

Envisioning Marketing in a Digital Technology-Driven Maritime Business

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Abstract: The maritime industry faces the challenge of implementing a digital culture inherent in the 21st century and a modern way of doing business in shipping, maritime ports, and a more expansive, within a whole maritime logistic chain. The main question is the implications for marketing when the maritime business's digital transformation is an emerging issue. The paper is designed using the PEST impact matrix. The systematic literature review, literature analysis, and synthesis are the main methods applied. The most important results are political, economic, social, and technological changes of modern maritime business and their important implications for maritime marketing. These implications revealed the nature of change, the anticipated impact of change, opportunity or threats, and marketing's strategic response to the contemporary external environment. The paper fills the current literary gap and draws attention to the trends of the marketing, business organization, and human resource management in the maritime industry. All is linked with digital culture, which is still developing within the maritime industry.

Keywords: digital technology; maritime business; marketing; PEST analysis

JEL: M31, L19

Marketinška predvidevanja v pomorstvu, ki ga poganja digitalna tehnologija

Povzetek: Pomorska industrija se sooča z izzivom uvajanja digitalne kulture, značilne za 21. stoletje, in sodobnega načina poslovanja v pomorskem prometu, pomorskih pristaniščih in bolj obsežno, znotraj celotne pomorske logistične verige. Glavno vprašanje so posledice za trženje, ko je digitalna preobrazba pomorskega podjetja v porastu. Prispevek je zasnovan z uporabo PEST matrice. Glavne uporabljene metode so sistematični pregled literature, analiza literature in sinteza. Najpomembnejši rezultati so politične, gospodarske, družbene in tehnološke spremembe sodobnega pomorskega poslovanja in njihove pomembne posledice za pomorsko trženje. Te posledice so razkrile naravo sprememb, pričakovani vpliv sprememb, priložnost ali grožnje in strateški odziv marketinga na sodobno zunanje okolje. Prispevek zapolnjuje trenutno vrzel v literaturi in opozarja na trende trženja, organizacije poslovanja in upravljanja s človeškimi viri v pomorski industriji. Vse je povezano z digitalno kulturo, ki se v pomorski industriji še vedno razvija.

Ključne besede: digitalna tehnologija; pomorstvo; trženje; PEST analiza.

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1 Introduction

Innovations, automation of logistics' processes, autonomous ships, smart maritime ports, changing social roles on the shore and onboard operations, digital marketing channels, and promotions are gaining increasing interest from maritime regulatory institutions, national economies, associations, researchers, and professionals. Several significant changes have formed the general conditions of business in the maritime market over the past ten years and can be economic, technological, social, political, legal, and environmental. Globalization, resource shortage, insecurity of collaboration and integration, political changes, digital transformation, data mining availability, energy transition, infrastructure automation, and sustainability awareness are some of the most important (Carlan, et al., 2018).

Digital culture is perceived as "an emerging set of values, practices, and expectations regarding the way people (should) act and interact within the contemporary network society", while it has been evolving from a 19th century (print culture), via a 20th century (electronic culture), to the 21st century (digital culture) (Deuze, 2006).

Technology is the foundation of digital transformation, and this culture is about rethinking operational models, processes, and policies, taking staff members and customers at the core of the process (Safety4sea, 2018). The maritime industry has not yet experienced the degree of development in digitalization compared to other industries.

Implementation of the digital culture brings benefits to maritime companies, as they (*Heilig, et al., 2017; Alix, 2017*):

- become more intelligent in terms of flow, situation, or customer management,
- make the best decisions, improve processes, and make them more efficient or cleaner,
- optimize connectivity, transfer skills and knowledge, and enable better planning and management within and between maritime stakeholders.

The percentage of publications published from 2010 to 2017 has been increasing by 20%, while in 2002, it was significantly below 5% (Sanchez-Gonzalez et al., 2019). The geographical distribution of these works confirms that China, Korea, and Spain are the leading countries in terms of work on maritime transport digitalization studies (Sanchez-Gonzalez et al., 2019). Thus, there is a noticeable literary gap that this work could fill to some extent. On the other hand, the question is, what is the degree of digital culture implementation in the maritime business, i.e., what is the gap between opportunities and challenges for its full implementation? Table 1 shows drivers/opportunities and barriers/common challenges in response to the above question.

Table1: The gap between opportunities and barriers in the implementation of a digital culture within the maritime industry

<i>Drivers/opportunities</i>	<i>Barriers/common challenges</i>
Availability of data and tools to process them	Lack of digital skills to extract value of data
Infusion of tech entrepreneurs and offering catalyze new solutions and applications	Dependency on 3rd party providers
Technology advances (in AI, Big Data, Cloud, Drones, IoT, Robotics & Automation) allow integrators (ie starts-ups & Consulting firms) to easily provide solutions to stakeholders.	Lack of digital dexterity to "hook on" to digital initiatives or platforms
Energy efficiency & scarce resources attract new players & public interest to the industry	Lack of collaboration experience requires trust and the development of social capital
Investments in building the digital platform infrastructure for new applications	No clear best practices on which technologies to implement for what, or on how best to do
Decentralized experiments with the application allow localized capability building which can serve future innovation projects	Cyber-security and GDPR require extensive & new ICT, compliance, and legal contract expertise
New technologies & availability of data mining opportunities help create awareness of new opportunities	Many companies are digital laggards, facing an increasing competitive gap with the large front-runners
Energy efficiency & scarce resources stimulate sustainability and external attractiveness of the industry	The challenge of attracting new talents is an issue affecting many stakeholders

Source: Interreg project SPEEDTeam, 2020

Table 1 shows that there are options for improvement in this regard in the maritime sector. So-called digital laggards' companies still operate, but the number of new talents grows, and cooperation intensifies. In literature, this topic has an emerging nature, and there is a lack of theoretical studies and related alternative explanatory approaches

(Acciaro and Sys, 2020; Fruth and Teuteberg, 2017; Sanchez-Gonzalez et al., 2019; Munim, 2019). Fruth and Teuteberg (2017) revealed that actors' behaviour in the maritime logistics chain is still not researched enough. A limited number of studies have investigated the interaction between strategy and digitalization (Sanchez-Gonzalez et al., 2019), while business models have been marginally explored in the maritime logistics automation literature (Munim, 2019).

Based on the relevant literature, the paper deals with the marketing aspects of this emerging issue. For shipping companies, awareness of marketing as a business philosophy is still developing. There are many examples in the port business, as well. One of the legal considerations is that port territory construction is sufficient to attract ships for service. However, today, any maritime company without intelligence about the market and its players and a clear strategy cannot survive international competition's intensity.

More than ever, marketing research and projections of the maritime market are needed in the modern maritime business. Namely, if actors of maritime logistics chains fail to anticipate their customers' needs, they face great difficulties. The competition is continuously intensifying, while the internal trade zones overlap. The goal is to ensure customer loyalty, but that loyalty obliges actors to deliver customer-tailored services.

On the other hand, in modern shipping and the maritime business, there are two groups of companies (UK Essays, 2018). The ones with an open-minded attitude embrace new technology such as digital marketing to achieve more visibility and brand awareness—the second ones with a passive attitude fear how competition could benchmark their strategies and processes. If a company uses digital marketing tools unprofessionally in real situations of maritime business, the consequences can be harmful.

The most widely used digital marketing tools are functional and regularly updated websites, e-commerce, online payment, search engine media, email marketing, social media, as a way to communicate and attract more customers. Furthermore, while large companies will sooner or later adopt digital marketing, now is a chance for small operators to take advantage of it to conquer the market uncovered by the big ones.

Having in mind the above mentioned, the primary research question in the paper is: What are the implications of changes in the macroenvironment and the growing digitalization of maritime business on the marketing of maritime companies? Thus, this paper aims to determine the economic, political, social, and technological factors that shape the macro environment for maritime companies' business and determine their integral effect on changes in the marketing concept of maritime business.

The paper aims to define maritime marketing's strategic response to the digital technology-driven maritime business, and it is its primary purpose.

2 Methods

Figure 1 presents graphically all the steps in defining the objectives, research questions, methods, and the results expected.

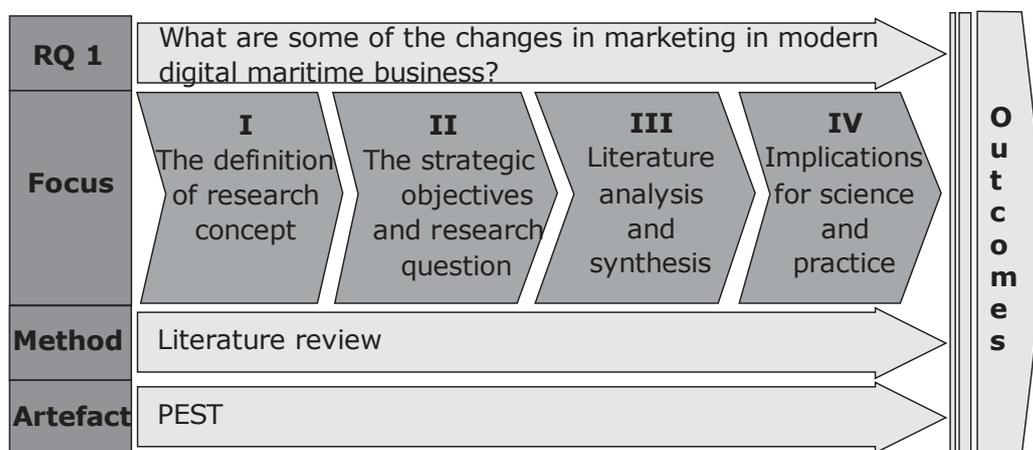


Figure 1: Methodological framework of the paper

Source: Author, according to Fruth and Teuteberg, 2017.

The paper is designed using the PEST framework (Sammut-Bonnici and Galea, 2015). The systematic literature review is the primary method, while the steps in methodology are as follows: definition of the investigation framework, development of research concept, literature search with keyword search, literature analysis and synthesis, and selection of the implications for maritime marketing science and practice (Šekularac-Ivošević, 2020; Fruth and Teuteberg, 2017).

3 Results

Figure 2 presents the main results of the paper graphically.

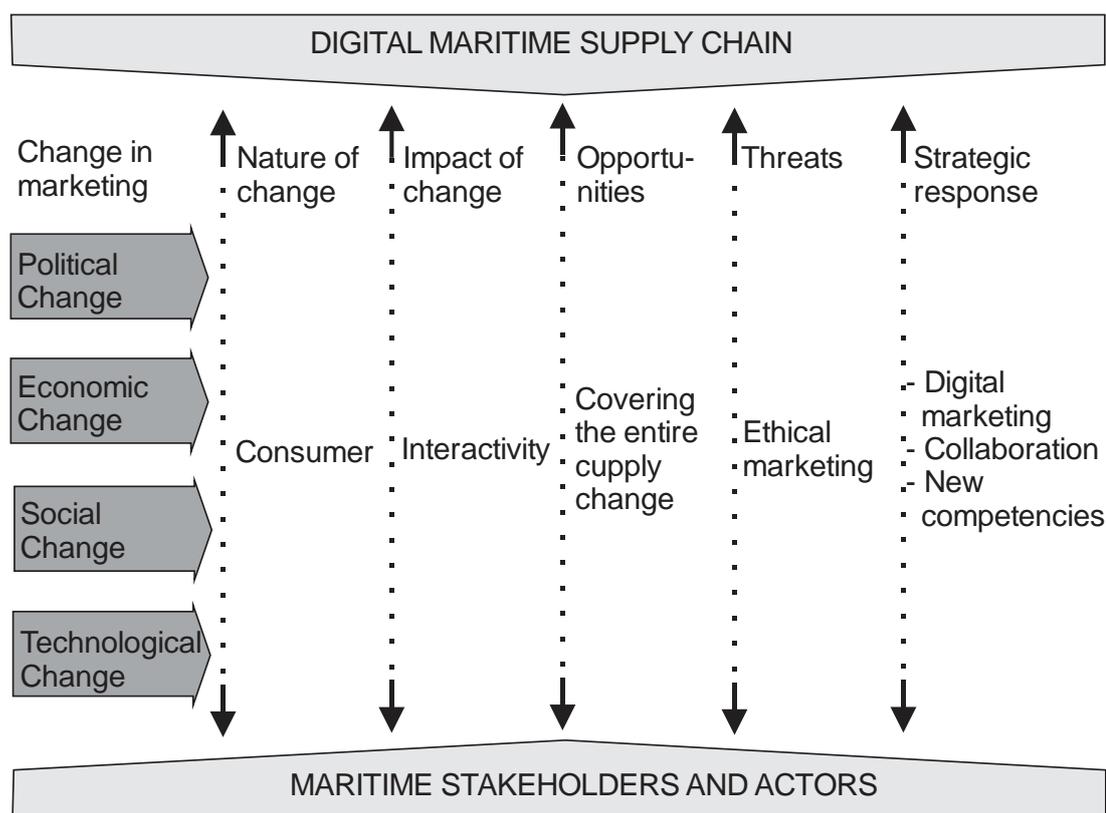


Figure 2: Changes in marketing in modern digital maritime business
Source: Author

Based on the theoretical foundations of PEST analysis and a systematic review of the literature, the main political changes concerning the maritime market and industry have been identified, as follows:

- Government policies (investments, concessions, private-public partnership, control of maritime entities politically and financially) (Alix, 2017).
- Competition is steadily intensifying.
- Inland trading zones are overlapping with one another (Alix, 2017).
- Governments define maritime strategies.
- Government-sponsored funding programs for the maritime economy.
- The political stability of the regions (Fruth and Teuteberg, 2017).
- Push towards collaboration and integration.
- Legislation.

The Government's role is essential, especially in maritime policies and legislation, strategy, and stability.

Both ports and shipowners strive for economies of scale. In shipping, larger vessels operate more frequently, while ports offer integrated logistics service packages. Strategic alliances have been forming in order to control the world's shipping routes. Such companies are also becoming more price-competitive so that smaller operators are increasingly failing. Shipping is a perfect showcase of contemporary economic liberalism (Alix, 2017). Thus, economic changes are:

- The transformation from paper to digital functioning accelerates sales and growth of the maritime organizations (Safety4sea, 2018).
- Contemporary economic liberalism (mergers, acquisitions, and strategic alliances) (Alix, 2017).
- Power of shipowners (economies of scale) (Alix, 2017).
- Smart innovation leads to satisfied customers/clients (productivity, efficiency, environmental awareness, profitability).
- Maritime clusters and agglomeration effects (de Langen, 2002).
- Lean production (Fruth and Teuteberg, 2017).
- Circular economy (Alix, 2017; Fruth and Teuteberg, 2017).
- Green economy.

Social changes are:

- Increase in the number of jobs on land.
- New digital competencies (experience, willingness to integrate and technical knowledge (Fruth and Teuteberg, 2017; Safety4sea, 2018).
- Innovation and creativity (Safety4sea, 2018), etc.

Artificial intelligence, the Internet of Things, Big Data, and other technological solutions allow maritime companies to become more intelligent in terms of flow, situation, or customer management, i.e., to become "smart" means to become more attractive and competitive (Alix, 2017). Namely, technological changes are:

- Emerging technologies (AI, Big Data, Cloud, Drones, IoT, Robotics & Automation) (Safety4sea, 2018), and
- R&D incentives.

The paper's final results were reached by connecting four groups of external changes to define four maritime marketing implications logically. Based on the acquired insight into the current state of the maritime business, the implications mentioned are:

- 1) Nature of change (new business models with the consumer at the center of activities),
- 2) The anticipated impact of change (socially responsible marketing, decentralization and transparency, value-added and higher visibility of services, multi-stage interactivities with customers and data analytics),
- 3) Opportunities (deepening service portfolios, covering the entire supply chain, company performance strategy),
- 4) Threats (sharing and manipulating of data, ethical marketing principles), and
- 5) Strategic response (resilient digital culture, digital marketing, partnerships, collaboration, new (smart) competencies).

The discussion follows an explanation of the implications for marketing, thus defined.

4 Discussion

Changes in marketing in the maritime logistics chain's digitalization are narrowly defined as in Figure 2, but each of them deserves to be described in more detail.

The nature of maritime marketing change reflects that companies that do not follow the technology will remain less competitive, as customer satisfaction will be reduced. In this situation, complete business models will change, with the consumer being at the center of activities. The expected growing role of marketing has been very modestly implemented in maritime actors' business philosophy in the market so far.

The anticipated impact is seen in the already present growing need for data security and data protection in maritime logistics to prevent manipulations of sensitive systems, which will impose the need for the implementation of ethical - socially responsible business. Furthermore, decentralization, data security, and transparency are enabled, i.e., there are visible examples of the application of blockchain technology in shipping companies' marketing. The next

anticipated impact is the improvement of value-added services and situations in which operators can meet customer demands and provide greater visibility throughout the shipping journey (Safety4sea, 2018). One of the most anticipated impacts is multi-stage interactivities with customers and data analytics that can also help to redesign maritime companies' marketing plans.

Opportunities that are possible in further marketing activities are mostly related to the fact that digitization will force different maritime companies to deepen their service portfolios and cover the entire supply chain, not just at sea but also increasingly on land (Fruth and Teuteberg, 2017). It will be a great chance to achieve greater operational efficiency, productivity, and better end-user satisfaction.

Threats that appear in technology-driven maritime business conditions are predominantly related to fears of sharing and manipulating data, leading to a more significant application of ethical marketing principles. Given these circumstances, maritime companies could greatly benefit from digitization in efficiency, security, and energy savings. However, there are also risks, known as cyber-crime.

The strategic response to the current situation is undoubtedly resilient marketing digital culture developed within the whole industry. The emphasis is on integrated marketing communications and Relationship Marketing. It implies that make companies aware of the benefits of digital marketing solutions. It is necessary to show that marketing-finance-operations are firmly connected and to announce the financial benefits from the application of digital marketing and its innovative solutions. The most effective digital marketing channels are email marketing, content marketing, social media marketing, landing page and website optimization, and SEO. Such a marketing strategy will significantly increase customer bases and future success. The strategic response to change is to hire employees/marketing managers who will create the strategy and ensure its implementation, emphasizing the interdisciplinary group, and new (smart) competencies. It is undoubtedly imperative to emphasize the need for collaboration and partnerships with educational institutions to adjust new courses tailored to the needs of future staff who will work in maritime companies, especially with modern (start-up) companies in the maritime sector.

The paper's limitations are those specific marketing strategies, plans, and programs are not presented, but more attention is given to changing the concept and vision of marketing development. The recommendation is to do a benchmarking analysis of digital marketing implementation in other (related) industries and then create and apply the maritime industry's best solutions accordingly.

5 Conclusion

At the beginning of the paper, it was assumed that there is no systematic literature analysis on changes in the marketing of maritime companies as digitization in maritime logistics occurs. It was found that there is still a marketing area requiring research and development. This area is a digital marketing and its means - email marketing, content marketing, social media marketing, landing page, website optimization, and SEO. It is precisely the recommendations to focus on digital marketing in future research and expand marketing strategies, plans and programs, and building and maintaining a competitive advantage. Future research should find a solution to fully affirm marketing in maritime companies' business practices in a new future led by digital technologies.

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