Maritime Technology and Research

https://so04.tci-thaijo.org/index.php/MTR

Research Article

Semantic arrangement of navigational safety management terminology

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Article information

Received: October 3, 2022
1st Revision: November 23, 2022
2nd Revision: January 20, 2023
Accepted: January 20, 2023

Keywords
Navigation safety,
Navigation safety management,
Terminological system,
Semantic organization,
Topic group,
Field structure

Abstract

Ensuring ship navigational safety is a complex, multi-faceted problem that can only be solved while considering the human factor and, consequently, the language component of this problem. Terms in general, and navigational terms in particular, comprising the concepts of navigational safety and acting as tools of knowledge, are very important components of the professional communication verbal aspect. Although extensive, the English terminology of navigation is not described systematically enough in its more specific sections, which leads to terminological synonymy and a variative interpretation of some terms. These problems prevent maritime transport from becoming safer. This study of semantic correlations in the space of navigation safety provides a deeper insight into the nature of the phenomenon. It also enables maritime English instructors to develop an effective mechanism for students to master, based on the awareness of the correlation between term subjects and concept structures.

1. Introduction

The requirements for the level of foreign language proficiency for a navigator are determined by the International Convention on the Training, Certification and Watchkeeping of Seafarers, 1978 (STCW-78). This document emphasizes the particular importance for seafarers to have a good command of maritime terms (STCW Convention, 2018). Thus, the relevance of such a study as the present one is conditioned by the need to systematize the properties, features, and characteristics of the English-language terminological units of navigation safety, since this terminology is a vital linguistic tool for professional communication. The lack of its systematic descriptions leads to a distorted or variative interpretation of some marine terms, which may cause emergencies or accidents at sea. The necessity of this study is also conditioned by the need to carry out a comprehensive analysis of terms in the field of navigation safety resulting, eventually, in the compiling of a corresponding terminological database.

Thus, the goal of the present study is to analyze and to systematize the semantic space of navigational safety management terms in order to enable navigators to avoid their distortion and misunderstanding in the process of professional communication. This goal can be achieved by summarizing the concepts of the professional activity area under study, since this approach allows identifying objective trends in its development. It is impossible to obtain reliable terminological data without considering them.

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2. Materials and methods

2.1 Basic concepts of navigation safety management

The methodology of the study involves the method of field approach, as well as the method of term hierarchical classification, as two most effective ways to describe the lexical and semantic structures of specialized terminological systems. These methods are considered as tools for modeling specialized thesauri (Gubanov & Novikov, 2014).

The corpus of units under analysis amounted to 281 terms, selected from professional discourse samples.

We fully agree with Professor Tkachyova (1987) that "close connection of terms with science and technology determines their relationship, and in order to get a true picture of terms formation and their semantic structure, an interconnected study of terminology and a corresponding field of knowledge is required".

Maritime industry experts believe that navigational safety is one of the four components of the concept of "marine safety", namely, technological and operational safety of ships, safety of navigation, safety of people in distress, and prevention of environmental pollution from ships (Tkachyova, 1987).

For the purposes of this paper, it is necessary to consider the concept of maritime safety management. According to experts, there are three aspects of safety management in any field: a technological aspect, the human factor, and the factor of man and mechanism interaction.

The technological aspect involves technical solutions aimed at increasing the level of safety, including the development of rules and norms that regulate its level. The human factor is decisive since, according to statistics, most accidents at sea occur due to human errors. The factor of interaction between man and mechanisms is the interaction of a crew with the ship's systems and mechanisms during the operation of the ship.

Taking into account these components, the concept of navigational safety management (NS) is considered as providing a set of requirements for the vessel, crew, conditions of operation (including requirements for the design of the vessel and its mechanisms, for fire safety, environmental safety, for the qualifications of crew members, navigation rules, etc.), and activities aimed at verifying their compliance (Formela et al., 2019).

The requirements for ensuring safety of navigation can be divided into the following groups: requirements for the design, equipment, and ship handling; requirements for the operation of the ship (including safe loading and transportation, ensuring the safety of the passage, etc.); requirements for the organization of search and rescue; requirements for crewing; ensuring the safety of maritime navigation; control in ports; and organization of accident investigations.

Navigation safety management also includes studying the nature and character of maritime hazards, identifying the causes of accidents and disasters, and the role and place of the human factor in ensuring safety, which makes it possible to develop recommendations and take necessary measures to prevent negative consequences. An important aspect is the study of navigation safety and prevention of marine pollution (Skorokhodov et al., 2017).

Ensuring the safety of navigation is "a set of navigator's various actions, which are aimed at maintaining the survivability and reliability of the vessel, in order to achieve the necessary level of protection of human life and health in the process of carrying out activities related to navigation, the vessel itself, cargo, that is, material values, as well as the environment, which is carried out by establishing various requirements" (Lushnikov, 1995).

Thus, navigation safety management involves a technological aspect, the human factor, and the factor of interaction between man and mechanisms; in terms of taking into account the human factor, it means high professional training of the crew, and preparation of personnel and vessel for going to sea. The technological aspect involves technical serviceability of all ship systems that are designed to ensure the passage of a ship, as well as navigation, communications, and damage control of the ship. The interaction of humans and mechanisms presupposes a proper organization

of the observer duties service, navigation service, and communication service; a running watch; the strictest observance of all navigation rules and high navigational accuracy when approaching navigational hazards; and control and knowledge of the parameters of navigational safety of navigation, pilotage, and hydro meteorological support.

As a generalization, it should be noted that the definition of the concept of "safety" is based on the concept of danger. Life safety, as a field of knowledge, can be structured in a system of interrelated concepts: sources of danger and the consequences of hazard fulfillment (emergencies, damage, etc.), the subject of safety, and the object of safety.

The terminology of navigational safety is determined by the structure of this area of knowledge, since the terminological aspects of this area are associated with the dichotomy of the "danger/safety" concepts, as well as the definition of the subject, the object of navigational safety, and methods of its provision.

Navigational safety as an activity can be characterized by its own subject and object. The subject of navigational safety is the navigator and the ship's crew, while it is aimed at several objects: human life, the ship, its systems and mechanisms, the marine environment, and the transported cargo.

The formation, development, and functioning of the navigational safety terminology is determined by the stages of formation and development of the professional maritime activity itself. Its complex nature is reflected in the hierarchical structure of its terminological system.

2.2 Semantic organization of navigational safety management terms

Safety management system is based on advanced methods for the efficient and safe technological operation of ships and ship equipment, as well as crew management, adopted in accordance with the requirements of the International Safety Management Code (ISM Code), International Standards ISO 9001:2015 "Quality Management System", and ISO 14001:2015 "Environmental Management System", a shipboard safety management system based on the ISM Code, as well as with the requirements of the flag administration and best industry practices (International Maritime Organization, 2022).

In the practical part of this study, 281 navigation terms of the safety management system, interpreted in this paper as the terms of navigation safety management, selected from the text "Safety management system of JSC SCF, SCF Safety Management System", underwent semantic and structural analysis (International Maritime Organization, 2022). The terminological status of these lexical units was also determined on the basis of comparison with lexicographic sources (specialized maritime dictionaries).

In addition, the selected units were compared with the terms fixed in the International Safety Guide for Oil Tankers and Terminals (ISGOTT) (Oil Companies International Marine Forum, 2022). One of the main functions of the international associations that have produced the new edition of the International Safety Guide for Oil Tankers and Terminals (ISGOTT) is to represent the interests of the tanker industry in regulatory bodies such as the International Maritime Organization (IMO). The IMO actively cooperates with The International Chamber of Shipping (ICS), the Oil Companies International Maritime Forum (OCIMF), and the International Association of Ports and Harbors (IAPH), which efficiently participate in IMO meetings, contributing significantly to tackling the most urgent maritime safety issues. The IMO recognizes ISGOTT as one of the main reference guides for the safe operation of oil tankers and terminals that serve tankers, which is specified in many IMO rules and recommendations.

These documents, as noted above, were drawn up on the basis of the requirements of the "International Safety Management Code" (ISM Code). The purpose of the Code is to provide international standards for managing safe ship operation and maritime pollution prevention.

2.3 Field structure of the navigational safety management terminology system

The subject world of navigational safety management is specific, as are the conditions of communication and the corresponding cognitive activity. As the analysis conducted in this study has shown, these specificities are represented in the semantic organization of the terminological system of navigation safety management (NSM). If regarded as a terminological field, this terminological system has three nuclei that correlate with three core topic groups:

- Maritime hazard/safety,
- Ensuring navigational safety,
- Maritime emergencies.

The possibility of identifying topic groups (TG) in the terminological system is conditioned by the fact that the topic group, regarded as a tool, allows observation of how the material world is dementalized in term units (Asher, 2011). The terms align with the conceptual apparatus of the corresponding branch of knowledge. Elements of the conceptual apparatus are always in relationships of interdependence (International Maritime Organization, 2015).

As shown by this study, the topic classification of the units of the navigation safety management system is a hierarchical system of the field type.

The center of this system is represented by the hypernym “navigational safety”. At the second level, the analyzed terminological system consists of three cohyponyms, corresponding with the three nuclear concepts of navigational safety management: navigational hazards, maritime emergencies, and tools for ensuring navigational safety (**Figure 1**).

At the next level of the hierarchy, terms are subdivided into lexical-semantic subgroups within each topic group. The term “lexical-semantic subgroup” in this work is used in a narrow sense, defining a group of words united by the commonality of a categorical-generic semantic element (an archiseme).

The figure below shows a hierarchical classification of safety navigation management terms, based on hyper-hyponymic relationships. This classification allows students to obtain a comprehensive understanding of the system and structural relationships of these terms. All safety navigation management terms are united by the concept of “navigational safety” (**Figure 1**).

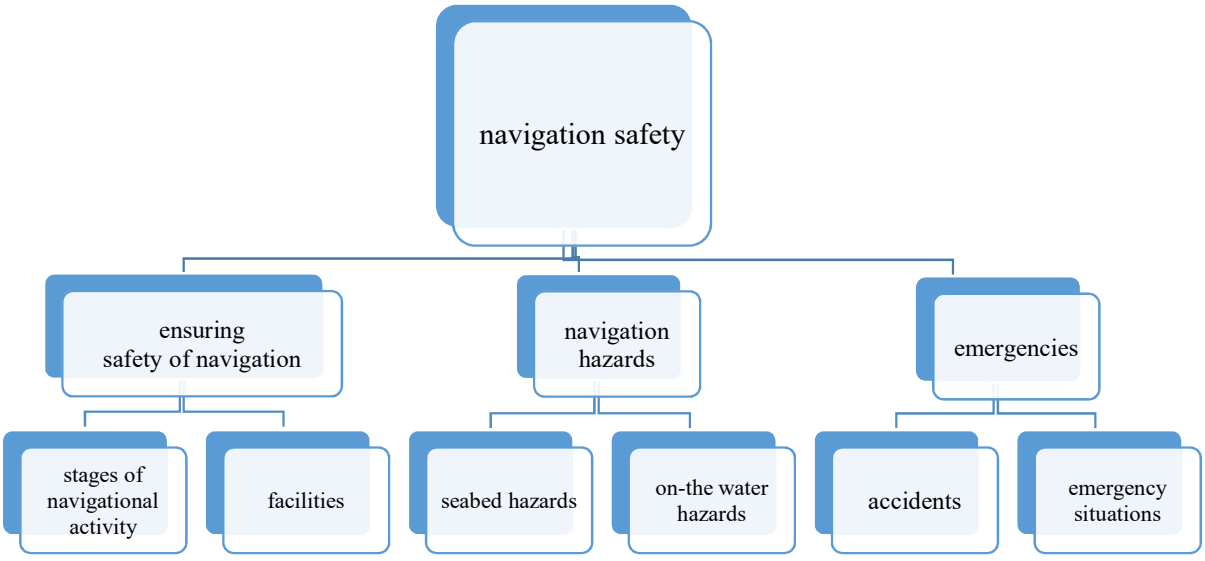

Figure 1 Hierarchical classification of navigational safety management terms (levels 1-3).

The hierarchical classification of safety navigation management terms correlates to the conceptual scope of this type of professional activity. Thus, navigation safety management includes

the study of the causes and specifics of marine hazards, the role and place of the human factor in ensuring safety, and the search for methods to prevent them.

The complex concept of navigational safety can be described in terms of "navigation", "navigational danger", "human factor", "vessel", "mechanism", and "technology". Analysis of definitions in maritime dictionaries shows that the term "navigation" in a broad sense is interpreted as "the science of getting ships from place to place" or "the passage of ships" and, in a narrow sense, as "a period of time in a year when navigation is possible according to local climatic conditions", and also as the main section of navigation, in which theoretical substantiations and practical methods of driving ships are being developed. In the 20th century, with the development of science and technology, and the emergence of new objects of navigation, the term "navigation" most generally describes "the process of managing some object in a certain space of movement. It consists of two main parts: theoretical substantiation and practical application of object management methods, routing, choosing the optimal path for an object in space" (Academic, 2022).

The term "danger" is defined as "the threat of an adverse effect of something on some object, which may worsen its properties, or lead to death" (https://fireman.club/statyi-polzovateley/opasnost-sut-termina-vidyi-priznaki). It is necessary to note that the semantics of the concept of "danger" includes the meaning of potentiality, which is realized here through the concept of "threat".

The term "human factor" is ambiguous. It describes the possibility of a person making erroneous or illogical decisions in specific situations. It also characterizes the interaction of a complex system of "man-mechanisms leading potentially to some negative consequences" (Academic, 2022).

The term "vessel" is defined in the Marine Dictionary as "a structure capable of floating on water and moving through it, carrying, in excess of its own weight, all the loads intended for this structure by the nature of its service" (Academic, 2022).

The concept of "mechanism" means "a set of technical devices intended for use in human activities" or "a piece of machinery". It is closely linked to the concept of "technology", which covers technical products created by man that did not previously exist in the natural environment (Academic, 2022).

The meanings of the terms listed above, which underlie the concept of navigational safety management, correlate in one way or another with the term units of the analyzed terminological system, which made it possible to select them.

2.4 Core components of the navigational safety management in the system of terminology

As shown by statistical data processing, the largest number of navigational safety management terms is included in the terminological group "Ensuring safety of navigation"- 74 %. The terms of the terminological group "Navigational Hazards" made up only 10 % of the selection analysis. The terms of the terminological group "Emergency situations" presented the same amount- 10 %. The terms of the terminological group "Cargo operations" and "Inspections" were poorly represented in the study materials (6 and 2 %, respectively). This correlation of navigational safety management terms in the system of terminology reflects the terminological specificity of the analyzed documents (**Figure 2**).

The terminological group "Ensuring safety of navigation" included terms that define concepts directly related to the work of the navigator to prevent and eliminate navigational hazards. The terms of this group name spatial and temporal concepts and objects of navigation activity.

Within this terminological group, two subgroups are distinguished.

- "Stages of navigational activity" subgroup,
- "Technical equipment providing navigational safety" subgroup.

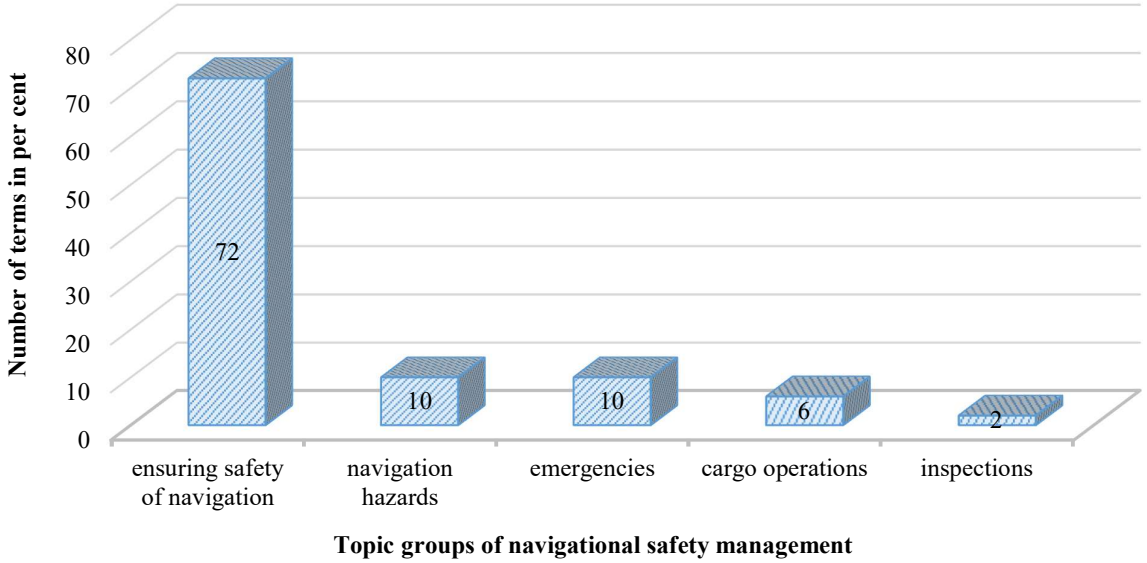

Figure 2 Topic classification of navigational safety management terms.

The terms that nominate the stages of navigational activities to provide safety of navigation, namely, 72 % of the total selection analysis, have the prevailing position in this terminological group. The terms of the second subgroup, thus, account for somewhat less than one third of the units of this terminological group, which indicates the dominant position of navigational activity within this fragment of the master's professional activity aimed at ensuring safety.

The subgroup "Stages of navigational activity" consists of entities united by the concepts of "navigation" and "period". This subgroup, in its turn, is divided into three topic sub-subgroups, in accordance with the main stages of the passage: passage planning, watchkeeping, and port water areas (**Figure 3**).

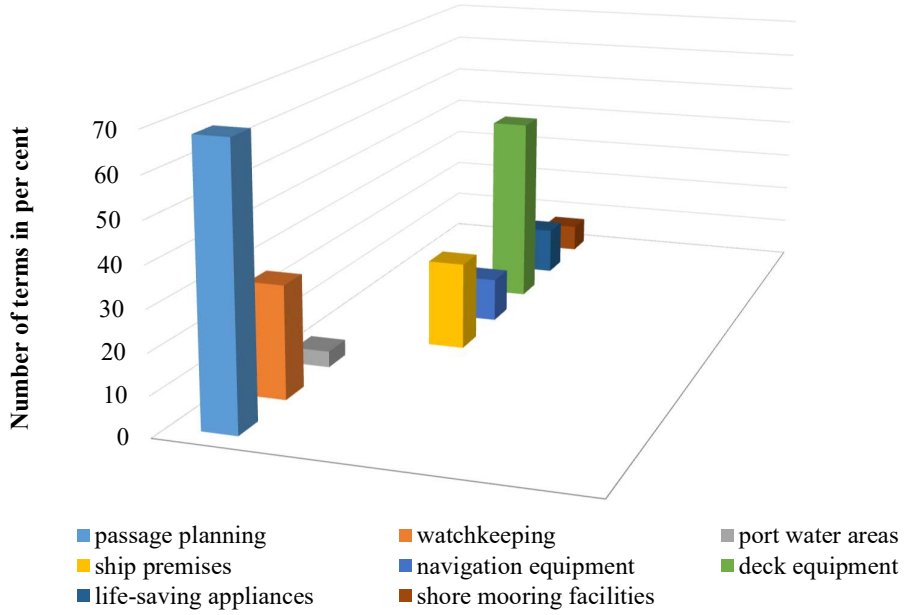

Figure 3 Components of the topic group "Safety Management".

Figure 3 shows that "Stages of navigational activity" subgroup is dominated by terms related to the planning stage (68 %). About one third of the units of this subgroup relates to the description of watch keeping, and only 4 % is used to describe the activities of the navigator when the ship is in port water areas.

The "Passage planning" subgroup, as can be seen from the examples below, includes units correlated with both the concept of "technology" and the concept of "human factor":

Bending Moment - technology
Bridge Watch Condition - human factor
Depth Contour - technology
Dilution - technology
ETO - human factor

At the same time, the terms correlated with the concept of "technology" in this sub-subgroup are more frequent than those correlated with the concept of the human factor (82 %).

The term units of the sub-subgroup "Watchkeeping" are united by the concept of "watch", for example, *CPA (Closest Position of Approach), Dead Man Alarm (System, designed to monitor the ability of the engineer on duty),* and *Dead slow ahead (Movement of the vessel ahead with smallest revolutions).*

Among the terms of this sub-subgroup, correlated with the concept of the human factor, the names of navigation safety actors are registered, for example, *DEO (Duty Engineer Officer), ETO (Electro-Technical Officer),* and *EWC (Engine Watch Condition).*

The "Port water areas" subgroup mainly includes terms that nominate operations to ensure the safety of the vessel when entering such an area; that is, they nominate actions and processes of safety management in this situation.

In addition, they nominate actors that ensure the safety of this navigation stage as well as spatial concepts.

The subgroup "Technological equipment providing safety of navigation", which unites terms correlated with the concept of technology and conditioned by the concept of "navigation safety", is divided into 5 sub-subgroups:

- Ship premises;
- Navigation equipment;
- Deck equipment;
- Safety equipment;
- Shore mooring facilities

Such a subdivision demonstrates the presence of an integral semantic element, "equipment" (a set of mechanisms, machines, devices necessary for work (https://dic.academic.ru/searchall.php)), and differential semantic elements conditioned by spatial concepts (*"ship premise", "deck", "shore"*) and the concepts of "activity" and "process" (*"navigation", "rescue", "mooring"*).

At the same time, the dominant position is occupied by terms nominating units of deck equipment (48 %). Terms that nominate ship spaces were registered about twice as rarely in the documents undergoing the analysis (22 %). Terms nominating objects of life-saving appliances and navigational equipment made up 11 % of the sampling. The minimum number of terms in this subgroup nominate objects of coastal mooring equipment (7 %): *Railing, Rescue boat, SART, SBM, Scupper, Sea chest,* etc.

2.5 Peripherical area of navigational safety management in the system of terminology

The second term group combines subgroups of terms correlated with the concept of "hazards of navigation", including such semantic elements as "hazard" and "navigation". It consists of five sub-subgroups that have a common semantic element, "hazard", and differential semantic elements that correspond to spatial concepts (bottom, above water space), and with the concepts of

"meteorology" and "radar":

- Bottom hazards,
- Above water hazards,
- Hydrometeorological hazards,
- Hazards of the area with intensive traffic,
- Radar interference.

As shown by the statistical data processing, most of the hazards mentioned in the analyzed documents belong to the category of hydrometeorological (38 %), which indicates the importance of studying hydrometeorological concepts by cadets. Quite often in this term group, there also occur terms that nominate surface hazards (32 %). Terms of seabed hazards occur about twice as rarely (15 %) in this group, and the hazards associated with navigation processes in areas of intensive traffic and radar are represented by the least amount of term units (8 and 7 %, respectively) (**Figure 4**).

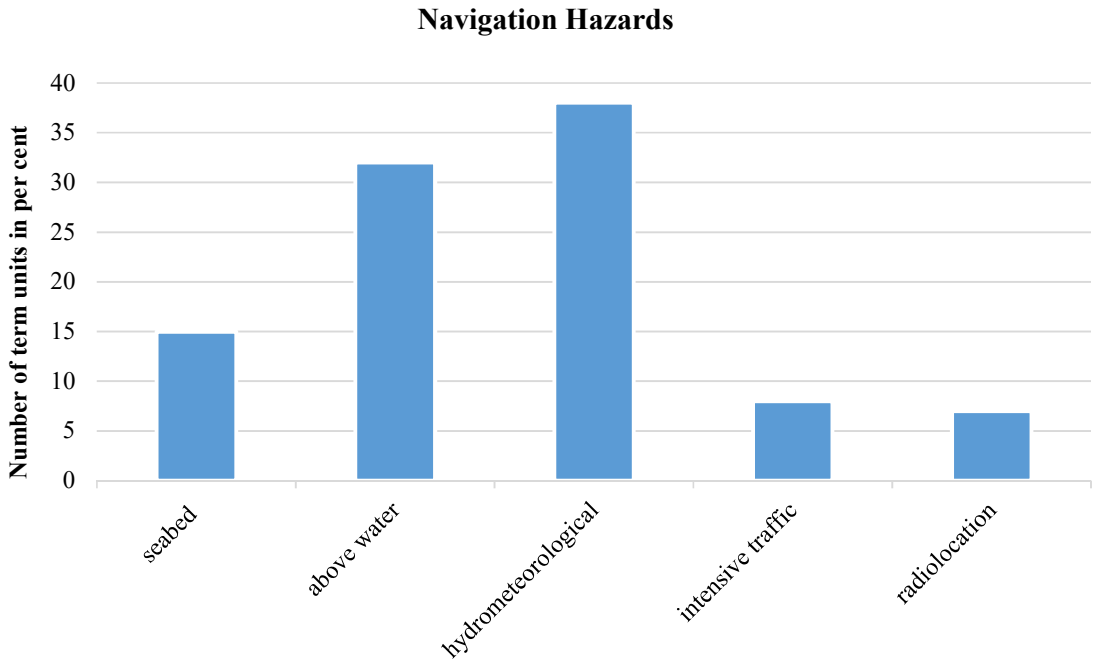

Figure 4 Structure of the topic group "Navigation Hazards".

It should be noted that bottom hazards and navigational hazards were also subdivided taking into account the natural/artificial opposition.

Breakwater - Artificial Above Water Hazard

Rock - Natural Above Water Hazard

The term group "Emergency Situations" is represented in the same volume as the group "Navigational Hazards"- 10 %. This ratio seems natural, since the concept of "emergency" is a consequence of the danger actualization. The distinction between these terms lies in the presence in the term "danger" in the seme of potentiality and its absence in the term "emergency situation", understood in this study as "the situation in a certain territory or water area resulting from an accident, a dangerous natural phenomenon, a catastrophe, a natural or other disaster that may or have caused human casualties, damage to human health or the environment, significant material losses and violation of living conditions" (Academic, 2022). This group includes two subgroups,

"Accidents" and "Emergency situations". The term "accident" means "damage to a merchant ship or its cargo and loss from it" (Academic, 2022). The term "emergency" describes a situation in which an accident is possible, thus occupying an intermediate position between the concepts of "danger" and "accident".

Collision - accident
Grounding - accident
Snap back - emergency
Close Approach - emergency

As noted above, the term groups "Cargo Operations" and "Inspections" are located on the near periphery of the navigational safety management. They made up an insignificant part of the selection analysis, but nevertheless are present in this terminological system as integral elements of navigational safety management. They are placed on the near periphery of the term system due to their rare use (less than 10 %) in the analyzed standard documents. The terms of the term group "Cargo operations" (6 % of the selection analysis) are divided into 3 subgroups- "Loading", "Discharge", "Preparation for cargo works". In addition, in the corpus of special units correlated with the area of navigation safety management, onyms related to this term group were identified. They are the names of documents, namely manuals for carrying out cargo works. They cannot be included in the terminological system due to their linguistic status but, of course, they can occupy the zone of the near periphery in the analyzed area.

As for the terms of this topic space, they are grouped around the concepts of "mechanism", "process", "indicators and measurement values", and "regulation" used in the process of loading and discharging.

Deck Seal mechanism
Masteriser mechanism
Purging process
PV breaker mechanism
Sounding process
PV valve mechanism
Stripping process
UEL indicators and measurement values
Ullage indicators and measurements
SSSCL regulation
B/L regulation

Terms of this group are included in the analyzed terminological system, as they are associated with the concept of navigational safety in terms of ensuring the safety of the vessel, crew, and the environment at this stage of the navigator's professional activity.

The term group "Inspection" contains the smallest number of navigational safety management term units, which was the reason for assigning it to the zone of the near periphery of this terminological system. It includes terms united by the semantic elements "control" and "verification". Units of this group nominate subjects and objects of inspection, as well as forms of reporting documentation.

It should be noted that seabed hazards and navigational hazards were also subdivided into subgroups taking into account the opposition of natural/artificial.

Breakwater - Artificial Above Water Hazard
Rock - Natural Above Water Hazard

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accident, a dangerous natural phenomenon, a catastrophe, a natural or other disaster that may or have caused human casualties, damage to human health or the environment, significant material losses and violation of living conditions" (Academic, 2022). This group includes two subgroups, "Accidents" and "Emergency situations". The term "accident" means "damage to a merchant ship or its cargo and loss from it" (Academic, 2022). The term "emergency" describes a situation in which an accident is possible, thus occupying an intermediate position between the concepts of "danger" and "accident".

Collision - accident
grounding - accident
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Close Approach - Emergency

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As for the terms of this topic group, they are grouped around the concepts of "mechanism", "process", "indicators and measurement values", and "regulation" used in the process of loading and discharging.

3. Results

3.1 The functional-semantic space of navigational safety management terms

A comprehensive study of the navigational safety management terms has resulted in a number of findings.

- Navigational safety management terms represent a functional-semantic space of units represented in topic groups, divided into subgroups and sub-subgroups based on unifying semantic elements in accordance with the hierarchical system of concepts used in this area.
- In the center of this area, there is a terminological system of navigational safety management, while the periphery includes proper names which, unlike terms, are special vocabulary units nominating single objects of the sphere of navigational safety, not concepts. They include names of regulatory documents and systems, as well as geographical names that nominate navigation areas and some other objects.
- The navigational safety management terminological system, located in the center of the semantic field of navigation safety management, also has a field structure. In its core zone, there are terms denoting concepts of maritime safety/danger, concepts of emergency situations at sea, and concepts of ensuring navigational safety. On the near periphery, there are terms related to the concepts of cargo operations at sea and inspection. On the far periphery, there are elements of the term systems of hydrometeorology, astronomy, and engineering, which are indirectly related to the work of navigators.
- The complex concept of navigational safety is represented by terms that nominate the concepts of "navigation", "navigational danger", "human factor", "vessel", and "equipment".
- The term group "Ensuring navigational safety" includes terms denoting spatial and temporal concepts and objects of navigation activity.
- The term group "Navigational hazards" unites terms correlated to the concept of "danger

of navigation". Five sub-subgroups in its composition are united by the semantic element "danger" and are differentiated by means of semes, correlated with spatial concepts (bottom, surface space), and with the concepts of "meteorology" and "radar".

- The term group "Emergency situations" is represented by terms that actualize the concept of "emergency" in the form of two subunits- "accident" and "emergency".
- The terms of the term group "Cargo operations" are grouped around the semes "mechanism", "process", "indicators and measurement values", and "regulation". The term group "Inspection" includes terms united by the semes "control" and "check". They name the subjects and objects of the inspection, as well as the forms of reporting documentation.
- The semantic links within the terms of navigation safety management represent a hierarchical system of hyper-hyponymic relations including certain synonyms. Their opposition in the analyzed terminological system is conditioned by the tendency to compress terminological units in the process of oral professional communication.
- Most of the analyzed terms are nuclear in their structure; however, this is not due to the lack of elements carrying secondary specifying meanings, but due to a large number of abbreviated units in the form of initial abbreviations, which represent one-word units and, therefore, are considered as nuclear; that is, having no semantic periphery.

4. Discussions

The terminology of navigational safety is conditioned by the structure of this area of knowledge. The terminological aspects of this area are associated with the opposition of two concepts: danger and safety, as well as the definition of the subject, object, and means of providing navigation. The major concepts of the terminological system under discussion are grouped around these elements, represented by the navigator and a ship's crew as the subject, and human life, the ship, its systems and mechanisms, the marine environment, and cargo as its objects.

The formation, development, and functioning of the terminology of navigational safety is determined by the stages of formation and development of the area itself. The complex nature of maintaining safety of navigation determines the hierarchical structure of its terminological system.

A comprehensive linguistic analysis of the English terminological system of the navigational safety management as an integral system made it possible to identify the specifics of its semantic organization.

Elements of this terminological system exist in hierarchical relations with each other. This system has close links with other terminological systems of the maritime industry and the terminological systems of hydrometeorology, geography, physics, and astronomy. The originality of this term system is manifested in its semantic organization, which reflects the conceptual sphere of this type of professional activity.

The complex concept of navigational safety can be described by such basic terms as "navigation", "navigational danger", "human factor", "vessel", and "technology".

A unique feature of this terminological system is a large number of abbreviations. Functionality of the terms of navigational safety management in professional communication is complicated by the presence of some units of synonyms-doubles and pseudo-analogisms among the English-Russian correspondences of some terms. The systematization of such units is relevant for the process of training navigators for work in mixed crews.

5. Conclusions

Overall, our data provide a comprehensive view of the semantic arrangement of navigational safety management terminology. The analysis conducted in this study has enabled us to compile a terminological system. The concepts within the area of sea safety navigation categorize and systematize knowledge which forms an integral part of professional navigation at sea.

It is hoped the results obtained can be used to further tackle the problems of terminological synonymy, pseudo-international vocabulary, and variable interpretation of some terms, and will undoubtedly contribute to ensuring the safety of navigation. Generally, the obtained findings could serve as the basis for further studies aimed at arranging and codifying special terminology used in intensive professional communication.

References

Academic. (2022). *Academic Dictionaries and Encyclopedias*. Retrieved from https://dic.academic.ru/dic.nsf/ruwiki/166336

Asher, N. (2011). *Lexical meaning in context* (pp. 1-280). Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511793936

Formela, K., Neumann, T., & Weintrit, A. (2019). Overview of definitions of maritime safety, safety at sea. *International Journal on Marine Navigation and Safety of Sea Transportation, 13*(2), 285-290. http://dx.doi.org/10.12716/1001.13.02.03

Gubanov, D., & Novikov, D. (2014). Analysis methods for the terminological structure of a subject area. *Automation and Remote Control, 75*, 2231-2247. https://doi.org/10.1134/S0005117914120133

International Maritime Organization. (2015). *Model Course 3.17* (pp. 1-228). Maritime English, London.

International Maritime Organization. (2022). *International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code)*. Retrieved from https://www.imo.org/en/OurWork/HumanElement/Pages/ISMCode.aspx

Lushnikov, E. M. (1995). *Theoretical grounding of methods and means of navigation safety ensuring (Teoreticheskoye obosnovanie metodov i sredstv obespesheniya navigatsionnoi bezopasnosti moreplavaniya)* (pp. 1-240) (*in Russian*). Summary of the Dissert, SP.

Oil Companies International Marine Forum. (2022). *International Safety Guide for Oil Tankers and Terminals (ISGOTT 6)*. Retrieved from https://www.ocimf.org/publications/books/international-safety-guide-for-tankers-and-terminals-1

Skorokhodov, A. D., Borisova, F. L., & Borisov, D. V. (2017). *Categories and principles of ensuring safety of navigation (Kategorii I Printsipy obespesheniya bezopasnosti moreplavaniya)* (p. 546-547) (*in Russian*). Vestnik MGTU.

STCW Convention. (2018). *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers*. London: International Maritime Organization.

Tkachyova, L. B. (1987). *Major regularities of the English terminology (Osnovniye zakonomernosty angliiskoy terminologii)* (pp. 1-200) (*in Russian*). Tomsk, Томск: Izd. Tomskogo Univta.