Artificial Intelligence Tools for Maritime Business Development in the Algorithmic Age

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Abstract

Algorithmic age is the actual time context where automated technologies and decision-making systems are starting to influence world scale transport economies and in particular the sector of maritime transport. Algorithms emerging from Artificial Intelligence (AI) and machine learning applications are suited to solve demanding problems or improving our ability to accomplish time-consuming tasks of maritime companies.

This paper presents a comparative analysis of technology advancements met in three case studies of artificial intelligence assisted platforms and tools useful for enhancing maritime business in the algorithmic age.

The case studies can be further used in qualitative studies on the societal impact of artificial intelligence technologies and for the understanding of the framework of digital evolution in the maritime sector.

Key words: marketing, dynamic codes, data, development, education
J.E.L. classification: H89, I25, M31

1. Introduction

Artificial intelligence is used intensively in automated business, political, decisional and technical systems. In the context of algorithmic age, accelerated development of artificial intelligence and advanced social web technologies lead toward machine-aided participatory communication, boosting processes and updating conventional business of maritime companies.

Over the last decade, marketing strategy and practice in the maritime have undergone major changes due to major technological advances, especially due to the development of the Internet and the artificial intelligence technologies. Like any field, marketing in the maritime continues to keep pace with technological developments. As a result, after invading with advertisements on all traditional channels (audio-visual, written press, events, etc.), it also approaches the virtual environment, in an attempt to attract, but especially to retain new customers.

Evolving so quickly, the consumer of maritime services is accustomed to selecting the media he/she wants to access. Thus, there is a continuous change in the status of consumers from "physical viewers" to "Internet browsers beneficiaries", which has given return to both advertising companies and their customers. Under these conditions, the importance of traditional marketing is not diminished at all, but it is necessary to develop a new component, which is online marketing based on artificial intelligence technologies. In this context, maritime companies that do not neglect their marketing side, aim to be present as much as possible on the virtual market for various actions aimed at launching a new shipping line, strengthening an existing brand or transport service, or their advertising.

In the context of the continuous evolution of web technology, social networks represent an excellent opportunity to establish meaningful relationships and to create ways of social interaction defined by dynamic exchanges between their members.

Social media is booming in terms of the number and variety of platforms and users. In the last two decades, social networks have grown and evolved into something that allows consumers and businesses to engage with each other in a meaningful way.

Thus, you can find audiovisual platforms such as YouTube, Vimeo and SoundCloud; image platforms such as Flikr, Picassa, Pinterest or Instagram; general social networks such as Facebook, Twitter, Google+ or specialized ones such as LinkedIn; news aggregators or bookmarks such as Digg or Delicious; blogs; Wikis and more - a vast digital arena where the new winners of the web in terms of digital marketing stand out.

2. Theoretical background

The context for artificial intelligence based changesets was anticipated around 1970, when Alvin Toffler, a futurist and visionary businessman, published the book "Future Shock", printed in millions of copies. After four decades, in 2016 (the year when he died), a BBC News article made an analysis of what Toffler had correctly anticipated and what he had not "guessed" until then, e.g. "demarcation of post-industrial societies, eclipsed by a knowledge-based economy" or shifted focus from manufacturing and labour to information and data" (Subramanian, 2016).

Today, at the level of 2021, is interesting to reanalyze the context of Toffler's predictions and to see what he anticipated correctly or not.

By evaluating the technological developments, social changes and political and economic context, we observe that what Toffler had anticipated in 1970 was, in fact, totally correct, and has become, in the meantime, a reality. For example, the "shift of work from both office and factory back into the home", leading to the raise of the deurbanization, is confirmed. This happens especially in the context of pandemics when maritime companies working environment is partly or totally switched from the office area to remote working from home, in order to avoid risks of contacting Corona virus which is spreading rapidly and aggressively in closed environments with lack of air circulation.

Another aspect that we notice Toffler got right is that "social isolation ignites by the wave of information". The raise of social media platforms like Facebook, Instagram, You Tube, Twitter, Pinterest, Tik Tok, We Chat, WhatsApp, Viber, Signal and other contribute to social isolation.

Toffler prediction of establishing colonies in space is in the process of becoming a reality, in 2021 first tourists being able to travel to space.

Although organizations initially understood the Internet as a new channel to increase their presence, they soon began to look for ways to maximize their various platforms and services. Currently, online marketing communications are an essential part of operational marketing in terms of becoming, in itself, a specific marketing line: digital marketing (Piñeiro-Otero and Martínez-Rolán, 2016, p.38).

Use of artificial intelligence is becoming more popular for communicating between the maritime company and customers through chatbots useful for natural and quick answers to customers (Stevanovic et al, 2018, p.107). Alibaba, a major China based technology company specializing in e-commerce, retail, Internet, and technology, with 500+ million users, combine big data analytics and artificial intelligence to customize customer experience both in physical store and in online store (Dudic, 2018, p.13).

An AI based digital marketing plan, in addition to study the maritime organization and its environment, must analyze its online presence and position. A concrete digital strategy compare the following elements:

- Monitoring the keywords of the organization, the competition and the sector of the organization (some useful tools are Mentions, Google Alerts, Hootsuite)
- Evaluate the web positioning of the organization and its platforms (for example, Google search or Alexa top ranking)

- Evaluation of social networks. Presence, activity, influence, etc. (a number of tools such as Klout, PeerIndex and Kred become relevant here)
- Comparative analysis of the competition and the main influencers in the sector present on digitalmedia
- Specific SWOT analysis (Piñeiro-Otero and Martínez-Rolán, 2016, p. 41-42).

Social media is not only a market place, but is also a place where companies interact with customers to try and solve their problems. Maritime companies should be aware social media is "a major player in most people's business lives" (Edosomwan et al, 2011, pp. pp.79-91).

Although the notion of social network is not new, in the period 2020-2021 it has reached new heights, due to the penetration and connectivity of Web technology and Artificial Intelligence technologies. Social networks have been developed through platforms that have different types of functions, but common features. These features aim to create a community by connecting users, who can interact, discuss, provide information or knowledge. And in the case of these platforms, the technology must be flexible and favorable to the exchange of information. This means that free web standards and modular architectures that lead to complex but efficient applications are usually preferred (Campos-Freire, 2008, pp. 287–293).

3. Research methodology

This paper presents a comparative analysis on three case studies of artificial intelligence assisted platforms and tools useful for enhancing maritime business.

A first case study presented in this paper is the Hootsuite platform, which has the role to simplify the process of planning, composing, and publishing engaging, on-brand content and plan postings and content on social media channels. The platform has the role to engage, monitor and manage incoming messages, advertise, measure and analyses company's performance on social media. Hootsuite integrates Proofpoint, a software tool that provide automated screening and analysis before and after each post is published.

Below is Hootsuite dashboard print screen showing the features from the platform.

Figure no. 1. Dashboard in the social media management platform and social networking services Hootsuite
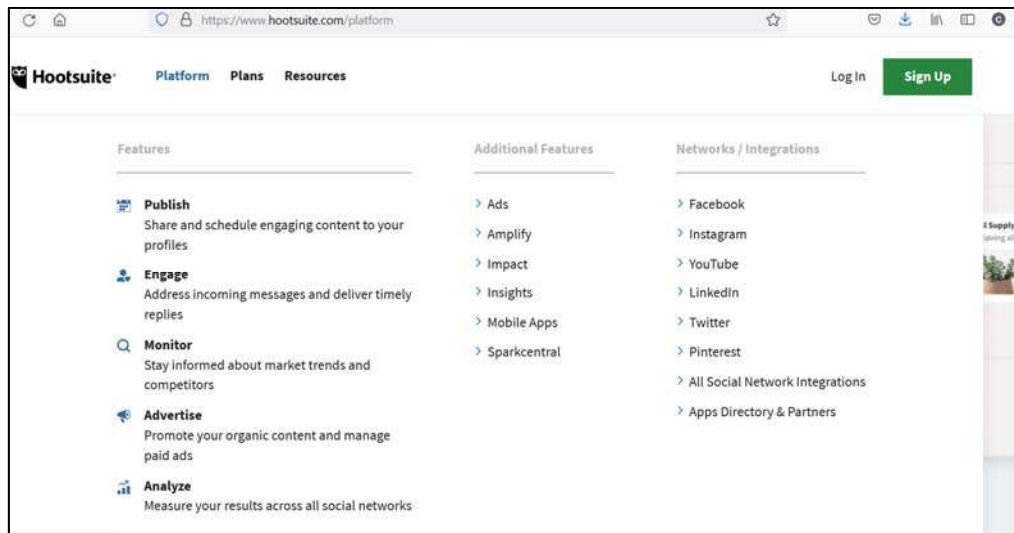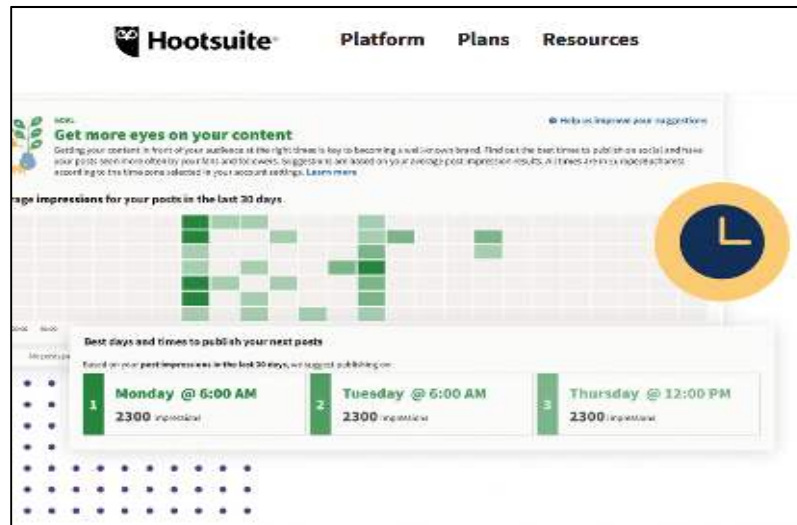

Source: (hootsuite.com)

Hootsuite analysis function is pre-determined to enhance brand awareness, engagement or driving traffic, suggesting the best time to publish on social media and have the posts seen more often by followers, based on post impressions in the last 30 days of use. The platform also measure post performance, team performance, amplified leaderboard, the impact content, audience discovery and provide reports on Hootsuite activity, LinkedIn, Facebook, Instagram or mixed

overview. The AI technology used in Hootsuite Impact function has the role to inform and influence business decisions with insight from social media campaigns (it measures campaign performance, optimize social media strategy and share insights across the business).Google Analytics or Adobe Analytics track how each post leads to actions that matter (contribute to sign-ups or to purchases).

Figure no. 2. Analysis function in the social media management platform and social networking services Hootsuite


Source: (hootsuite.com)

With Panoramiq Multiview, created by Synaptive developer, the Hootsuite platform enables the management of interactions on Instagram platform and is used for monitoring and responding to comments, mentions and tagging in one stream, no matter the number of Instagram accounts.

The second case study refers to another AI business assistance platform suitable for the development of maritime business. Gong is a real-time assistance conversation intelligence platform that uses artificial intelligence and machine learning to analyze unstructured data by recognizing effective patterns from plenty of hours of spoken conversations between B2B sales. The revenue intelligence app has the role to records, transcribe and analyzes sales calls (gong.io).

*Figure no. 3. Gong.io revenue intelligence platform*
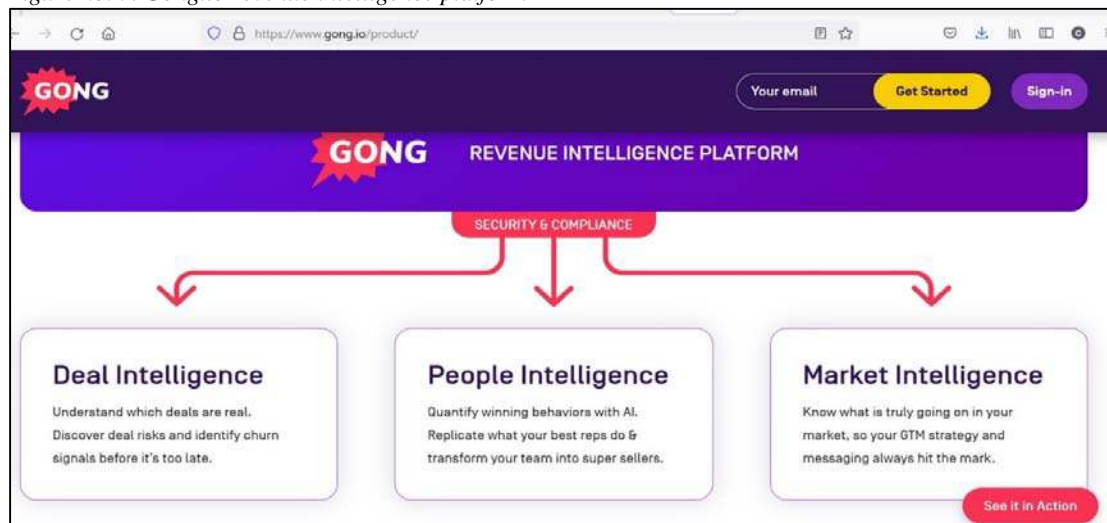
Source: gong.io

The third case study refers to Google Alerts which is an website tool based on content detection and notification service. The tool is also based on artificial intelligence technologies and was offered since 2003 by the search engine company Google. Google Trends website analyzes the popularity of top Google search queries in different regions and languages, using artificial intelligence technologies. The website uses graphs to compare the search volume of different queries over time. In 2008, Google launched Google Insights for Search, a more sophisticated and advanced service that displays search trend data. In 2012, Google merged Google Insights for Search into Google Trends.

The service sends automatic emails to the user when it finds new results - such as web pages, newspaper articles, blogs, or scientific research - that match the user's search terms. When selecting a Google Alert type, a field opens in which the user can note the area of interest for creating alerts. The user can customize the way alerts are searched by selecting the frequency of notifications, sources, language, region, etc. For example, when searching for a randomized word, as "digital marketing", the engine suggests a number of related options, including "digital marketing" - search term; or "digital marketing plan", topic "internet marketing" or "digital marketing topic", representing possible associations to the search indicated by the user (Fig. 4).

Figure no. 4. Google Trends website
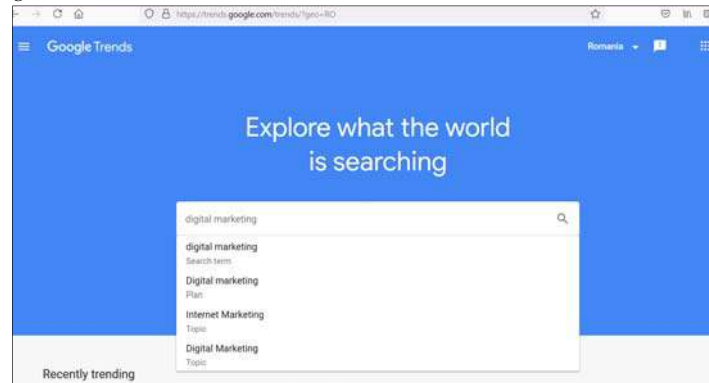
Source: trends.google.com

The search result for trends for the field of interest "digital marketing" indicate modest values when searching for the term for Romania geographic area (Fig.5). The returned result consists of a maximum frequency of 75 searches of the key term "digital marketing" with a peak of results in the period February-May 2021.

Figure no. 5. Trend results regarding the interest of searching for the key term "digital marketing" in Romania in the last 12 months
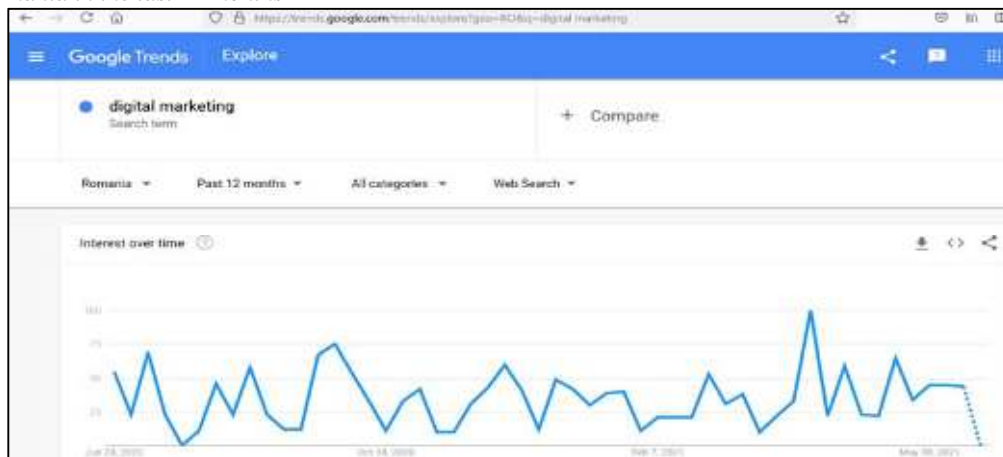
Source: trends.google.com

At the global level, search results are represented in Fig.6 indicating a higher search frequency of the key term "digital marketing", as compared to the area of Romania, highlighting a peak in the number of searches also in February-May 2021. A possible explanation for these similar values may be the orientation of companies towards digital marketing services and providers before the beginning of the summer season, being expected a recovery of the economy after the COVID-19 pandemic.

Figure no. 5. Trend results on the interest of searching for the key term "digital marketing" globally, in the last 12 months
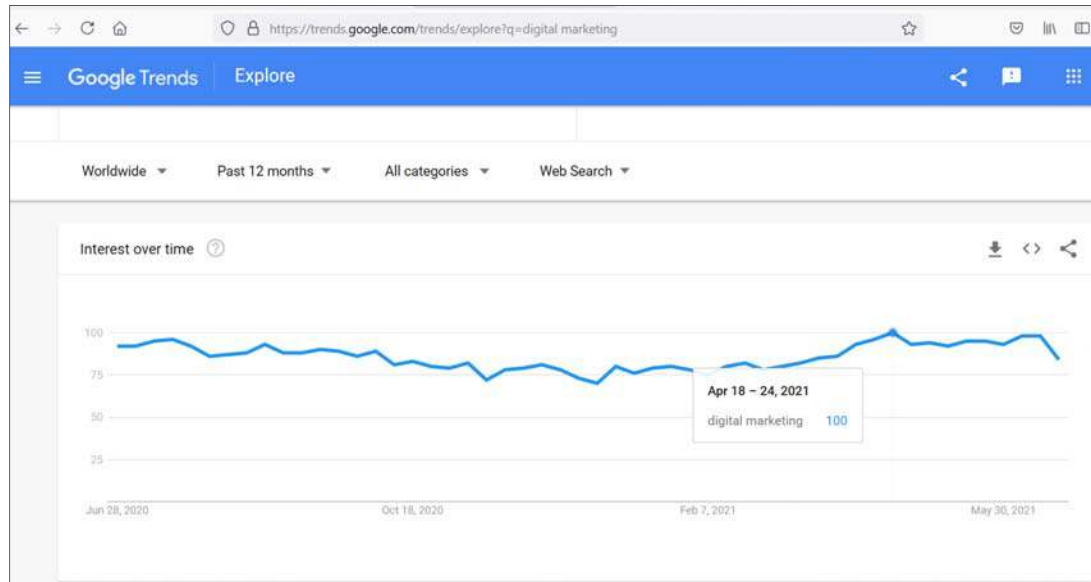
Source: trends.google.com

4. Findings and discussions

In recent years, the number of companies adopting artificial intelligence has grown steadily and now is considered more than 9 out of 10 companies have continuous investments in technologies based on artificial intelligence. As shown in the Table 1, there are various accessible platforms and marketing tools using AI with payment plans or with free access. More and more organizations in different industries are beginning to implement AI in a variety of applications as part of their marketing strategies. In Table 1 is included a comparative analysis of technology advancements met in the three case studies of artificial intelligence assisted platforms and tools useful for enhancing business: Hootsuite, Gong and Google Trends.

Table no. 1 Comparison between AI platform/tools that can be successfully used in the maritime sector

Platform/tool	Similarities	Differences	Remarks
Hootsuite	1. All three tools have incorporated AI technology. 2. All of them provide records analysis useful for appropriate decisions 3. Although the tools are intuitively and easy to use, the user (beneficiary) must have basic digital competences and	Maritime company can analyze their social media presence (posts, replies, feedbacks, questions, actions of registration or shari g	Paid subscription needed. Several plans are available. Results are used to strengthen the power of the company in the online environment.
Gong.io		Maritime company can analyze sales calls recordings.	Paid subscription needed. Several plans are available. Results can be used in assessing selling teams
Google trends		Maritime company can analyze the popularity of top Google search queries in different regions and	No paid subscription needed. Results can be used to identify the points of interest of users.

	IT&C literacy to be able to use the results	languages.	

Source: own study

There are several ways in which artificial intelligence changes the future of digital marketing will be presented.

One of the biggest changes brought about by artificial intelligence in digital marketing is in the field of data collection and processing. We are in an era of collecting large volumes of data (Big Data), and the data we are going to collect in the coming years will grow at an exponential rate. The Internet of Things (IoT) means that more and more devices are connected to the Internet every day, which means that a significant amount of data is collected. As data is better collected, users become better at advanced data processing.

In the period 2020-2021, machine learning algorithms have already become better at fast processing of huge amounts of data, and AI technology allows to improve the use of collected data. Among the most obvious changes that occur due to advanced data processing is the over-personalization of marketing messages. At the moment, the most significant personalization in marketing is based on the fact that, voluntarily, consumers provide a lot of data necessary for the development of marketing campaigns, while data collection based on AI runs in the background (on social networks, website websites and other platforms). With the additional help of emerging technologies such as face recognition, companies now have the ability to target customers and create hyper-personalized marketing messages without having to rely on consumers to provide information.

Artificial intelligence helps marketers discover the type of content that is most effective based on the behavior of their target customers. This is a change with a significant impact on the future of digital marketing, as it allows the use of content that contributes to optimal results without unnecessary consumption of financial resources and time for tests, studies or surveys needed to find out what content works best for the public. aim.

At the level of 2020-2021, there are already content tools based on artificial intelligence that provide the necessary feedback and information to content creators in order to achieve better results related to the effort. These artificial intelligence tools can help create content, including:

1. Write blog posts based on data that is well differentiated for rankings
2. Writing optimized posts on social networks that stimulate the involvement of participants
3. Personalize emails and copy the site for higher conversions
4. Conduct effective keyword research to meet the user's intent.
5. Asses selling teams efforts and suggest way of improvements
6. Provide an overview on the latest trends and point of interests of users, based on geographical areas or other criteria, and compare trends in time etc.

5. Conclusions

In an age of dynamic change, such as the one we are in, the algorithmic age, where a major focus is placed on artificial intelligence technologies implemented in companies and especially in digital marketing tools, is necessary for maritime companies to look to the close future and intuit what changes they need to make to uptake the emerging digital context.

Further development of this research can be a qualitative study based on secondary data analysis on the use of artificial intelligence technologies can be applied for the development of maritime business.

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