometres off the southern route. Global warming is congesting maritime lanes, causing much concern. The new route has problems. Due to global warming, ship captains warn passengers to avoid polar waters. Transporting goods between Europe and Asia via these channels reduces CO2 emissions. Vladimir Putin has invested \$11 billion in the route and aims to ship 80 million tonnes annually by the end of 2014. The administration said 100 ships used the Russian Northern Sea Route in August. The polar silk route reduces CO2 emissions and ship passage times. Shipping emits 940 million tonnes of CO2 annually. This represents 2.5% of global emissions. Reducing Europe-Asia trade may reduce greenhouse gas emissions. Fewer lineups at the world's natural bottlenecks and fewer pirates increase efficiency for Asia shipping. Savings might be 40%. Cost savings benefit many businesses and economies. Companies can import and export raw materials and goods with decreased shipping expenses. Businesses might charge less while still generating a profit. Cost-saving patterns have macroeconomic benefits. Northern Sea Route will boost new industries and cities. Using the polar silk road will reduce CO2 emissions between two major trade hubs. Christophe de Margerie sailed the North Sea Route eastward this year. Describe your trip. Cruise problems? What then? July will bring navigability to the eastern NSR.



Vessel Becomes Stuck in Arctic in Challenging weather.

(Source Arctic.lio.com)

In May, when ice conditions were still difficult, our LNG carrier Christophe de Margerie made this voyage two months early. Our Arctic experience and careful planning with NOVATEK, our charterer, and Atom lot, our Arctic partner, helped us to book an early cruise. Arctic and Antarctic research institutes and ScanEx analyzed the route's ice and hydrography. We also engaged a team of Arctic ship operations and satellite ice data experts. A naval task force accompanied Yamal down the Northern Sea Route. Project 22220 nuclear icebreakers will shorten NSR passage times. These icebreakers outpower and outsize Yamal. We correctly predicted ice. Thick hummocky ice fields, plastic ice deformation, and ice pressure slowed progress. The icebreaker and LNG ship enjoyed smooth voyages due to their experienced crews. As expected, the crew encountered icebergs in the Vilkitsky Strait, East Siberian, and Chukchi seas. In several spots, shifting ice forced our ship to use full power. A break in the fast-ice allowed the Christophe de Margerie to sail across the Laptev Sea. Ice kept the ship on course. Other seas were uniform. Due to easterly winds causing significant ice pressure in the Long Strait, both ships skipped Wrangel Island. This year's eastern NSR ice is similar to past years (i.e. the average). Ice was better than it's been in 30 or 40 years. We slowed the NSR ship due to ice conditions. Only 13% of the cruise was at full throttle. When could eastbound NSR stop? Will you repeat previous trips? Yama LNG controls the ship's sailing schedule. Commercial and ice-related variables impact this decision. Long-term goal: year-round NSR navigation. In May, the NSR was tested with a cargo ship. This increases the travel window. "Safety First" guides our cautious, step-by-step approach. Each step must be well-planned. Christophe de Margerie's early trip established that NSR-designed vessels could extend this navigating window. During the cruise, the LNG carriers' icebreaking, manoeuvring, structural capabilities, and the maximum permitted crew weariness were examined. We employed remote internet monitoring to find and correct the ship's mechanical and electrical faults. The equipment's ice performance was continuously monitored. Both

GTT and ABB manufacturers provided remote diagnostics. This trip's data will be utilized to better future icebreakers and cargo ships. How did you rotate crews throughout the pandemic? The pandemic's duration and scope of shipping are unknown. It isn't good. States limit foreigners. Our personnel come home safely, and new ones can join us. We've improved crew rotation plans to ensure order when ships arrive in Russian ports. Employees generally agree to contract extensions. To reduce health hazards, every crew member undergoes pre-boarding, contract, and changeover health exams. New crew members must pass a coronavirus test, wait two weeks, and retest. We follow federal guidelines and FSPCHR standards (Rosпотребнадзор). Local authorities often develop new restrictions that aren't federally compliant. Delaying and cancelling rotations violates sailors' rights. Murmansk and Khabarovsk needed aid. The Transportation Ministry resolved individual complaints. Deliberate action is needed. This item was condensed from Port News IAA. The Northern Sea Route connects Asia and Europe quickly. It might transform global logistics. US, China, and Russia are competing for Arctic resources. With the Arctic Sea Route (NSR) connecting Europe and Asia, Russia's Arctic oil and gas riches might be monetized in new ways. Northern Sea Route is two to three weeks faster than Suez Canal for Europe-Asia transit. Through-the-Arctic Transpolar Passage saves two days. 40% shorter than the Suez Canal and 60% shorter than the Cape of Good Hope. Improved transport efficiency and minimized piracy. Extreme weather and a lack of search-and-rescue services raise the cost of insurance for Arctic-bound ships. But. Economical. Ocean transportation has the lowest long-distance freight prices. Efficiency. Large and hefty freight capacity. Safety. Ecology. According to the Global Ice Centre, Arctic sea ice will be the lowest in 2021. Northern Sea Route (NSR) through Siberia and Canada will open in August (Northwest Passage). Summer introduces a new Arctic route. Due to sea ice, few ships travelled the Northwest Passage after Amundsen's 1906 expedition. Thick, year-round sea ice made the Northwest Passage impossible. Warming has opened the Arctic to commercial shipping. Global warming worsened this dispute. Early ice melting and greater open sea make once-impassable Northwest Passage routes viable. The Northwest Passage led to Asia. England coined "Northwest Passage." Europeans searched both coasts for a way to North America.

4. Methodology:

Peer review is used to examine scholars' research and viewpoints. It encourages authors to fulfil their profession's high standards and controls research data distribution to avoid unfounded claims, undesired interpretations, or personal viewpoints. Peer review is seen as slow and biased by editors and reviewers. Peer review is essential in science. Well-designed experiments help peer-reviewed papers address relevant subjects and produce reliable discoveries. It can present in consolidated way to Policy makers and administrators nationally and internationally.

5. Recommendation:

For National and international aspect it is essential to take step to optimize the routes and focus on international standards. NSR disruptions. No. Disruption Description. Poor forecasts. Complex and variable weather makes Arctic Northeast Route forecasts challenging. The NSR security system overall lacks credibility. Unfinished sea map Geology, a lack of

hydrographic ship data, and political meddling make the NSR navigation map incomplete. Insufficient communication and positioning. Det Norske Veritas' DAMA marine accident database reveals that safety restrictions and inadequate communication could compromise Arctic transportation. Engine trouble. According to the Canadian Transport Agency, engine and power failures cause most NSR accidents (CTA). Propeller/steering damage Icebergs can destroy ship propellers and steering gear, endangering NSR safety. 6 Ice accident Deck machinery breakdowns at cold temperatures could impede NSR ship operations. Limited navigation instruments High latitudes can affect ship navigation. Chilly Low temperatures may impact the hull, windlass, and mooring winch. Iceberg Sea ice separates the NSR from other sea routes and threatens ship safety. hazy Steam fog, ice fog, blowing snow, and other factors impede NSR watchkeepers' visibility. Seaswelling In narrow island passes, strong currents make polar navigation difficult, while NSR currents are concentrated on the continental shelf. Magnetic storms affect NSR security and navigation instruments. Non-icy obstacles Reefs, beaches, and unexploded weapons could disrupt NSR. Competence In an emergency, NSR ship crews must handle ship handling and emergency conditions that could compromise safety. Geopolitics Local, national, and international regulations complicate NSR decision-making.

6. Conclusion:

Foreign corporations frequently participate in Arctic energy initiatives. Russia wants the Northern Sea Route. This guarantees Russia's economic, energy, and Arctic security. National transportation arteries are crucial to Russia's growth and competitiveness. The Northern Sea Route is crucial for Russia's geopolitical and military interests, as well as for normalizing living conditions in the north, developing mineral riches, and exporting oil and gas. Building the Northern Sea Route includes mining, processing, and exporting materials. EU's involvement in Arctic issues and the Polar Silk Road will help build Asia-land Europe's maritime transit infrastructure. It's preferable to do this along Russia's northern coast. Northern Sea Route's multifarious development assumes it will be the cornerstone of the Arctic transport system, which should comprise ships, planes, pipelines, rail, road, and coastal infrastructure.

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