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Mandjak Tibor, Lavissiere Alexandre, Hofmann Julian, Bouchery Yann, Lavissiere Mary Catherine, Faury Olivier, Sohier Romain

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Port Marketing from a Multidisciplinary Perspective: A Systematic Literature Review and Lexicometric Analysis

Authors

MANDJAK, Tibor, EM Normandie, Le Havre, France

tmandjak@em-normandie.fr

LAVISSIERE, Alexandre (corresponding author)

alavissiere@em-normandie.fr

EM Normandie, Le Havre, France

30, rue de Richelieu, Le Havre

76600 France

HOFMANN, Julian, EM Normandie, Le Havre, France

jhofmann@em-normandie.fr

BOUCHERY, Yann, EM Normandie, Le Havre, France

ybouchery@em-normandie.fr

LAVISSIERE, Mary Catherine, EM Normandie, Le Havre, France

mclavissiere@em-normandie.fr

FAURY, Olivier, EM Normandie, Le Havre, France

ofaury@em-normandie.fr

SOHIER, Romain, EM Normandie, Le Havre, France

rsohier@em-normandie.fr

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Abstract

This paper aims at a systematic analysis of previous academic research on port marketing. First, we posit that port marketing is multidisciplinary by essence, and we analyze whether our assumption is reflected in the academic literature. Second, this paper aims at identifying the theoretical foundations of port marketing in the academic literature. With these two objectives in mind, we first conduct a large systematic literature review, and we identify 369 relevant academic publications over the last 40 years. Second, we implement an automated content analysis – a lexicometric analysis – on the 369 identified articles dealing with port- and marketing-related topics to analyze whether a conceptual field linking port and marketing appears in the literature.

Despite the large existing academic research dealing with port marketing, our results do not confirm the expected multidisciplinary embodiment of port marketing (e.g., involving combined work done by researchers from both (per se) independent fields). Hence, considering (theoretical) concepts from the domain of marketing management research might leverage further research on the value creation done by ports.

Moreover, our lexicometric analysis highlights the lack of a clear theoretical foundation of port marketing as a holistic concept. We conclude in proposing a pathway towards such a framework and outline specific topics for further research to foster such a holistic port marketing concept.

Highlights

Port marketing is assumed to be multidisciplinary by nature.

Current lack of strong and flexible theoretical base.

Port marketing literature is divergent, and it is promising to carve out a theoretical framework.

Relational approach based on business-to-business marketing offers a possible theoretical framework.

Keywords

Port marketing, multidisciplinary research, business-to-business marketing, lexicometric analysis, systematic literature review

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Port Marketing from a Multidisciplinary Perspective: A Systematic Literature Review and a Lexicometric Analysis

1 Introduction

As ports are important facilitators of international trade, they enable an international division of labor leading to worldwide economic growth. For instance, more than 70% of global trade by value is handled by ports (Shi and Li, 2017). A crucial link in international supply chains, ports reflect a substantial proportion of a manufactured product's value chain in terms of inbound and outbound logistics (Porter, 1985). Apart from obvious geographic boundary conditions, successfully managing ports requires incorporating many internal as well as external stakeholder groups. Crucial internal stakeholder groups are, for instance, terminal operators and port authorities. However, ports also need to be considered (and managed) as parts of business networks that incorporate external stakeholder groups, such as municipalities and different kinds of intermodal transport connecting ports with their hinterland as well as companies supplying and/or demanding goods. Thus, successfully outstripping competition among ports means incorporating dynamic business networks.

Extensive literature exists on the question of which factors drive the competitiveness of ports. Recently, scholars have published review articles dealing with port-choice in container markets (Martínez Moya and Feo Valero, 2017), marketing strategies of port authorities (Parola et al., 2018), themes and tools of maritime research (Shi and Li, 2017) and drivers of port competitiveness (Parola et al., 2017, Lagoudis et al., 2017). Generally, all these articles emphasize the increasing competitive pressure that ports are facing. Their results highlight the centrality of maritime and inland connectivity, the efficiency of port operations, and the endowment of infra and suprastructures (e.g., Parola et al., 2017). Moreover, the overall economic and business-related importance of ports is reflected in earlier secondary review articles (e.g., Pallis et al., 2010; Woo et al., 2012).

Furthermore, the existing literature deals with the aforementioned topics from a maritime policy or transport research point of view. However, we think considering the concept of marketing to be an integrated management approach can contribute to understanding port management. The American Marketing Association defines marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (www.ama.org). According to this definition, we are convinced that researchers as well as practitioners benefit from considering all management activities according to their value creation potential.

Nevertheless, to the best of our knowledge, there exists no study that provides an empirical systematic review of the existing literature in this field. The existing review articles provide very important first insights, but they remain on the level of narrative reviews that summarize previous research. Against this background, we present the results of a computerized content analysis (Krippendorff, 2004) – a lexicometric analysis –based on a systematic literature review (Palmatier et al., 2018) on studies dealing with different port marketing-related topics.

These results enable us to derive fruitful insights on how to contribute to a more rigorous conceptualization of port marketing as a holistic management concept.

Therefore, the goal of our paper—our focal research question—is to assess the current state of port marketing in the academic literature. More precisely, we want to understand two aspects. First, we posit that port marketing is multidisciplinary in essence, and our intention is to assess whether this emerges from the academic literature. Second, we aim at assessing the theoretical background of port marketing by identifying its current conceptual framework in the literature. That is why the second part of our contribution aims at strengthening a conceptual framework of port marketing research. This enables us to understand how marketing can leverage the value ports are creating.

In the next section, we summarize the background of our research. The third section is dedicated to the presentation of our methodology and the main bibliometric results of the systematic literature review. In our fourth section, we present the results of our lexicometric analysis. In the fifth section, we provide managers as well as practitioners with important implications of our findings. Finally, we provide a short conclusion outlining avenues of further research in the last section.

2 Background of the research: Reasoning for a multidisciplinary approach

In 2017 and in the first half of 2018, five literature reviews were published concerning different port marketing aspects. Lagoudis et al. (2017) and Parola et al. (2017) investigate port competitiveness in a general way. Martínez Moya and Feo Valero (2017) focus on port-choice in the container market. Shi and Li (2017) review research themes and methodologies of the maritime transport throughout the publications of the 21st century. Finally, Parola et al. (2018) derive marketing strategies for port authorities.

In their critical review of the literature Parola et al. (2017) highlight main dimensions of port competitiveness as follows: the centrality of maritime and inland connectivity, efficiency of port operations, and endowment of infra and suprastructures. They also observe a paradigm shift from maritime-related to hinterland-related factors of port competitiveness. Based on the analysis of 30 years of literature, Lagoudis et al. (2017), underline port productivity and port efficiency resulting in port selection as main dimensions of port performance and port competitiveness. The geographical profile of port competition studies indicates that most of the ports analyzed are European ports, followed by Asian ports and North American ports. Accordingly, the authors point out the lack of papers focusing on developing regions (Lagoudis et al., 2017).

Regarding the container market, Martínez Moya and Feo Valero (2017) study the role of port authorities when shipping and landside actors make port-choice decisions. They conclude that port-choice criteria are different in function of whether the factors are under the control of port authorities or not, on the one hand, or whether it is a maritime traffic or an inland shipment, on the other. For interoceanic traffic, the primary factors of port-choice are port

costs, geographical location, hinterland connection, port infrastructure, and port efficiency (Martínez Moya and Feo Valero, 2017).

Finally, Parola et al. (2018) elaborate in a recent work on the important role of port authorities form a marketing perspective. Based on 86 qualitative interviews conducted at port authorities they derive a multidimensional framework on the strategic positioning of port authorities. The authors derive five marketing objectives on different levels of interaction (e.g., business-to-administration).

Overall, the literature reviews also highlight different further research questions related to the competition of ports. Some of the authors' solutions concern operational questions. Lagoudis at al. (2017) propose investigating the link between operational and financial performance whereas Parola et al. (2017) propose studying the consequences of the growing economies of scale in shipping. Other future research themes are more related to different managerial fields like the investigation of the influence of the port authorities' strategies on the actors' decision-making process to identify the *real* decision maker (Martínez Moya and Feo Valero, 2017). Parola et al. (2017) propose studying the institutional change in port governance due to pressure imposed by green and sustainability challenges. There are also proposals concerning competition like the intraport competition (Lagoudis at al., 2017) or the rise of co-opetition among ports in proximity (Parola et al., 2017), the network as the port-choice criteria by the industry (Martínez Moya and Feo Valero, 2017) or the development of interfirm networks (Parola et al., 2017).

These literature reviews show researchers' increasing interest concerning the different questions and matters of port competition. One part of further research could focus on firm level questions. The other part could be directed towards broader elements of port competition, namely the local or international networks. Marketing, closely cooperating with other disciplines, seems to be in a good position to propose some successful solutions to these and other important questions.

In the fields which are at the intersection of two or more disciplines (McDougall and Oviatt, 2000) researchers may tend to specialize in one discipline or the other, with the result that studies are well constructed and theory based in one field, yet perhaps deficient in the other. As Coviello and Jones (2004) emphasize resolving the imbalance in knowledge contribution from different disciplines, collaboration among different fields is desired and necessary. Thus, a multidisciplinary approach may combine the crucial qualities of theories and models of different, but related fields. It may also create the base of a strong and flexible theoretical framework of port marketing.

3 Methodological approach

3.1 Characteristics of a systematic literature review

The systematic literature review approach has its roots in medical research and is now considered a powerful tool in other disciplines, including psychology, information systems, and business and management (Senivongse et al., 2017). A systematic literature review "is

based on a clearly formulated question, identifies relevant studies, appraises their quality and summarizes the evidence by use of explicit methodology. It is the explicit and systematic approach that distinguishes systematic reviews from traditional reviews and commentaries" (Khan et al., 2003, p. 118). An important characteristic of a systematic literature review is that it takes a concept-centric approach. It means that the concepts determine the organizing framework of a review (Senivongse et al., 2017).

In a systematic literature review, the researcher always forms the research question before the beginning of the review (Boell and Cecez-Kecmanovic, 2015). This provides a solid pathway to guide what the researcher is looking for, allowing the formulation of a meaningful survey of the literature. With predefined research questions, the researcher can look for evidence from the literature. This is considered a more direct approach to developing a good support-based literature review (Khan et al., 2003).

Durach et al. (2017) emphasize that regardless of the field, discipline, or philosophical perspective, systematic literature reviews commonly follow six steps: (1) defining the research question, (2) determining the required characteristics of primary studies, (3) retrieving a sample of potentially relevant literature, (4) selecting the pertinent literature, (5) synthesizing the literature, and (6) reporting the results. Moreover, Tranfield et al. (2003) draw on previous guidelines to provide the adaptation of systematic literature reviews to the management field. We basically follow these two approaches outlined by Tranfield et al. (2003) and Durach et al. (2017). In the following subsection 3.2, we describe the application of the process from step 1 to step 4. Later, we elaborate on step 5 and 6 in the sections 4 and 5.

3.2 Steps in defining the relevant literature base

Step 1: Research question

The goal of our paper—our focal research question—is to assess the current state of port marketing in the academic literature. More precisely, we mainly want to assess two aspects. First, we posit that port marketing is multidisciplinary by essence and our attention is to assess whether this holds in the academic literature. Second, we aim at assessing the theoretical background of port marketing by highlighting its conceptual framework.

Step 2: Required characteristics of primary studies

We include in our systematic literature review only articles published in refereed journals. We do not consider book chapters, articles in conference proceedings, Ph.D. dissertations, or management reports. While these resources also contain relevant information, we limit ourselves to peer reviewed journal articles to ensure synthesizing work that meets quality assessments in a comparable way. As we posit in this work that port marketing is multidisciplinary by essence, we do not limit our search to the most important field journals. Instead, we consider all scientific journals referenced in the subsequently described scientific database.

Step 3: Sample of potentially relevant literature

We conducted a keyword search on Scopus (Elsevier) to identify a first set of relevant articles. We selected the Scopus database in accordance with recent literature reviews in the field (see, for example, Parola et al., 2017). Scopus is recognized as one of the databases with the largest coverage, which is of key interest when conducting multidisciplinary research. We limit our search to the articles published from 1978 to 2017 to reflect the last 40 years of research on port marketing.

A group of experts from different disciplines (including maritime economics, transport geography, operations management, marketing, and international business networks) agreed on the most relevant keywords to include in the search. First, we determined the keywords related to marketing. Our starting points were the abovementioned marketing definition of the American Marketing Association and the definition of Weitz and Wensley (2002) in their Handbook of Marketing. They claim that "marketing is the study of relationships between buyers and sellers, between firms and their markets, marketing managers and their customers. Clearly effective marketing is based on a thorough understanding of the needs and buying behaviors of customers, both consumers and organizational buyers, and both as collectivities and as individuals" (Weitz and Wensley, 2002: 3). The choice of "Marketing" as a keyword is evident. "Value creation" is the essential part of any marketing activity. "Competitiveness" (completed by "Competition") is, on one hand, one of the general characteristics of market economy (Hunt, 2000) and consequently of the environment on which the marketing activities are happening. On the other hand, from a focal company's point of view "Competitiveness" means the efforts to satisfy their target customers (Jain, 2013) and at the same time to cope with their competitors. "Attractivity" (completed by "Attraction" and "Attractiveness") is the other side of the competitiveness, as it means how the customers perceive the marketing activities of the competing companies (Ellegaard et al., 2003, Wilkinson et al., 2005).

Second, we selected keywords related to port. "Port" is a straightforward choice. Then, we reflected the two sides of the port interface by selecting "Maritime" (completed by "Shipping") for the foreland side of port operations and "Hinterland" to account for the growing importance of inland operations.

We then conducted a search in Scopus for those keywords in the articles (including title, keywords, and abstract) by combining one word related to port and one word related to marketing. For instance, we searched for ("Maritime" OR "Shipping") AND ("Competitiveness" OR "Competition"). This results in 12 lists of articles (by combining one of the three port related keywords and one of the four marketing related keywords) including in total 1,945 occurrences. The number of occurrences for each of the 12 combinations appears in Table 1.

	Port	***Hinterland***	***Maritime or Shipping***
Marketing	*113*	*14*	*255*
Competitiveness or Competition	*621*	*116*	*644*
Attractivity or Attraction or Attractiveness	*86*	*31*	*50*
Value Creation	*7*	*1*	*7*

Table 1 The number of occurrences for each combination of keywords

Step 4: Selecting the relevant literature

Note that some articles appear in several lists leading to several occurrences of the same article. The database includes 1,502 individual articles with an average occurrence of 1.29 per article. For each of the 1,502 articles, two members of the team of authors were randomly assigned to decide for inclusion in the follow up stages. We can notice form Table 1 that Competitiveness" OR "Competition" combined with a port related keywords generate 71% of the occurrences." Many articles were rejected as they were not related to port logistics (i.e., port is used with a different meaning in computer science and medicine for instance). Then, we excluded articles not dealing with a maritime port (e.g., a dry port or an inland port). We also excluded articles not mentioning any of the internal port stakeholders in the title, keywords or abstract. For instance, articles dealing with marketing activities of shipping lines were excluded if the connection with port marketing was not made. Finally, in several consensus meetings, conflicting assignments were resolved to obtain a final list of 369 articles. The references of the 369 articles selected appear in Appendix 1. Table 2 below highlights the results for each keyword search. Note that some articles appear as the result of several combination of keywords as seen in Table 1.

	Port	***Hinterland***	***Maritime or Shipping***
Marketing	*24*	*2*	*10*
Competitiveness or Competition	*319*	*59*	*150*
Attractivity or Attraction or Attractiveness	*21*	*5*	*9*
Value Creation	*5*	*1*	*0*

Table 2 The results for each keyword combination

Table 2 includes 605 occurrences, i.e., an average occurrence per article of 1.64. The increase in the average occurrence per article is a sign of consistency as we can expect that the relevant articles often include several keywords related to port and several keywords related to marketing in the title, keywords, and abstract. Moreover, the combination of the two keywords "Port" AND "Marketing" is apparently not the most predominant result. These two keywords appear together in only 24 of the 369 selected articles. This low proportion may have several explanations. The marketing concept in general is perhaps more focused on the *operational* aspects of marketing, namely on the different marketing mix parameters (McCharty, 1960; Show and Jones, 2005) and, among them, particularly on the pricing

parameter. Consequently, the literature covers more *strategic* aspects of marketing (Lambin, 2007) as market knowledge, segmentation or targeting to a lesser extent.

Comparatively, "Port" AND ("Competitiveness" or "Competition") appear in 319 of the 369 selected articles. We refer to Parola et al. (2017) for an in-depth literature review on port competitiveness. However, limiting port marketing to port competitiveness does not enable a more general conceptualization of port marketing.

3.3 Descriptive bibliographic results

Figure 1 below illustrates the number of publications per year in our dataset from 1978 to 2017. We notice that the number of publications per year has rapidly increased during the last decade. This can be partly related to the global expansion of the number of articles published in peer reviewed journals during the last decade in general as well as partly related to an increase in the economic and business importance of port marketing elements.

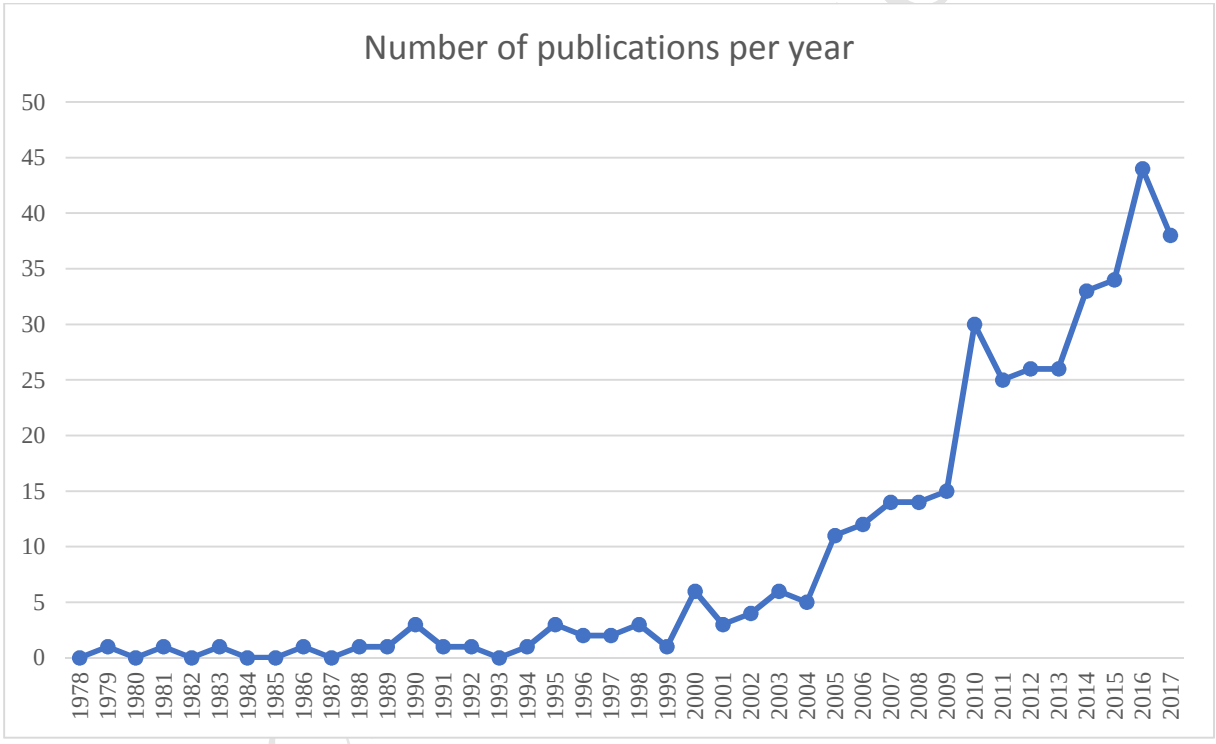


Figure 1 Number of publications per year in our data set from 1978 to 2017

Table 3 provides the most well-represented journals as well as the number of occurrences in our database of 369 articles. Note that this table includes all journals with at least three articles listed. Not surprisingly, the journals from the area of Maritime Economics and Transport Geography are the most represented ones. However, we can notice that 27% of the articles in our database are published in journals with less than three occurrences. This shows the variety and the multidisciplinary nature of the issues related to port marketing.

Maritime Policy & Management	61
Maritime Economics & Logistic	33

The Asian journal of shipping and logistics	20
Research in Transportation Business & Management	18
Journal of Transport Geography	16
International Journal of Shipping and Transport Logistics	13
Transportation Research Part A: Policy and Practice	12
Transport Reviews	10
International Journal of Transport Economics	9
Pomorstvo: Scientific Journal of Maritime Research	9
Transport Policy	9
Transportation Research Part E: Logistics and Transportation Review	9
PROMET-Traffic&Transportation	8
Transportation Journal	5
Transportation Research Part B: Methodological	5
Growth and Change	4
International Journal of Logistics Research and Applications	4
Research in Transportation Economics	4
Transportation Planning and Technology	4
Asia Pacific Viewpoint	3
European Transport Research Review	3
Polish Maritime Research	3
Tijdschrift voor economische en sociale geografie	3
Transport	3

Table 3 The most well-represented journals

In our database, there are 52 articles with four authors or more (up to 7 authors) and an average number of authors per article of 2.5. The following Table 4 highlights the authors who appear the most in our database. All the authors with at least five publications included in our database are listed. We additionally provide the country of their current affiliation based on further screenings on their institution websites.

Name	**Number of publication**	**country of affiliation**
Lam, J. S. L.	15	Singapore
Notteboom, T.	12	Belgium
Pallis, A. A.	8	Greece
Yeo, G. T.	8	Korea
Zhang, A.	8	Canada
Parola, F.	7	Italy
Song, D. W	7	UK
Cullinane, K.	6	Sweden
Yap, W. Y.	6	Singapore
Chang, Y. T.	5	South Korea
Ng, A. K.	5	Canada
Twrdy, E.	5	Slovenia
Wang, Y.	5	USA

Table 4 The most active authors in the field of port marketing

3.4 Lexicometric analysis procedure: Lexicometric analysis with Iramuteq

Lexicometric analysis is a powerful approach to the study of textual data. It has been used in different scientific domains, as well as professional domains, for example in companies conducting market studies (Helme-Guizon and Gavard-Perret, 2004). Through analyses carried out with the aid of software such as Alceste or Iramuteq, this method allows researchers to make inferences about qualitative textual data in a systematic and quantitative manner (Abhayawansa, 2011). In essence, these programs link qualitative and quantitative methods (Giannelloni and Vermette, 2001). The statistical analyses (Reinert, 1990) of the texts (i.e., the included articles) carried out by the programs can reveal existent clusters of concepts in the texts (Krippendorff, 1989), allowing automated textual analysis to code words in a systematic fashion and one that reduces bias (Illia et al., 2014; Macke et al., 2018).

While this method may be new to the port domain, other social sciences and management sciences have exploited its capacity to conceptualize themes that emerge from a corpus — a set of texts collected for analysis —thanks to the statistically created classes of words which the authors of the corpus frequently link together. For example, Chanel et al. (2014) use this method to extract factors motivating land-use policies in the South of France from a corpus of semidirective interviews. Guerrero et al. (2008) apply this method to transcriptions of focus groups in order to understand the cross-cultural differences in definition and innovation concerning traditional food products. While the studies cited are two of many that have used this tool on original textual data in management sciences, several research groups have exploited this tool to study a corpus of academic literature. Mathieu and Roehrich (2005) chose this method to study researchers' definitions of marketing throughout the history of this management science. Plumecocq (2014) uses this method to study the evolving discourses in the field of ecological economics in a substantial corpus of abstracts. Finally, in the domain of entrepreneurship, Macke et al. (2018) used this method as part of their systematic literature review process. Thus, for our study, lexicometric analysis seemed a promising method for understanding the structure and the tendencies of port marketing in multidisciplinary academic literature—such as maritime economics, marketing, logistics, supply chain management, and transport geography.

Iramuteq is an open-access software based on the linguistic method outlined in Reinert's 1990 article (Smyrnaios and Ratinaud, 2017). Reinert's method aims to discover representations found in a specific corpus or body of texts by calculating the statistical distribution of lexical elements such as nouns, verbs, adjectives, and adverbs (Reinert, 1990). The linguistic assumption behind this method is that when an author places two lexical elements within a certain distance, generally that of a clause, she is creating a representation that connects these two elements (Reinert, 1990). Following this reasoning, in a corpus containing texts from various authors, the reoccurrence of two or more lexical elements together indicates that these two or more elements form a *conceptual field*. Conceptual fields differ from lexical fields in that the latter are words that are always associated with certain representations whereas the former emerge from the specific lexical distribution in a given corpus (Reinert, 1990). For instance, the words *port* and *maritime* belong to the same lexical field. The connection

between these two words is generally accepted, even without any context. The words *port* and *marketing*, however, belong to two different lexical fields.

The aim of this study is therefore to verify whether they belong to the same conceptual field in the corpus used for this study. In fact, a conceptual field emerges from the analysis of a specific corpus in which the authors choose to link elements by placing them in the same segment. A segment is a small part of the text that theoretically corresponds to a clause (a subject and its verb). Iramuteq measures the distribution of words in segments in order to build a representation of these conceptual fields. For this reason, this method was adapted to our study. It allows us to test for the association of words traditionally linked to the domain of *ports* with words traditionally linked to the domain of *marketing* to discover whether the conceptual field of *port marketing* exists in our corpus.

The articles identified were imported into Iramuteq. Then each article was coded as a *Text* with variables. Variables are the name of the author, the year of publication, the marketing keyword as well as the port keyword through which they were mined from the Scopus database. Subvariables were also added to the text to identify the title, the abstract and the body of the article. Results are described as *forms*, which is the term Iramuteq uses for lemmatized content words that include adjectives, adverbs, nouns and verbs. Lemmatization means that the words such as *runs, ran, run* are all counted under the active form *run*. *Active forms* are forms that appear more than once. Finally, a *hapax* is a word that only occurs once in a corpus. In this article, the corpus is the group of written academic articles gathered for the lexicometric analysis.

4 Results of the lexicometric analysis

4.1 Results concerning the frequency of most often used words

The lexicometric analysis was performed on a corpus composed of the 369 *Texts* including 2,617,224 occurrences of words with an average of 7,054.51 occurrences per text (i.e., around 7,054 words per article). These occurrences are made of 39,982 forms including 18,254 hapaxes (0.70% of occurrences and 45.66% of forms). There were 18,221 active forms used for the analysis.

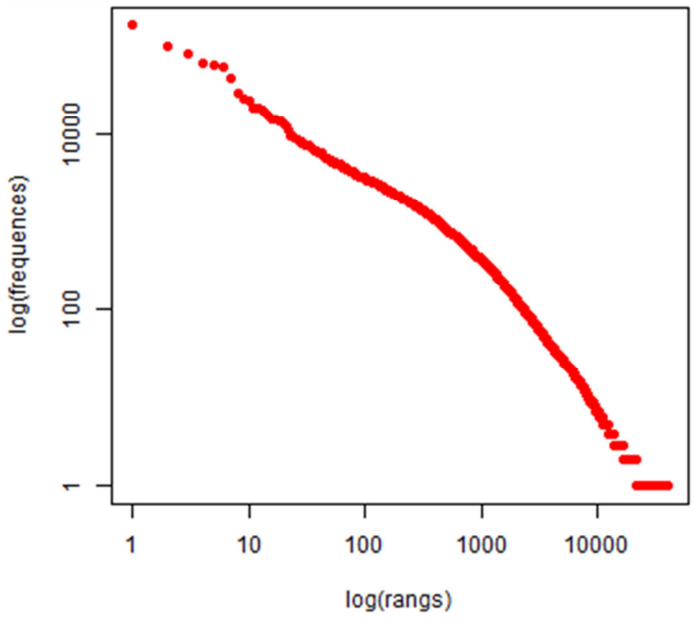
These active forms can be divided into four main categories:

- **First**, the word *port* represents almost 5% of active occurrences, showing its central importance in the overall corpus of all texts.
- **Second**, nine words each account for more than 0.4% of all active occurrences. Altogether, these nine words represent another five percent of all active occurrences. They include *container, terminal, service, cost, ship, market, model, transport*, and *competition*, (*market* being the lemmatization of *market*: 4,709 occurrences; *marketing*: 526 occurrences; *markets*: 808 occurrences; *marketed*: 4 occurrences). These words represent the core of the overall corpus.
- Subsequently, the **third** group is composed of another 82 words that represent, together with the first two groups, the top tier of the active occurrences.

- Finally, the **fourth** group represents the rest of the words and amounts for two-thirds of the overall occurrences and 99.69% of all forms.

In sum, 93 words (0.31% of all forms) represent one third of all active occurrences of the overall corpus. The ratio of this small subset of words in the overall corpus shows that we have a consistent corpus. Indeed, these active forms centrally characterize this corpus: all authors of the 369 academic articles included chose these 97 active forms to write their various studies related to port and marketing. Given this consistent corpus, a statistical method that studies their co-occurrences (i.e., the occurrence of combinations of those words), by means of a lexicometric analysis using Iramuteq, indicates links or conceptual connections the authors intended to make between the underlying concepts represented by these words.

Therefore, the words from the three first groups were selected for the main analysis. Figure 2 shows the logarithmic distribution of active forms in the overall corpus. Concerning the words for selection of the articles, they are predictably present in the top occurrences, with the exception of *attractiveness*. We notice also that marketing-related words appear after port-related words rather than appearing interspersed.



Rank	Form	Occurrences	share on total occurrences
1	port	63080	4,8%
2	container	11723	0,9%
3	terminal	9248	0,7%
4	service	8829	0,7%
5	cost	8475	0,6%
6	ship	7816	0,6%
7	market	6047	0,5%
8	model	5860	0,4%
9	transport	5571	0,4%
10	competition	5119	0,4%
	...		
22	value	3906	0,3%
27	hinterland	3537	0,3%
	...		
46	competitiveness	2934	0,2%
68	competitive	2492	0,2%
	...		
554	attractiveness	485	0,04%
984	attractive	242	0,02%

Figure 2 The logarithmic distribution of active forms in the overall corpus

4.2 Results on the occurrence of combinations of the most often used words

As explained in the previous section, Iramuteq breaks down texts into smaller parts called segments. These segments are based on punctuation and on size criteria[1]. Iramuteq classifies these segments into clusters based on the distribution of words. The analysis of the proximity of words in segments and the recurrence of this proximity indicates the existence of a conceptual field. Moreover, the closer two words appear together in segments, the stronger

[1] The authors used the size of segment given as default in the software: 40 words per segment. This corresponds to the general length of a clause, a subject and its verb.

the indication of the existence of an underlying conceptual field. Even though two concepts may belong to different lexical fields, a high frequency of occurrence in the same segment indicates that a conceptual field containing both exists for the authors. This method is called similarity analysis.

First, a similarity analysis was run with the word *port* (Figure 3). This analysis provides a representation centered on this concept and a few groups of concepts that are strongly enough interlinked to be independent from *port*. These groups are *supply chain*, *Hong Kong* and *ship(ping) line*. There is no marketing-related concept forming such a group that is strongly enough interlinked to be independent from *port*. This latter point tends to show that the two concepts of *port* and *marketing* are not considered as equally important concepts in the literature. Obviously, it seems that previous research applies marketing to port rather than considering ports as a subfield of marketing studies.

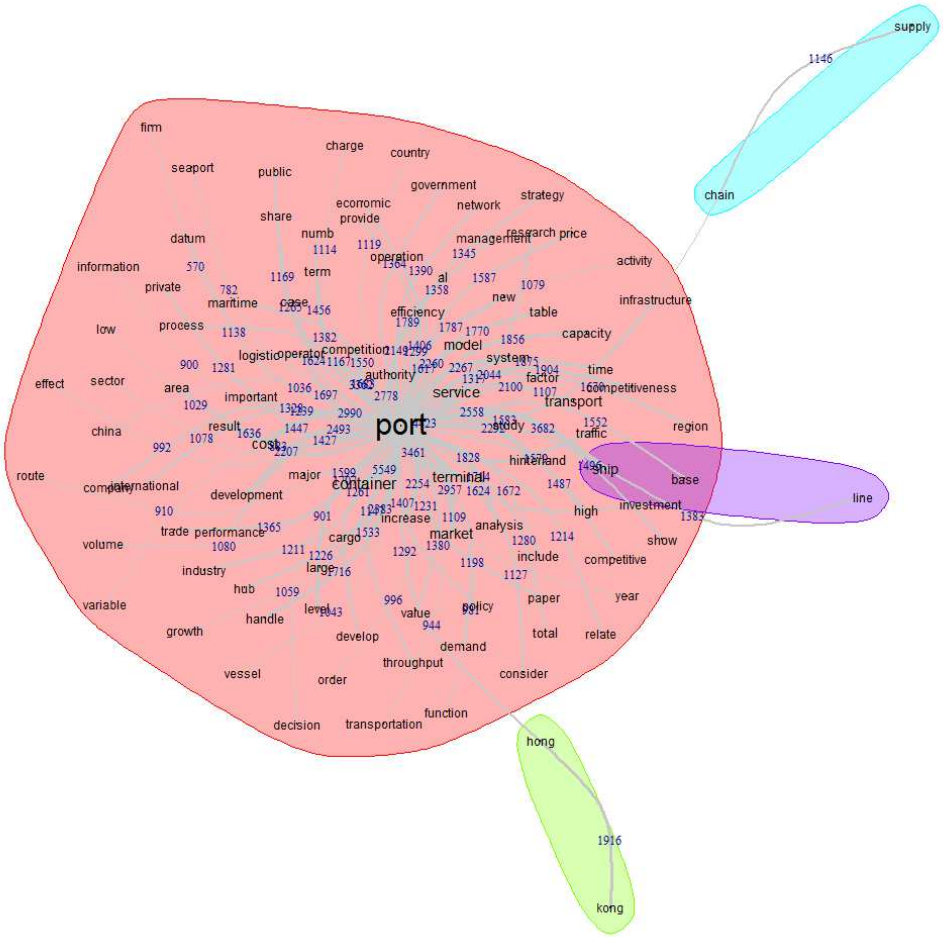


Figure 3 Similarity analysis centered on the word *port*

Second, conducting this lexical similarity analysis on the subset of the second most often used words (i.e., *container*, *terminal*, *service*, *cost*, *ship*, *market*, *model*, *transport*, and *competition*), but without the central concept of port, enables us to look deeper into the underlying conceptual fields (Figure 4). There are twelve groups of concepts that are interrelated around six of the main concepts (i.e., *container*, *terminal*, *service*, *cost*, *ship*,

market, *model*, *transport*, and *competition*). *Container*, being the most occurring word is at the center of the mapping with eight connected groups:

- three of these eight groups are related to methodology of research (*study, case, research – table, result, datum – model, variable, decision*);
- one of these eight groups concerns a specific port (*Hong Kong*);
- one of these eight groups concerns marketing (*market, share, competitive*);
- one of these eight groups concerns IT (*system, development, information, process*); and
- one of these eight groups concerns economy (*development, economic, activity*).

Then, there is a branch of groups going from *container* to *ship*, next to *service*, and finally leading to *cost*. Within this chain of concepts, the group around *service* contains concepts of marketing (*value, price, demand*) and two subbranches, one towards *supply chain* and the other one towards *factors* of *competitiveness*.

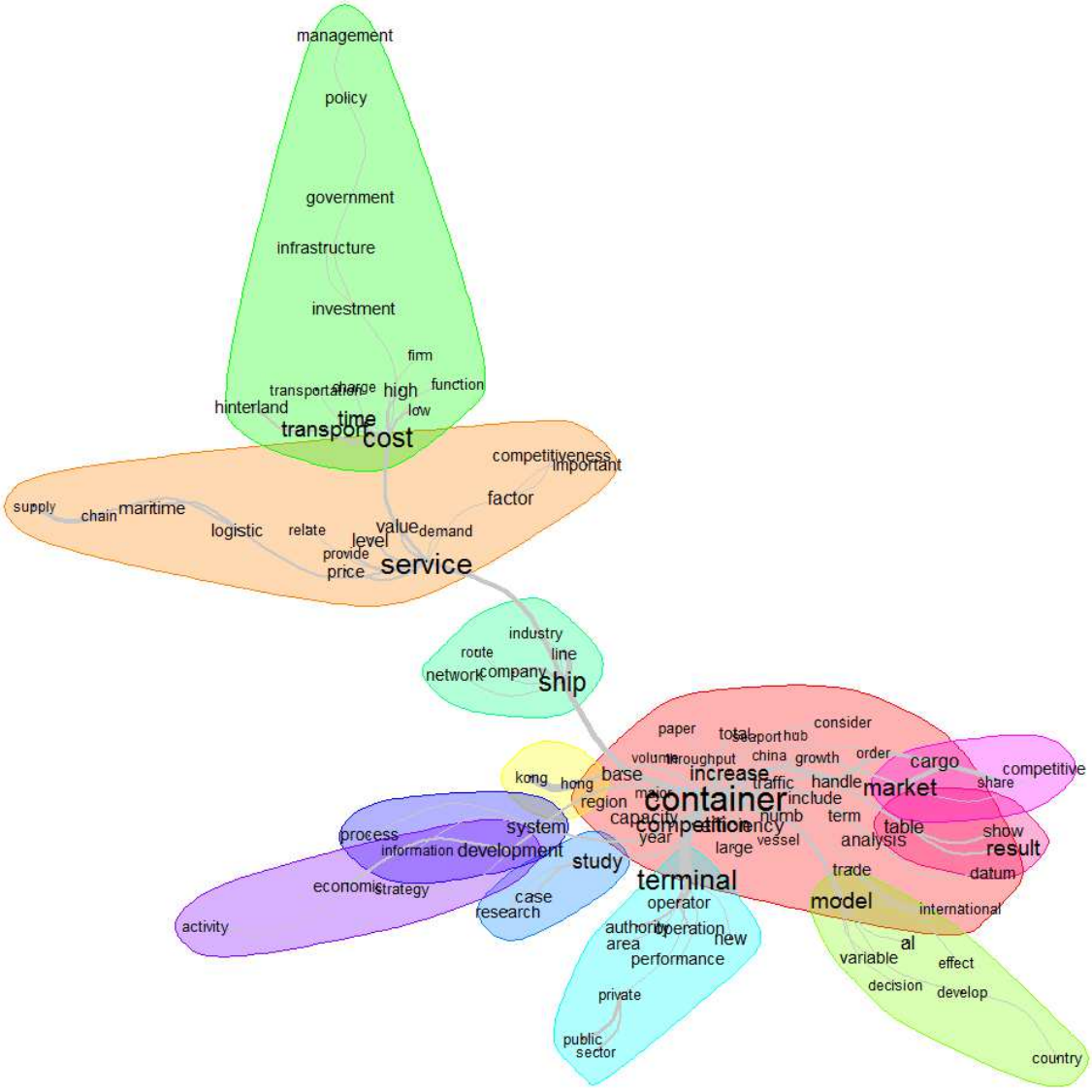


Figure 4 Similarity analysis centered on the words *container*, *terminal*, *service*, *cost*, *ship*, *market*, *model*, *transport*, and *competition*

Third, to identify conceptualizations of marketing in this domain, i.e., based on the recurrence of proximity between two words indicating the existence of a conceptual field, we used *market* (being the lemmatization of *marketing*, *markets*, and *marketed*) in our lexical similarity analysis (Figure 5). As a result, two branches emerge. The first one leads to *competition*, which divides into one sub-twig on *price* and another sub-twig on *line operators*. Further, *competition* leads to *model* that is split into a group connected to *study* and a group connected to *result*. The second branch leads via *increase* of markets with one sub-twig concerning *increase* of *capacity* (*investments*, *infrastructure*, *government*, *policy*), and the other sub-twig concerning increase of *traffic*, *volume*, and *cargo*. This *increase* of *cargo* leads then to groups concerning *transport*, *development*, *trade*, and *supply chain*.

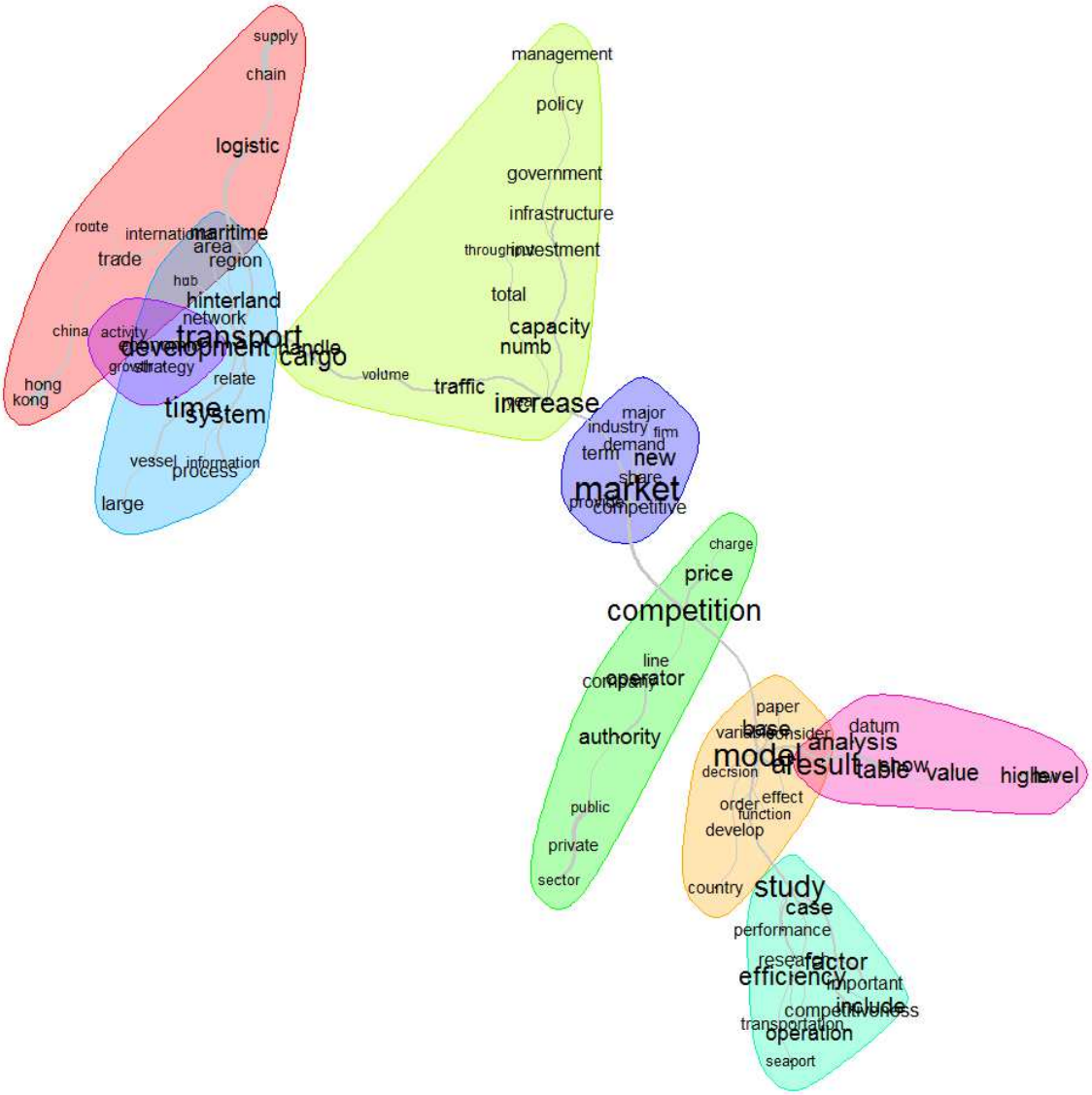


Figure 5 Similarity analysis centered on the word *market*

4.3 Factorial correspondence analysis

While similarity analysis shows an interesting state of the corpus organization of main concepts, Reinert (1990) recommends the use of a factorial correspondence analysis (Hirschfeld, 1935) in order to identify the main groups of relations in the corpus in detail. Carrying out a factorial correspondence analysis enables us to show (a) a dendogram based on the hierarchical clustering of words and (b) a graphical visualization of clusters of words in a two-dimensional graphical form. As a multivariate statistical technique—somewhat comparable to factor analysis—AFC enables us to rely on categorical data. Calculating chi-squared statistic-based on contingency tables (i.e., counts of the recurrence of the proximity of words indicating the existence of conceptual fields) it provides a means of displaying and summarizing a set of data in a two-dimensional graphical form (Greenacre, 2007). In our case, the results show six classes of words on two axes (Figure 7).

Prior to the interpretation of the two axes, we first inspected a dendrogram to illustrate the hierarchical clustering of the words which enables us to interpret the six identified classes of words. The six classes were divided into two main branches in the dendrogram. In order to reduce bias, the naming of these categories was done in two steps between a port scholar, a marketing scholar, and a linguist. First, a blind naming of each category by each scholar was done and, second, iterations were conducted until a compromise was found.

The first class to be generated by the model (Figure 6), meaning the most significant, is composed of business logistics words, as opposed to class 4 that is composed of port operations words. Class 2 regroups research-approach-related words while class 6 regroups methods, names, and concepts. Class 3 gathers geographical areas and concepts related to port and sea. Lastly, class 5 regroups governance concepts.

An interesting observation from this analysis is that marketing does not appear as a class while port (operations) does. The marketing concept remains in the background with words appearing in most of the classes (circled in Figure 6). This might indicate a potential lack of a theoretical foundation for port marketing as a stand-alone concept.

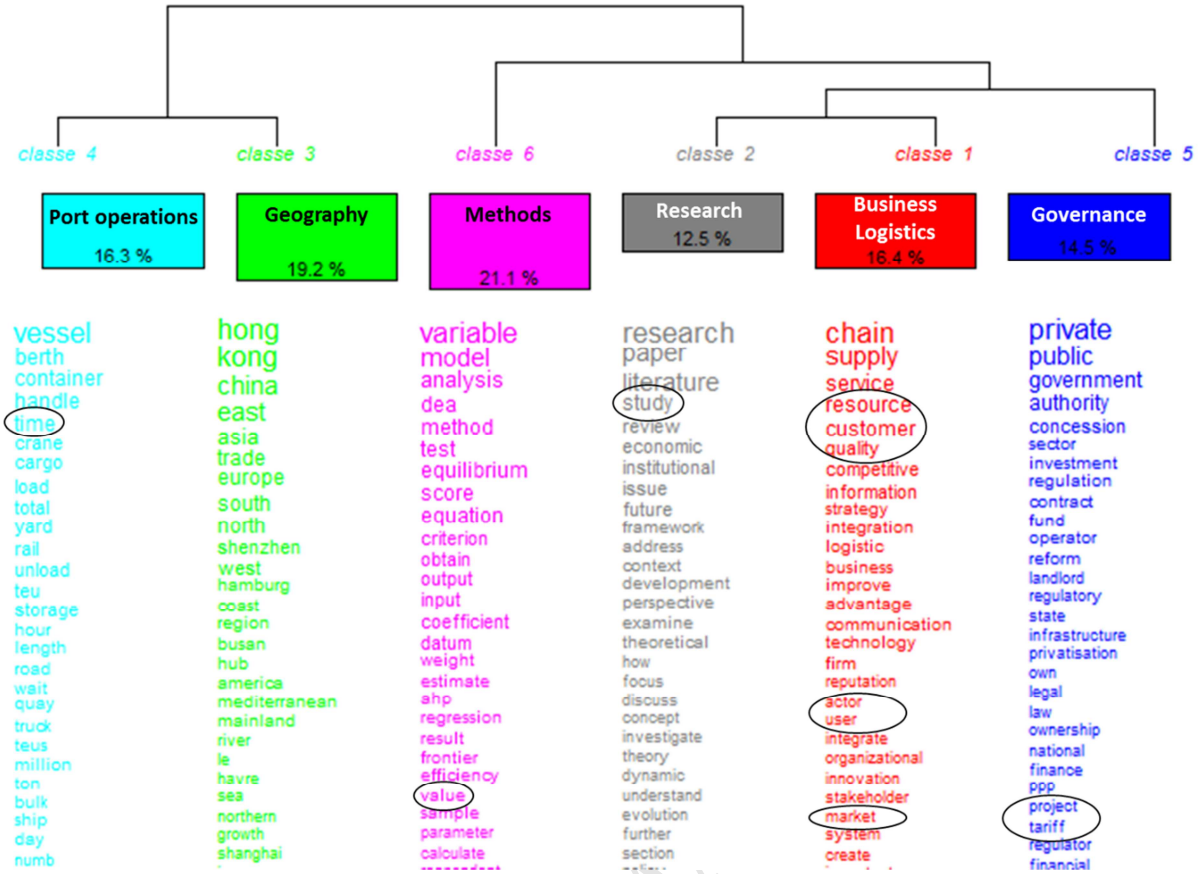


Figure 6 Dendrogram with named classes of the whole corpus

Factorial correspondence analysis statistically groups words on two axes depending on the co-occurrences of words in segments. The results show six classes of words on two axes (Figure 7). In the same manner as the six different classes have been labelled, the axes have been interpreted in two steps by the same set of interdisciplinary scholars. It appears that the first axis (factor 1) opposes abstract and concrete words. On the negative side of the axis, there are words related to modelization of reality and research. Then, closer to 0, management concepts appear. On the positive side, words go from modes of transportation, cargo, handling to geographic places. This factor 1 can be interpreted as spreading words on an abstraction axis. The second axis (factor 2) appears to distribute words on an opposition between operation and management. On the negative part (operation), there are two clouds of words constituting class 6 on methods and class 4 on port operations. Methods being operations of research goes from concepts (application of methods, names of methods, etc.) to management of research (from *conclusion*, to *review*, to *context*, until *understand*). The other side of the graph goes from port operations (*discharge*, *berth*, *handle*, *transport* …), to trade (*canal*, *export*, *trade*, *international* …), then business logistics (*service*, *improve*, *supply*, *organizational* …) to finally governance (*contract*, *concession*, *private*, *public*, *dialogue*).

Marketing concepts do not represent a significant class by themselves, but they are located around the center of the graph, which is consistent with the methodology of our research since marketing is central to the literature reviewed.

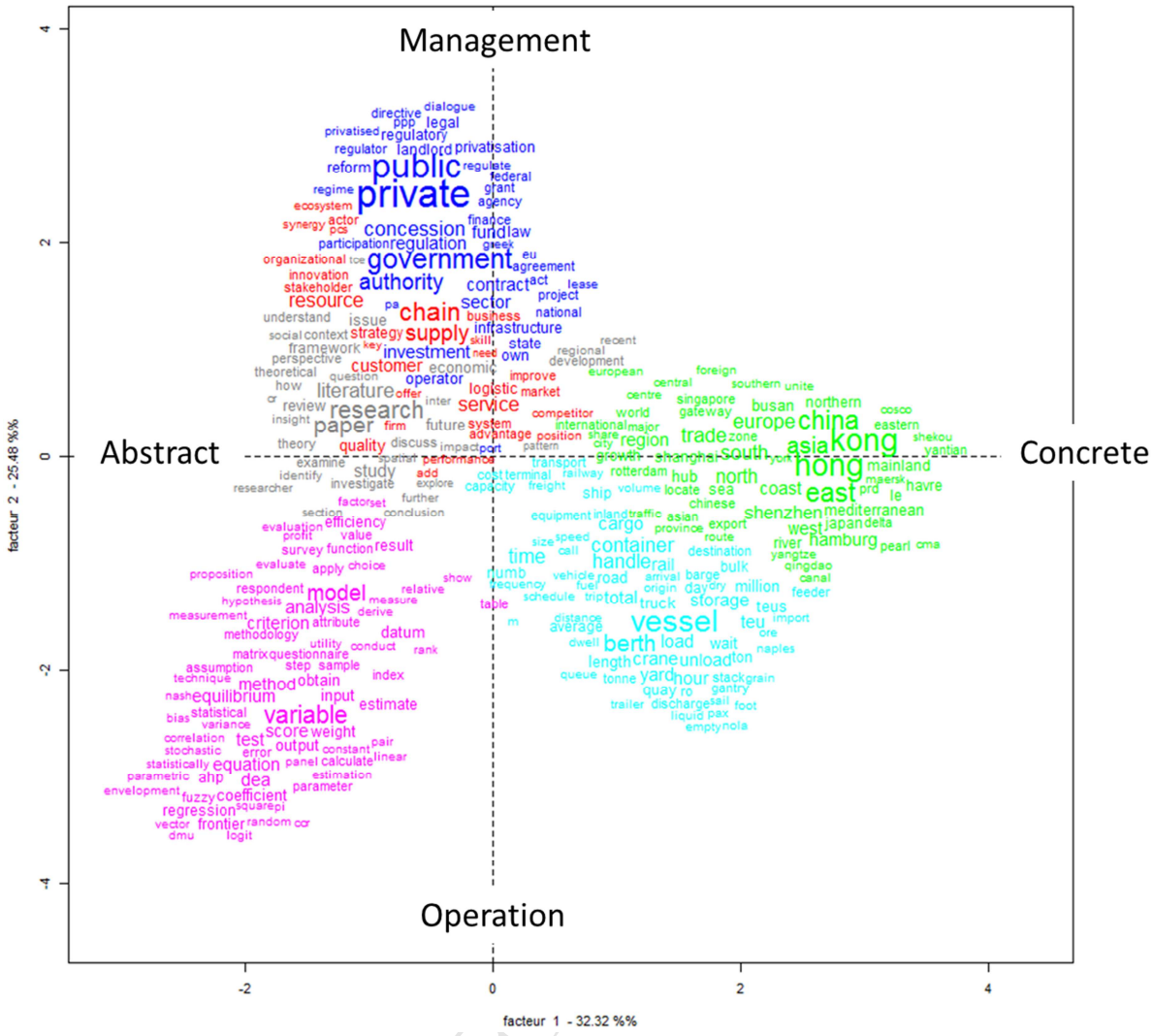


Figure 7 Clusters of the whole corpus

The graphical representation shows a propeller shape with three blades. One blade deals with methods of research. Another blade deals with transport geography and operational logistics. The last one deals with logistics management. If we exclude the methodological aspects that are intrinsic to such literature reviews, there is a dichotomy between operations logistics and management logistics of ports. Such a dichotomy already exists in the literature on logistics as well as in research communities. For example, there are two branches of development in logistics literature. On the one hand, marketing-related literature investigates distribution channels and the buffer effects of inventory to serve markets. On the other hand, production-related literature investigates the optimization of processes and costs through inventory management and route planning.

In that sense, Dornier and Fender (2007) provide a complete overview of the evolution of the definition of logistics—departing from the early twentieth centuries' authors (Clark, 1922; Crowel, 1901). These authors identify a function of physical operation management without having a very clear definition of it. Ballou (2007) explains the fact that the domains of marketing and production both claimed responsibility for physical distribution, even though distribution now belongs to the field of logistics. In 1973, however, logistics was identified as

a strategic function by Heskett (1973). Supply Chain Management attempts a theoretical reconciliation of these two approaches through supply and demand management. It seems, however, that this dichotomy still appears in the field of port studies.

In a further step, factorial correspondence analysis was performed using only the abstracts of the selected articles in order to extract the core of the research linking *port* and *marketing*. This second factorial correspondence analysis shows some similarities. However, overall there are more significant classes (Figure 8). Geography does not appear while economy, transport and trade emerge from the factorial correspondence analysis as classes. Cruise also appears very clearly.

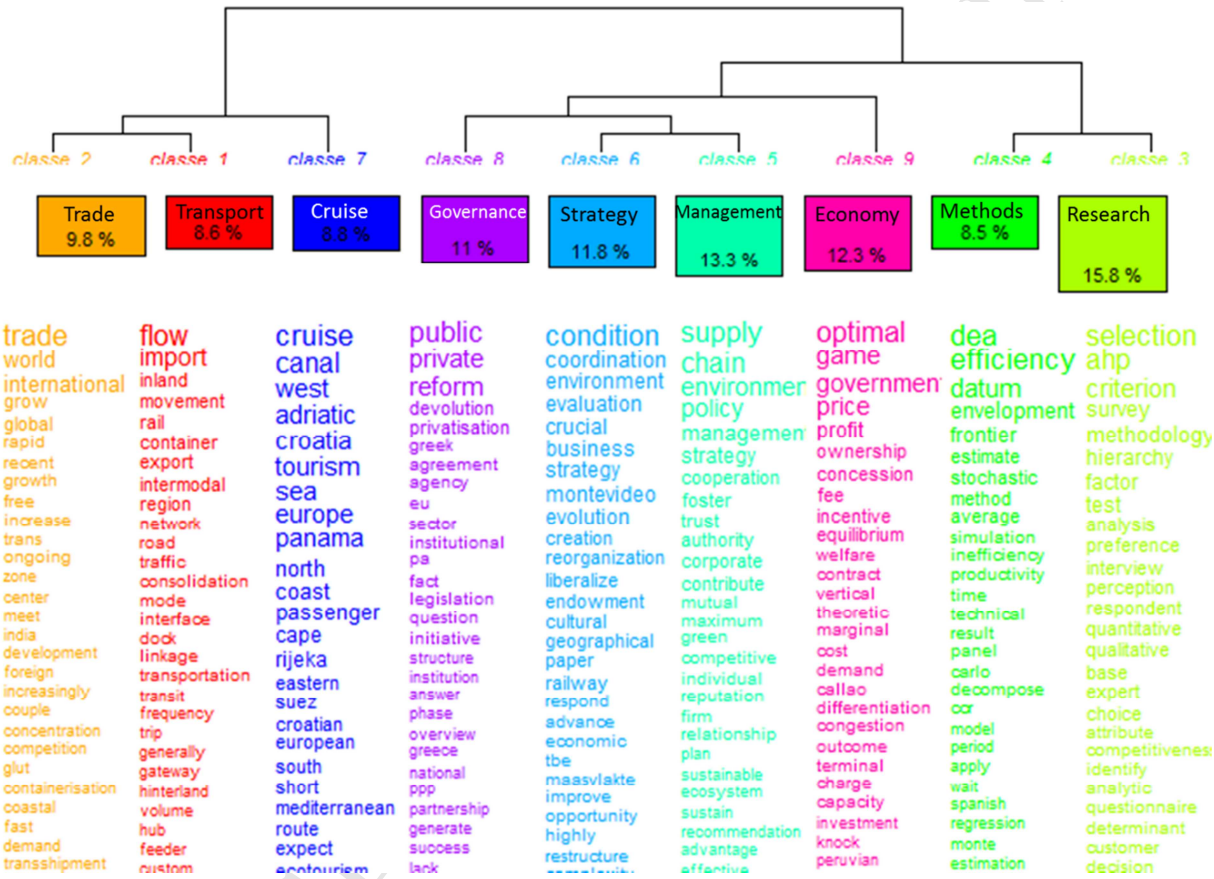


Figure 8 Dendrogram with named classes of the abstracts

The factorial correspondence analysis shows a similar propeller shaped distribution of words with different elements (Figure 9). On one blade, there are international trade concepts (*cruise*, *transport*, and *trade*), on another one the research and methods words and on the last one strategy, management and economy appear. This is consistent with the construction of an abstract with three categories: the domain (international trade), the methods and the recommendations (economy, strategy, and management).

The other important fact to highlight is that despite the growing number of classes, there is still no marketing class. Cruise appears as a subtopic, but there is still no explicit port marketing subtopic.

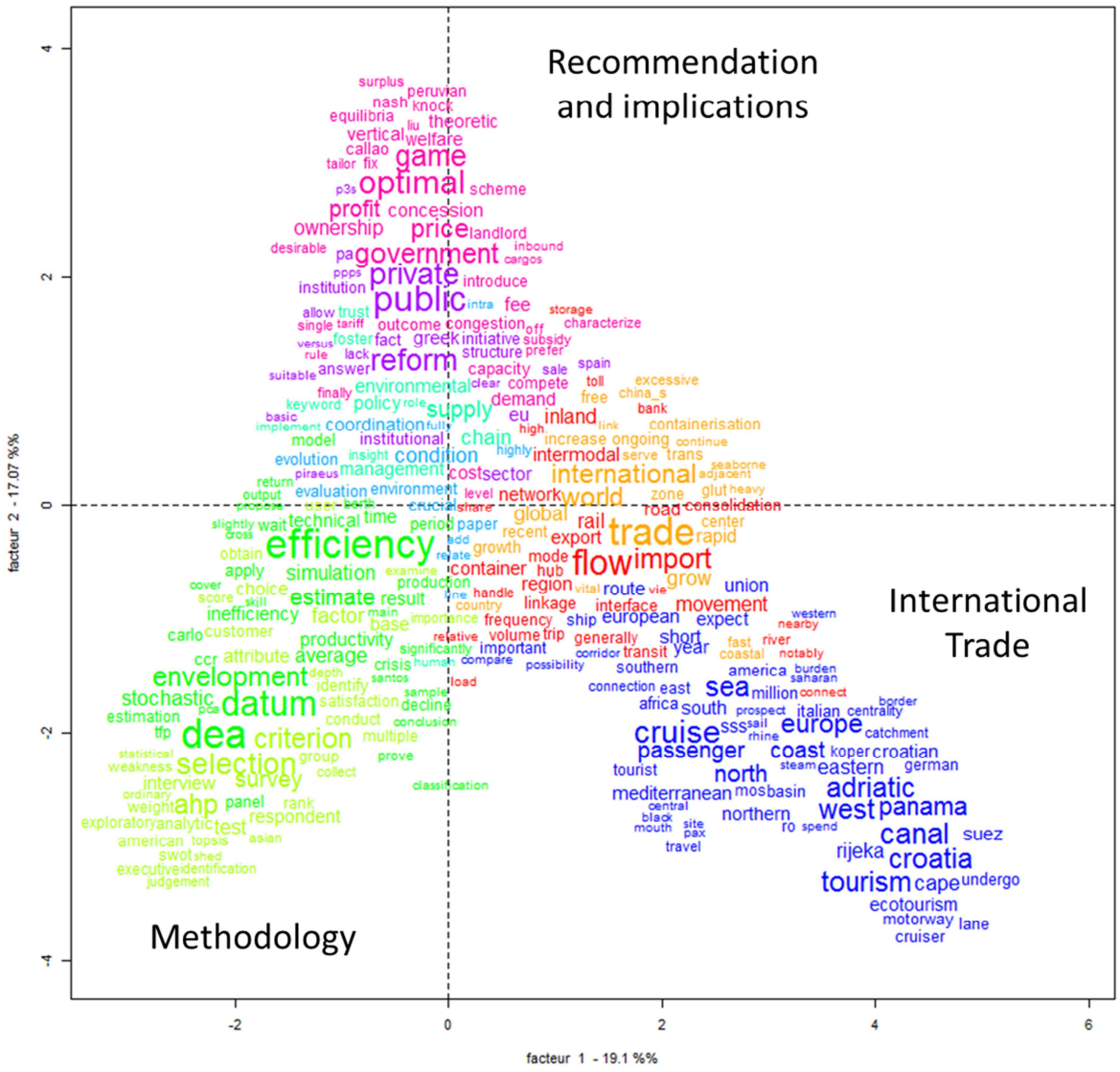


Figure 9 Clusters of the abstracts

4.4 Evolution of occurrences of words across time

Finally, we analyze the evolution of occurrences of words across time. This adds an interesting component to the association of *port* and *marketing*. First, the identification of the 10 most used words per annum is an interesting indicator. Since 1979, every year, *port* is the top occurrence, except in 1991 where it is the fourth occurrence. *Market* appeared only eleven times out of thirty-three years. Once in the eighties, twice in the nineties, four times in the first decade of the twenty-first century and four times in the present decade. There is, therefore, an increasing importance. It however appears in top occurrences in the past and has dropped to the end of the top ten since then.

Rank	1979	1981	1983	1986	1988	1989	1990	1991	1994	1995
1	port	port	port	port	port	port	port	cruise	port	port
2	trade	competition	seaport	market	economic	new	zone	market	trade	competition
3	canadian	service	state	miami	community	share	free	passenger	west	terminal
4	export	area	seattle	trade	marine	coast	trade	port	south	authority
5	effect	seaport	local	traffic	developmer	import	terminal	ship	uk	traffic
6	share	public	authority	export	cargo	york	productivity	industry	gripaios	mombasa
7	variable	authority	container	cargo	activity	equipment	nation	age	ro	trust
8	cargo	transport	merger	import	authority	machinery	developmer	survey	channel	es
9	canada	range	tacoma	teus	industrial	east	authority	economic	plymouth	privatisation
10	import	policy	public	facility	function	los	example	population	sea	salaam

Rank	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	port	port	port	port	port	port	port	port	port	port	port
2	rotterdam	industry	transport	pp	cost	factor	cost	cost	container	terminal	service
3	transport	bunker	container	greek	location	container	service	model	terminal	container	container
4	uk	policy	hong	investment	price	reputation	infrastructur	container	cost	service	competition
5	plan	transport	kong	price	ship	trust	hong	market	china	efficiency	east
6	good	eu	ship	major	transportatio	antwerp	kong	service	operator	market	ship
7	sea	european	china	revenue	hong	relationship	price	transport	mainland	model	asia
8	area	developmer	service	piraeus	kong	firm	efficiency	time	table	operation	trade
9	new	state	hinterland	greece	risk	al	transport	variable	transhipmen	ship	china
10	ship	market	line	term	hub	seaport	commission	trade	criterion	cargo	capacity

Rank	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	port	port	port	port	port	port	port	port	port	port	port
2	container	service	container	container	terminal	container	terminal	container	container	service	service
3	terminal	market	terminal	terminal	container	cost	container	ship	service	cost	terminal
4	service	cost	time	cost	service	model	service	terminal	competitive	container	container
5	transport	model	ship	ship	ship	ship	ship	service	ship	terminal	cost
6	ship	container	model	system	market	capacity	model	cost	cost	ship	al
7	market	system	efficiency	time	cost	time	al	market	al	al	study
8	traffic	opportunity	cost	cargo	operator	transport	competition	cruise	market	transport	ship
9	increase	efficiency	service	service	capacity	service	market	study	terminal	increase	time
10	cost	logistic	transport	efficiency	transport	price	factor	developmer	study	model	maritime

Table 5 Top ten words by year

From the yearly analysis of the top 10 occurrences, some remarks can be made. In certain years, we observe a concentration of words from the same branch of a port sector, such as *cruise* (1991) and *containers* (2013, 2014, 2015). This latter concept gains in importance with time. This shows a segmentation of the analysis of port marketing. There are also years with a concentration of operation management and macro-economic-related topics (2004, 2005, 2009, 2016). Furthermore, there is also a strong link between costs and services (2003, 2007, 2008, 2011, 2016). In sum, there are either macroeconomic and operations management approaches or business-to-consumer (B2C) approaches with segmentation, clients, and costs/services trade off. There is, however, no clear combination of business-to-business (B2B) keywords among the top 10 occurrences during that period. This constitutes a surprising finding since a port is an industry, and as such, we would expect most of the marketing topics related to ports to be at the B2B level.

To analyze to what extent port-related topics are connected to B2B tendencies, we investigated in detail the overlap between keywords provided by a Delphi study of the leading U.S. business market researchers organized by the Center of Business and Industrial Marketing at Penn State University. The most cited words are *service*, *customer* and *relationship*. The latter, which is probably the strongest B2B-related keyword, has most of its occurrences in only one of the years (2015). There is, however, no trend concerning B2B keywords.

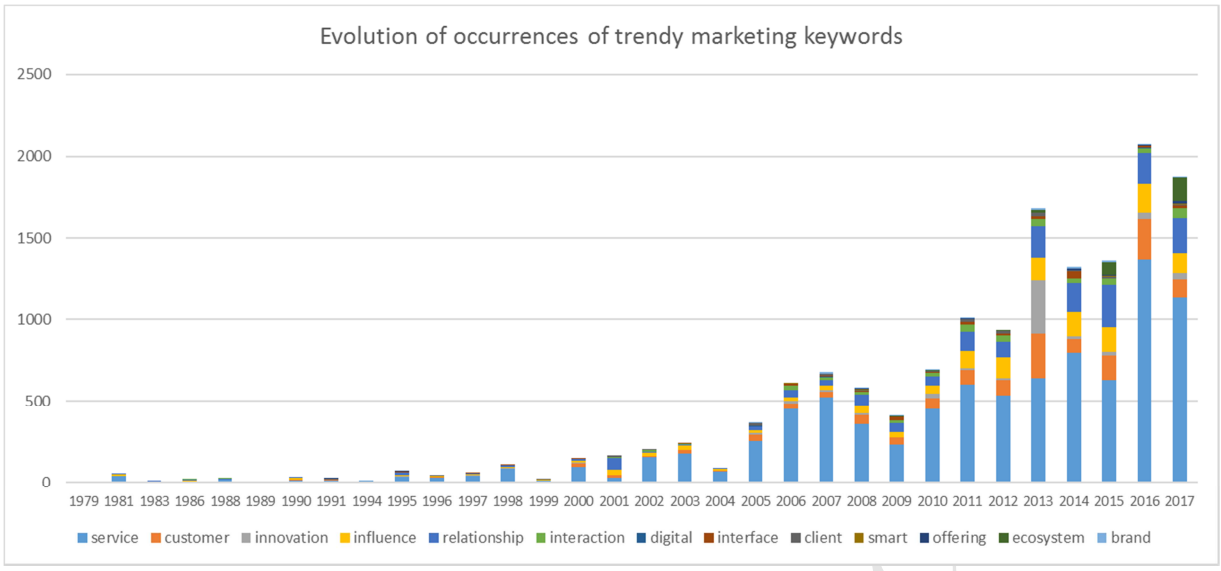


Figure 9 Marketing keywords

The same analysis was conducted with the five major concepts identified by Parola et al. (2017) about port competitiveness. These concepts are less represented than the B2B ones. There is, however, a positive trend starting from 2005. Network, Scale, and Governance are the major key concepts developed in Port and Marketing studies. Green and Coopetition rarely appear.

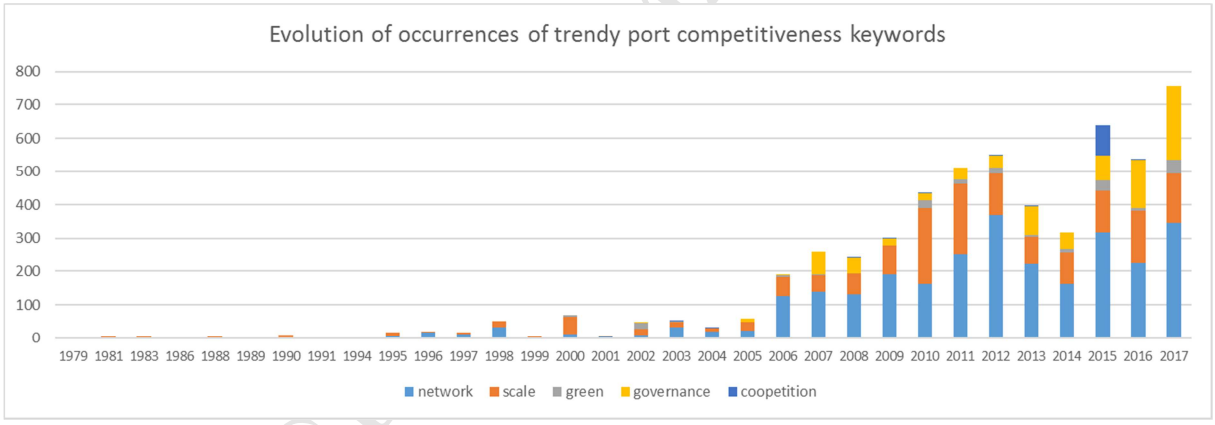


Figure 10 Competitiveness keywords

Finally, the yearly evolution of the seven keywords of the present study provides some interesting data. Port-related words have more occurrences. However, if we exclude *port*, marketing-related keywords are of a growing importance and become more important starting from the year 2014.

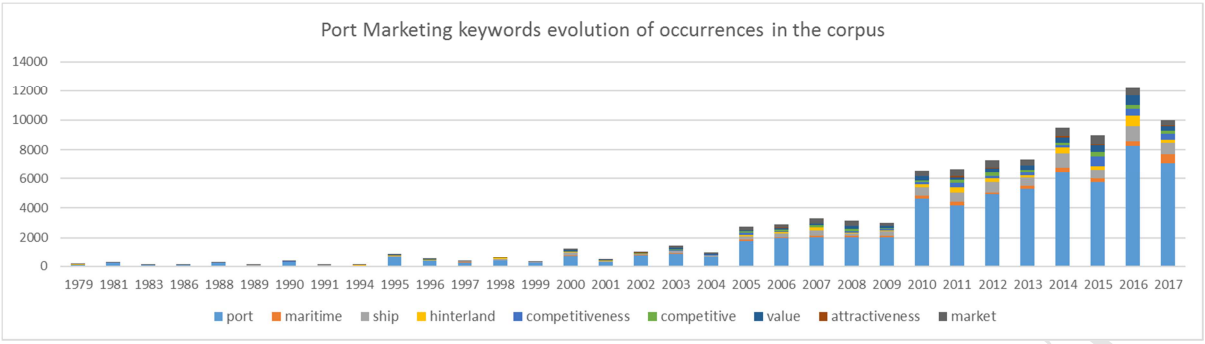


Figure 11 Port marketing keywords

5 Implications of the findings

5.1 Multidisciplinary nature of the port marketing academic literature

First, we notice that marketing-related words appear independently from port-related words. This tends to show that both concepts of *port* and *marketing* are not yet well-connected within the literature. On the contrary, transportation- and logistics-related topics are more clearly linked while marketing and service concepts are almost independent from other concepts. For instance, *market* (*market* being the lemmatization of *marketing*, *markets*, and *marketed*) is associated with *competitive*, *share*, *relationship*, and *position* constituting marketing concepts. However, *service* is related to *level*, *quality*, *customers* etc. and is linked to *ship* because of the idea of *shipping line services*. Overall, through comparing business management and operations management concerning logistics topics we can confirm the existence of a dichotomy in the literature on logistics as well as in research communities. Our confirmation of this structural dichotomy is especially based on the results of analyzing the full texts.

Second, there is a dominant approach of marketing as a tool for port research areas rather than a subfield of marketing research in port management. The very low number of articles in this systematic literature review that are published in core marketing journals is a first piece of strong evidence. Moreover, the marketing semantic field appears in conceptual fields of transport geography, transport economy, port governance and policy, and marginally, in port operation.

Third, we cannot observe clear combinations of B2B keywords in the top 10 occurrences of the time interval observed. However, a port is an industry, and as such, most of the marketing related to ports should be at the B2B level. In addition, container-related topics are more present than bulk-related. In terms of marketing, bulk is more likely to be a field for B2B marketing than container. We will elaborate on this lack of B2B-related words in the next section to conceptualize existing research on port marketing.

5.2 Proposed theoretical framework for port marketing

Based on the results of the lexicometric analysis, we try to conceptualize port marketing research as an integrated approach. Our study was based on a systematic literature review by means of a lexicometric analysis. The main contribution of this methodology is to show an overall picture of the summarized past research. This study observes that port marketing research is at the intersection of business marketing, maritime transport (including both goods and persons), service management, logistics, and supply chain management. Port marketing

contributes to the actors' value creation process and to the competitiveness of ports. The increasing importance of the hinterland-related factors in the port competitiveness (Parola et al., 2017) strongly draws attention to the role of business networks and the importance of the capabilities of the management in a network (Ford at al., 2011). The multidisciplinary nature of port marketing draws attention not only to the complexity of the phenomenon but also to the necessity of a balanced application (Coviello and Jones, 2004) of the knowledge contribution of the different involved fields. Thus, the multidisciplinary nature of port marketing should require a joint effort of business marketing, maritime transport, service management, logistics, and supply chain management researchers.

Particularly, another interesting finding is that the business/marketing approach is not the main approach to port marketing research. It is surprising not only because most of the actors in the field are organizations, but also because their business always takes place in a certain type of business relationships which, being strongly interrelated, form business networks.

We believe that "the real purpose of marketing science thus should be to know, to describe, and to understand marketing phenomena rather than being able to predict them, and that may be more important to marketing scholarship" (Tamilia, 2011: 510). Accordingly, *to frame and to develop the research efforts in the field, our solution is to place the port marketing on a relational base.*

From a relational marketing point of view, we consider the port itself as a complex embodiment of all economic, technological, social, and geographical components of the exchange (Bagozzi, 1975; Hunt, 2013) and the interaction (Håkansson, 1982; Håkansson et al., 2004) between involved professional actors.

Bagozzi (1975) argues that the exchange is a complex and multidimensional process, which is one of the critical concerns in marketing. He categorizes exchange into three forms of transactions: restricted, generalized, and complex exchange. Restricted exchange is a simple transaction between the buyer and the seller based on the give and take (quid pro quo) principle. In generalized exchange, the social actors "form a system in which each actor gives to another but receives from someone other than to whom he gave. … Complex exchange refers to a system of mutual relationships at least three parties. Each social actor is involved in at least one direct exchange, while the entire system is organized by an interconnecting web of relationships" (Bagozzi, 1975: 33).

Interactions are different to transactions, as they are not based on the quid pro quo principle. Instead, they are based on the mutual interdependency and influence of the exchange partners, i.e., the buyer and the seller (Ford et al., 2010; Håkansson and Snehota, 2002). Interactions, more precisely the frequency of interactions (Håkansson et al., 2004), build business relationships between the buyer and seller. These business relationships, where we have the same type of actor on both sides – both the selling and buying side are companies or other professional organizations, create the peculiarity of business markets. This similarity of actors has far-reaching consequences for the market processes (Håkansson and Snehota, 2002).

The formation of relationships follows an economic logic and plays an important role both in the achievement of economic efficiency and in fueling innovation (Anderson et al., 1994).

Given the prominence of relationships in business markets and their impact on the economic performance of business organizations, the task of marketing management in business markets can be framed as action in relationships (Anderson et al., 2009; Ford et al., 2011). The development of business relationships, which is the core of marketing in business markets (Håkansson and Snehota, 2002), entails developing new patterns of connections and interactions (Håkansson et al., 2017).

This framework may include at the same time the application of the Industrial Marketing and Purchasing (IMP) approach (Håkansson, 2006) and the relationship marketing management (El-Ansary, 2005). The IMP approach serves to describe and consequently to more deeply understand the port marketing phenomenon. In turn, the relationship marketing management, which is a more normative approach (Hunt, 2013), is useful in facilitating the relational managerial activities. Although these two approaches do not have the same theoretical bases, their application to different types of research and managerial questions might be fruitful and lead to cross-fertilization.

The IMP approach for instance, seems to be adequate for understanding the intra and the inter port competition claimed by Parola et al. (2017), because IMP describes the business as networks of related relationships (Axelson and Easton, 1992). The business network is the outcome of the activities of the actors who mobilize their own and their partners' resources to achieve their goals. These goals are always influenced by their direct and indirect partners. In this way, actors simultaneously create cooperation and competition amongst themselves (Håkansson and Snehota, 2017).

The IMP approach may be also useful to understand the decisions of the decision makers by application of the circular management in the network model (Ford et al., 2013). This model explains that managers make decisions based on their network picture. Based on this picture, they interact in the network. These interactions create the network outcomes, which, in turn, influence the managers' network picture. However, to better understand the companies' decision-making process itself, the relationship marketing approach seems better (Sheth and Sharma, 2006).

A similar situation exists for the value creation process. The IMP approach may be helpful in understanding what value means for the customer because it points out that the value of any resource depends on how it is perceived as a useful solution to resolve the customer's problem in a particular relationship (Harrison and Håkansson, 2006). At the same time, relationship marketing management may be an interesting approach (Anderson et al., 2009) if the question is more operative, namely how to develop, offer, and deliver a value proposition to the customer.

6 Conclusion

The contributions of this article are twofold. First, we perform a systematic literature review and a lexicometric analysis of the port marketing literature. Our results show the predominance of port-related words compared to words related to marketing. This leads us to conclude that port is at the center and marketing is outside the core discussion of the existing port marketing research. Moreover, we notice that authors latently assume that port marketing

exists as a conceptual field, yet they fail to focus on port marketing in their research topics. This shows the lack of a theoretical foundation of port marketing. Second, we posit that port is an industry and, as such, most of the marketing related to ports should be at the B2B level. Therefore, we argue that relational-based business marketing offers a possible theoretical framework for port marketing research.

Our approach has several limitations. First, we limited ourselves to including only peer-reviewed journal articles. Thus, particularly important recent, new aspects—from presentations at conferences and their proceedings—could be overlooked. Second, lexicometric analysis provides a means to quantify the connectedness of concepts, but this method cannot reveal more abstract facets, for example, storylines or argument structure.

More generally, returning to our research findings, why is placing port marketing on a relational base interesting? The application of the fundamental business marketing concepts may offer a possible solution to link port and marketing concepts that are not yet related to each other in the port marketing literature. It also can help to rethink and restructure the relations between market-based and service-based concepts. Such a framework may make the application of different marketing concepts to the port industry more concrete. More interestingly, this framework may contribute to the emerging development of port marketing, offering it a broader, more holistic and integrated view and way of conducting research.

This approach to port marketing does not aim to create a new silo (Tamilia, 2011). In fact, its goals are the opposite. It broadens the marketing view and practice in a field of huge complexity and strong interconnections by bringing in a multidisciplinary approach. We think that the different levels of analysis in business marketing (Wilke and Ritter, 2006) create the possibility and the opportunity for many marketing schools of thought (Shaw and Jones, 2005) to study different perspectives of ports' marketing activities and behavior. More importantly, the complexity of ports and their activities create an interesting platform for the cooperation and coevolution of different marketing approaches, potentially cross-fertilizing the theories involved. We hope that our research paves the way for developing a stronger theoretical framework of port marketing research.

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