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**Management OF Public–Private Partnerships
for Smart City Projects**

**Patent Activity in Central and Eastern Europe
for the Period 2014-2024**

**The Scientific Interest to "E-Marketplaces" –
a Bibliometric Study**

**Endowment Funding as an Effective form
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**Georgia as a Brand: Analyzing the Country's
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THE SCIENTIFIC INTEREST TO "E-MARKETPLACES" - A BIBLIOMETRIC STUDY

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Abstract: Electronic commerce, e-trade platforms (e-marketplaces) and Internet have been growing parallelly and continuously in the last more than three decades. In our paper we conduct a bibliometric study on data from the Web of Science (WoS) database for the period 2000-2025 (730 sources with 19947 references and 11.63 average citations per document). Revealing the evolution of the notions about e-marketplaces over time, we observe a remarkable regularity of research matching the maturing of the market itself and Chinese authors having emerging and growing importance. Core topics in the research group around three areas - strategy, business aspects and organisation of commerce, covering both business and technical aspects of e-commerce.

Key words: e-marketplaces, electronic commerce, e-trade, bibliometrics

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1. Introduction

Electronic commerce has been growing continuously in the last more than three decades. To a great extent, it closely follows the development of the Internet, where the major part of it is materialised. E-trade platforms have evolved and matured with the expansion and extension of the Internet and its users. Logically, electronic commerce marketplaces (e-marketplaces) have been the subject of numerous scientific studies and their exploration has produced vast scientific literature.

In order to reveal the evolution of the notions about e-marketplaces over time, a bibliometric study, based on data from the Web of Science (WoS) database is potentially able to give valuable results. In this paper, we conduct a bibliographic study of papers on "e-marketplaces" in the period 2000-2025.

Scientific papers production about "e-marketplaces" demonstrates a remarkable regularity according to the maturation of the market itself. Our study aims to aid in the investigation of the development of electronic commerce in e-marketplaces and contributes mainly with the application of the not very traditional bibliometric approach to electronic commerce. The study can be easily extended to include additional terms and to narrow the scope of exploration, i.e. by observing a specific section of the market.

The rest of the paper is organised in a literary review section, followed by a methodology and results and discussion sections, the last section concludes.

2. Literature review

The core idea of bibliometric analysis as an extension to bibliographic analysis of quantitative type is to provide a general picture of a certain research field, based on data for authors, publications, citations etc. (Merigo and Yang, 2017; Derviş, 2019).

Recommended (Aria and Cuccurullo, 2017) is a workflow starting with data collection (retrieval, loading, converting and cleaning of the data) and continuing with analysis of the data (with specific software, normalisation and reduction of the data, network extraction), visualisation of the data, followed by interpretation and model building. The most valuable information lies in the coupling between papers - i.e. which papers simultaneously are cited by a specific paper or refer to a specific paper. Networks built on these linkages contain particular information. The study of evolution and the main features of the scientific literature on a specific subject can strongly contribute to the more

detailed comprehension of its intrinsic traits and its potential to develop and change, as well as of its impact on the participants in the process.

Technically feasible are three types of studies, depending on the extent of available literature. In cases where publications are scarce, only a systematic literary review is the instrument for the study, if sources are more abundant, meta analysis is possible to be conducted, which is a quantitative approach, but of a limited scope. However, if publications on the subject are numerous, bibliometric studies as full-fledged quantitative techniques can be carried out.

3. Methodology and data collection

Bibliometric studies have been conducted for a number of years, so that a standard methodology emerged over time. In our study, we employ the widely used guidelines by Donthu, Kumar, Mukherjee, Pandey and Lim (2021), Van Nunen, Li, Reniers and Ponnet (2018) and Derviş (2019) and we structure our research in:

1. Importing and converting the data.
2. Performance analysis (metrics related to publications, citations, citation-publication etc.).
3. Science mapping (citations, co-citation, coupling, co-word analysis, co-authorship etc.).
4. Network analysis (network metrics, clustering and visualization).

Following the instructions in Aria and Cucurullo (2017) and Batagelj and Cerinsek (2013), data were collected by writing and submitting a query, refining the search results and exporting the search results. In our case, a search in the WoS database (<https://www.webofknowledge.com/>) with "e-marketplace" and "e-marketplaces" as key words for a period 2000-2025 resulted in 730 documents from 530 sources with 19947 references and 11.63 average citations per document (1.109 citations annually per document). Among the retrieved documents, 395 are journal articles, 287 are proceedings papers and the rest are book chapters, reviews and other papers. We use the bibtex (.bib) format for the data, due to its comprehensive structure and the possibility for a comprehensive preliminary overview of the sample. In the WoS variant, the .bib file contains various additional fields such as the references, the abstracts, the affiliations of the authors etc. This additional information enables us to conduct some additional mappings and clusterisations. Conventionally, citation analysis is made over bibliographic coupling, co-citation, co-author and co-word as inputs (Derviş, 2019). The cognitive structure of the research in the period studied is mapped with the co-word analysis, based on co-occurrence of

terms in the texts or their key parts such as the key words, abstracts or conclusions, which makes this analysis of a special importance.

Our analysis is not constrained in any way by prior theoretical guidelines about the role of electronic commerce, being derived solely from the information contained in the data about the publications studied.

4. Results and discussion

The results in our study were obtained with calculations in R 4.3.3 (R Core Team, 2024) applying the package *bibliometrix* (Aria and Cuccurullo, 2017).

4.1. Performance analysis

The number of publications demonstrate a strong upward trend until the global financial crisis of 2008, later there is no sustainable tendency (see Figure 1). In general, the upward trend coincides with the evolution of broadband Internet and the rise of big-scale e-marketplaces such as Alibaba Group or Amazon. After the peak of publications in 2008, increased interest is observable in the mid-2010s, aligning with the boom of the mobile broadband Internet and around the time of the Covid-19 crisis, when the lockdowns raised many questions about the future of retail trade.

Although there are several most productive journals in our field of research, none of them demonstrates a high concentration of papers, with the highest number of papers (14) in the "Electronic commerce research and applications", and the rest of top-5 journals containing between 7 and 11 papers. Publications are diversified, spread among many journals, with activities also in many multi-disciplinary journals covering IT/information, management and marketing. There is no group of highly dominating journals covering the field of e-marketplaces research.

The top 10 most prolific authors come mostly from two countries - China and Italy (see Figure 2) with Zhang J. (23 papers) in first place, followed by Di Noia, T. (14 papers) and Donini F. M. (14 papers). In the first part of the period studied, the most productive are authors from Italy, and in the second, these are the authors from China. This observation concurs with the economic activity in the field, with Chinese firms taking big and growing shares of the electronic commerce in the last two decades.

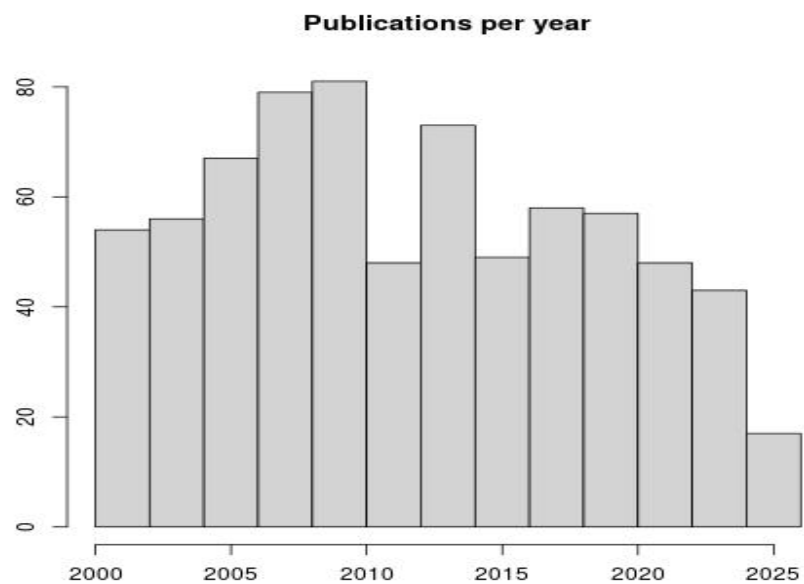


Figure 1. Publications per year
Source: Authors' elaboration.

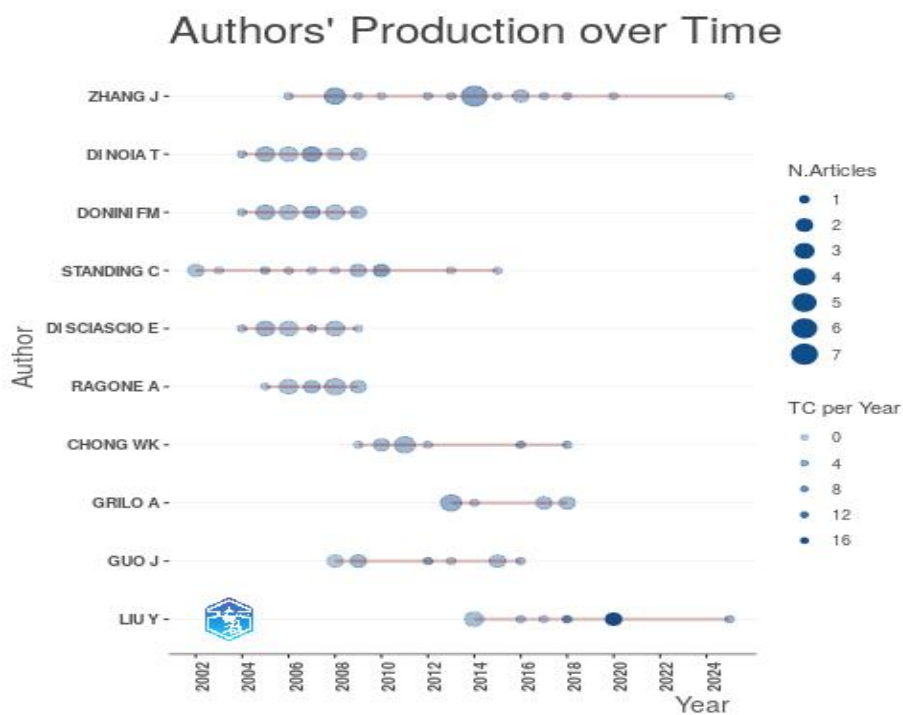


Figure 2. Most productive authors
Source: Authors' calculations with bibliometrix.

The list of countries with the most scientific publications (see Figure 3) also maps the origin of the most productive authors, with most papers having corresponding authors coming from China (168 papers) followed by the USA (62 papers) and Italy (42 papers).

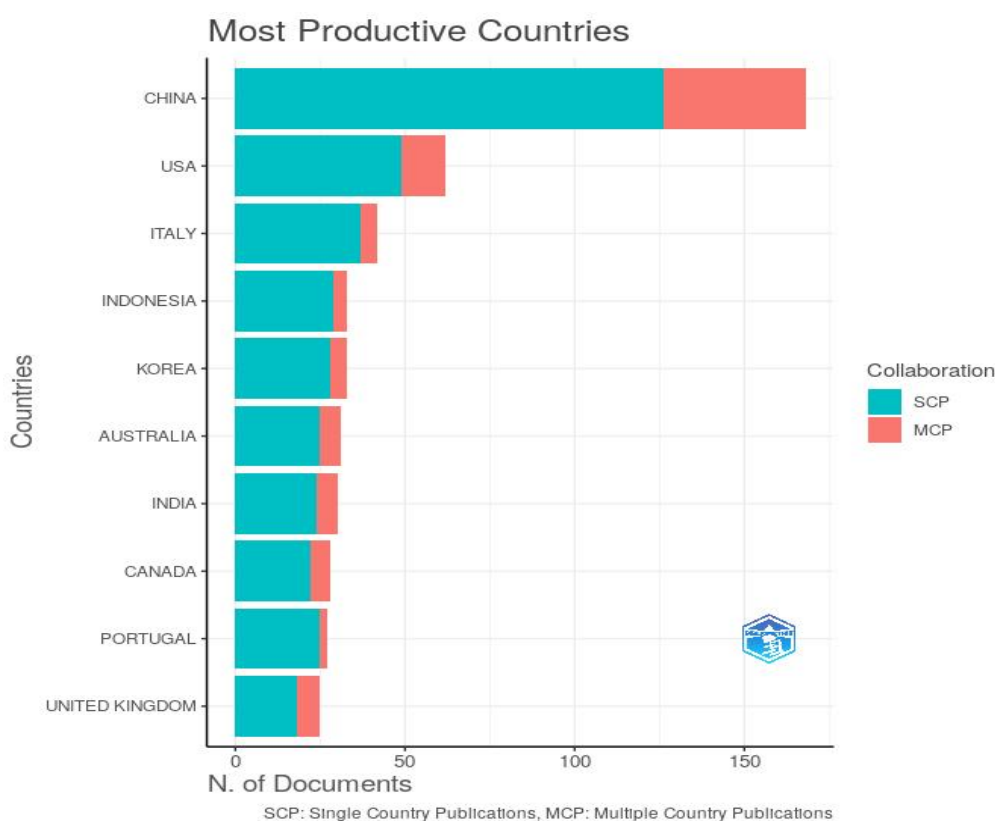


Figure 3. Most productive countries
Source: Authors' calculations with bibliometrix.

Research on e-marketplaces has been conducted predominantly in countries with biggest shares in global trade, with USA and China emerging as the dominant contributors.

4.2. Science mapping

The country collaboration map (Figure 4) reveals that there are many countries around the world where there is a scientific interest in e-marketplaces. These countries include also several very low developed economies, such as Sudan and Ethiopia, although the most important are, naturally, China and the USA, together with several other advanced economies – UK, Italy, Korea, Canada, Australia etc.

Country Collaboration

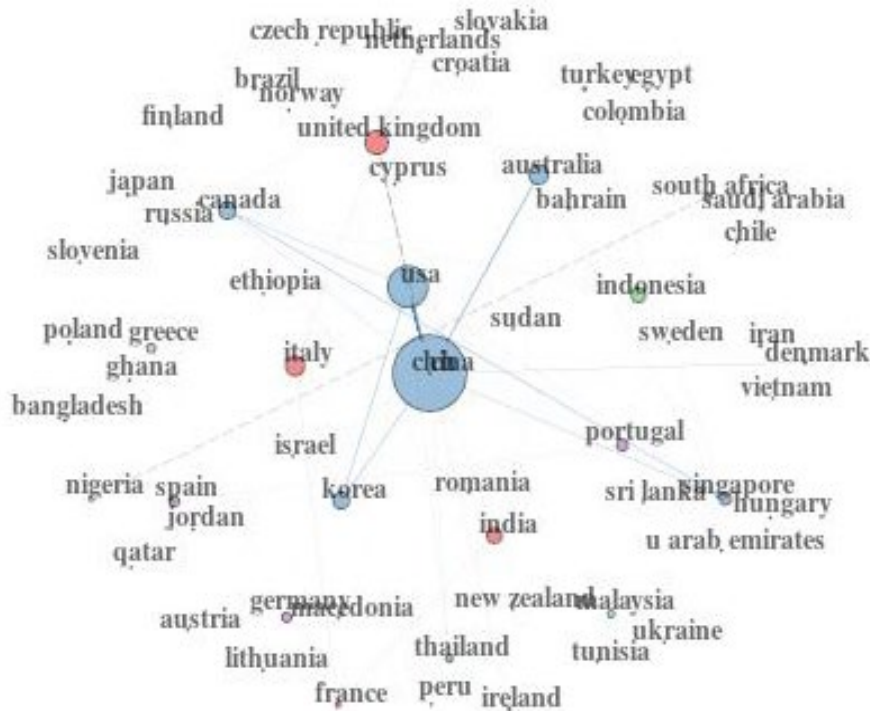


Figure 4. *Country collaboration*

Source: Authors' calculations with bibliometrix.

The most productive authors also come from these countries, mainly from China and the USA (Figure 2), and the collaborations (Figure 6) are among groups of researchers coming overwhelmingly from these countries.

The two clusters of authors with highest rates of co-citations (Figure 5) demonstrate that co-citations have occurred mainly during the early stages of research on e-marketplaces, roughly until the middle of our sample. Together with the shifting of the interest towards China, such a picture is easily understandable, given also the maturation of the research process.

Co-Citation

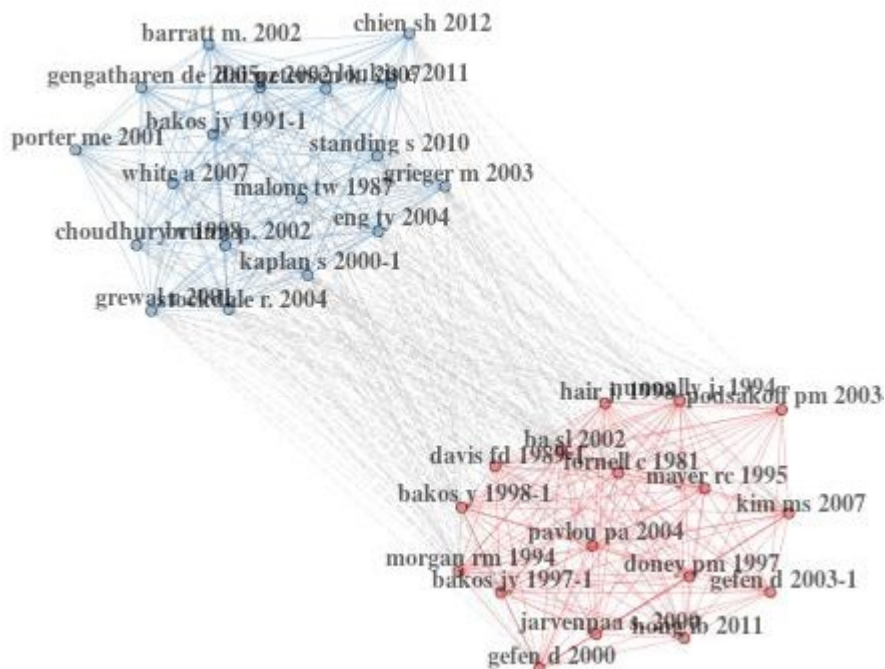


Figure 5. Authors with highest rates of co-citations

Source: Authors' calculations with bibliometrix.

The network map of collaboration among the top 35 collaborating authors (Figure 6) shows an evolution from a single country collaboration to multicountry co-working. Clearly visible are three clusters of collaborating authors, the most populous is dominated by authors from China (upper right corner), and the others of authors from Italy (chronologically, the first collaborations, in the left low corner) and mixed countries (in the center). This map reflects fairly well the general evolution of research on e-marketplaces, with dominating interest gradually shifting from Europe to China over time (compare to Figure 2).

More comprehensively, the evolution of research can be traced in Figure 7 – the three fields plot of topics, authors and journals. The most productive authors (Zhang, Chong, Di Noia) cover almost all top topics, lying in the core of e-commerce such as e-marketplaces, trust, supply chain etc. The top journals for the publications of the most important authors are in both the field of marketing/management/business (Electronic commerce research and applications, Electronic commerce research, Journal of enterprise information and management, Decision support systems) and the field of engineering (IEEE

transactions on engineering management, Internet research, Information and management).

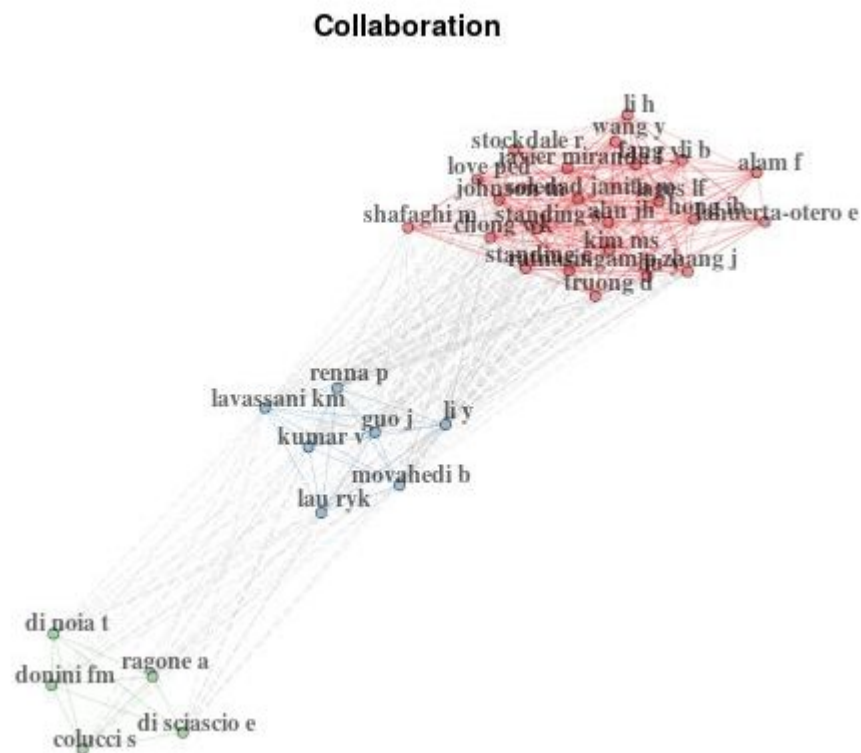


Figure 6. Network map of top 35 authors' collaboration
Source: Authors' calculations with bibliometrix.

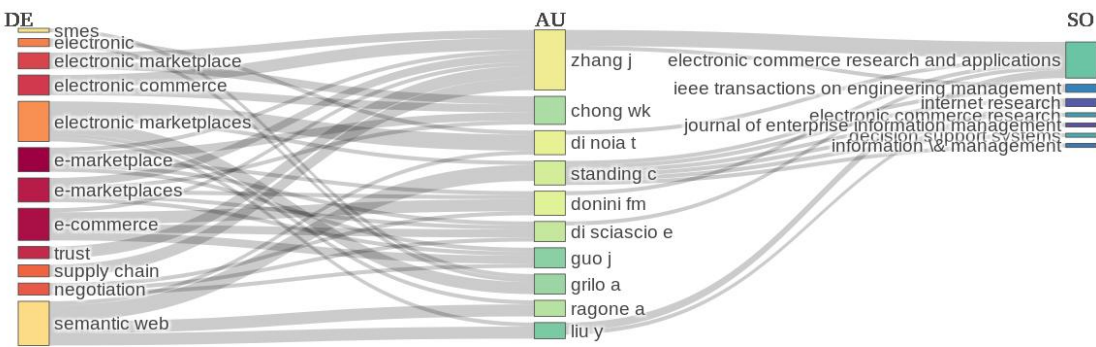


Figure 7. Three fields plot - topics, authors, journals
Source: Authors' calculations with bibliometrix.

4.3. Network analysis

The network analysis allows to most comprehensively map and explore the domain of expertise studied. The core part of it consists of the content analysis, based on application of some types of factor analysis on the terms used.

To identify the optimum number of factors to be used in the content analysis for revealing the conceptual structure, iterative runs of the corresponding bibliometrix function were made varying the parameters about the minimum occurrences of terms to analyse and the number of clusters, applying a form of analysis similar to the factor analysis, called multiple correspondence analysis (MCA) – see Abdi and Valentin (2007) and Le Roux and Rouanet (2010) for a nice explanation of the MCA method. Technically, MCA is using an indicator matrix (with entries either 0 or 1) instead of a classical matrix.

Following the recommendations in Preacher, Zhang, Kim and Mels (2013), since determining the number and nature of the factors is the most critical decision in factor analysis, although it is always a subjective decision, we select the optimal number of factors according to traditional criteria. Since in most circumstances there is only a hypothetical operating model, with no true operating model possible, the correct number of factors is per se a questionable undertaking. In our case, we choose the optimal number of factors as the one that provides the most plausible factor structure, a number under which the model fits reasonably well in data. As factor retention criteria we choose the scree test, with the reasoning found in Cudeck (2000), Costello and Osborne (2005) and Howard (2016) that more factors are preferable as better accounting for data and give preference to the interpretability of the retained factors. The break in the magnitude suggests retaining 3 factors, we continue with this number which matches 3 clusters containing the most important terms.

Our goal to reveal the thematic and intellectual structure of the research field involves conceptual analysis in order to represent the evolution of research, its coherence and complexity.

The conceptual structure map (Figure 8) obtained from the application of MCA delineates the clusters of terms and concepts on e-marketplaces, forming distinct conceptual groupings, graphically revealing the structure of specific ideas and concepts. The closer related items demonstrate strong thematic associations, while those situated far apart are of minor linkages.

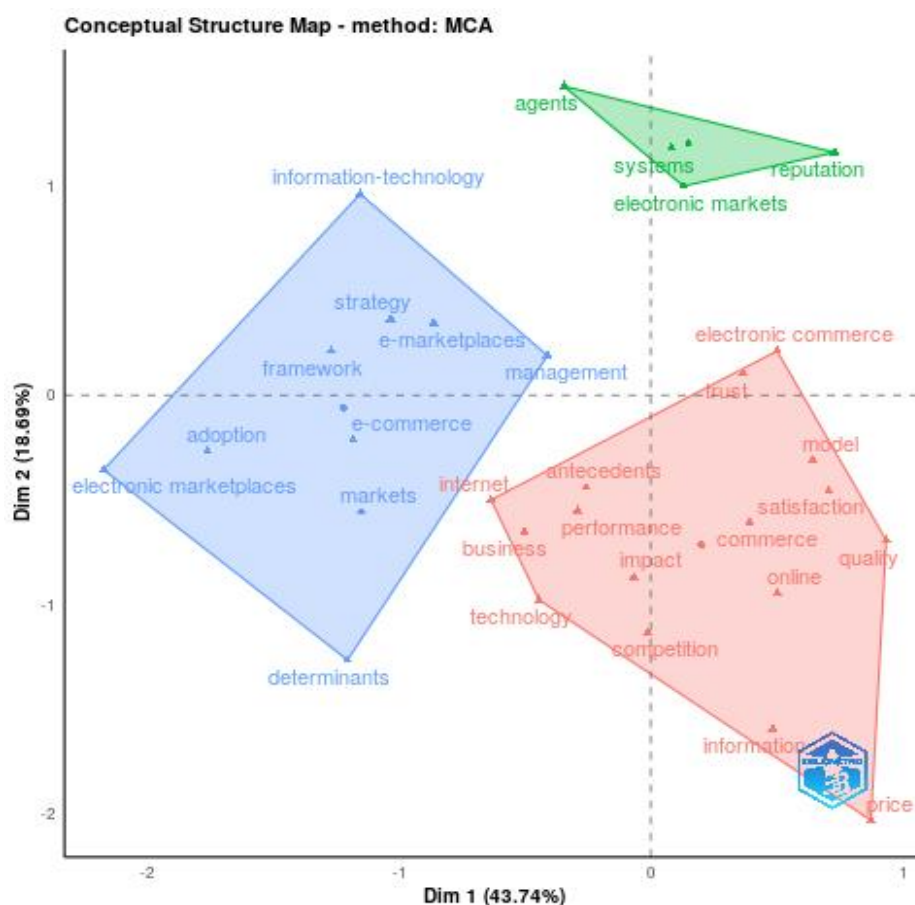


Figure 8. **Conceptual Structure Map - method MCA**

Source: Authors' calculations with bibliometrix.

The MCA method with mapping the terms in 2 dimensions (Figure 8) reveals 3 core clusters, roughly corresponding to the areas which we interpret as *strategy of commerce*, *business aspects of commerce* and *organisation of commerce*. These clusters cover both main factors, with the first factor comprising 43.74% of the variance, and the second factor comprising 18.69% of the variance. The two factors have on their edges respectively *e-marketplaces/adoption* vs. *price/quality* and *agents/systems/reputation* vs. *price/information*, which allows us to interpret them as perception (the main factor) and technical features (the second factor). Within these factors, terms are compacted in well defined clusters.

The first cluster, *strategy of commerce* (composed of terms such as strategy, e-marketplaces, management, adoption, framework, e-commerce, markets, determinants, information-technology) takes the left part on the axis of

the first factor, as well as the center in regard to the second factor. Dispersion in both axes is relatively wide, suggesting that the terms in this cluster correspond to various features of both factors.

The second cluster, *business aspects* of commerce (business, performance, commerce, quality, satisfaction, technology, international, price, impact, online, antecedent, model, trust, electronic commerce) also covers great area in both factors, also with a relatively wide dispersion in both dimensions, accounting for a great part of the dispersion the second factor, with price being on the edge of the factor (the lower part).

The third cluster, *organisation* of commerce (agents, systems, electronic markets, reputation) also falls within the right part of the main factor, however it is responsible for the other (upper) side of the second factor. Its interpretation is relatively simple, as it contains to the greatest extent technical terminology, related to the organisational structure of the e-marketplaces.

The thematic map of main terms (Figure 9) is built as opposing the relevance degree (centrality) to the development degree (density) and composing a matrix consisting of 4 areas - niche themes, motor themes, emerging or declining themes and basic themes. This map suggests that basic themes are related mainly to technical matters on e-marketplaces, such as design of the systems, support, models, negotiation, channel, agents etc. These themes persist over time and seem to be of utmost importance, in the search for the optimal design of the trade systems.

Themes driving the research (motor themes) focus mainly on the customer's perception of e-marketplaces, covering topics such as trust, coordination, customer satisfaction, user acceptance etc.

Emerging or declining themes cover some technical aspects of e-marketplaces, such as matchmaking, selection, cooperation, scale, architecture, automatic negotiation etc. These topics have emerged over time with the development of e-marketplaces, i.e. in the early stages of trade there were multiple competing architectures, based on different matchmaking processes and allowing for different types of negotiations etc. With the maturing of the e-marketplaces the scientific interest in some of these topics decline as some features become ubiquitous.

Minor, although not negligible, interest is produced by the niche themes such as contracts, issue trade-offs, mechanism, combinatorial auctions, signals, costs etc. These topics encompass mainly particularities which were discussed and covered in research on traditional exchange markets. Since many similarities between traditional exchange markets and e-marketplaces do exist, the grouping of these topics as niche themes seems plausible and is a logical outcome of the long record of literature on exchange markets.

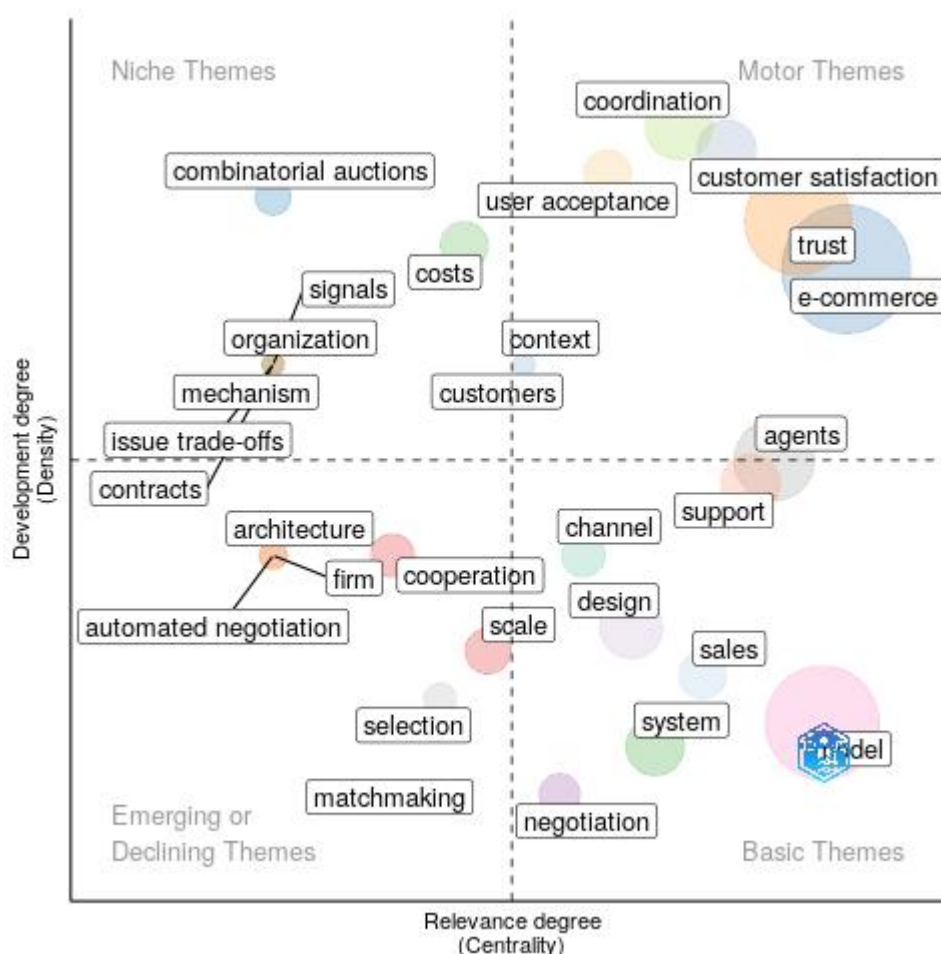


Figure 9. Thematic map
Source: Authors' calculations with bibliometrix.

The network of word co-occurrences (Figure 10) expressly delimits two main areas of research, the one related to business matters of e-marketplaces (in the upper part of the graph) and the other related to rather technical matters (in the lower part of the graph). The business aspects of e-marketplaces comprise mainly marketing and management questions such as satisfaction, online, impact, management, quality etc. The technical aspects of e-marketplaces include topics such as systems, information, trust, Internet, adoption, performance, framework etc. Both areas of research cover the evolution path of e-marketplaces over time, with the problems emerging in different stages of development of these markets.

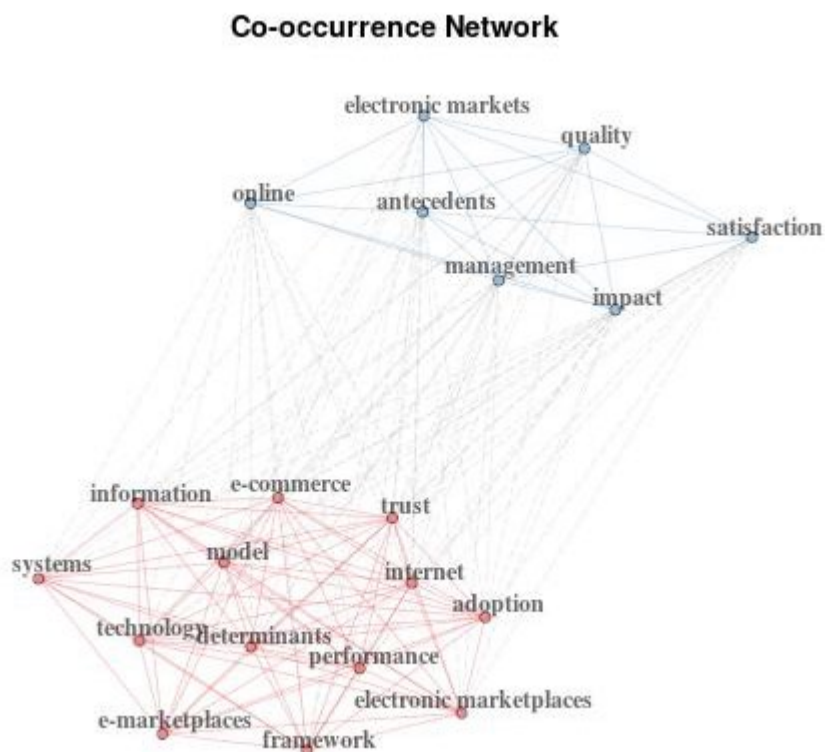


Figure 10. Co-occurrence network
Source: Authors' calculations with bibliometrix.

5. Conclusions

E-marketplaces are essential because of their development in the last three decades as well as because of the growing importance of online related shopping habits both of the general public and the firms.

Research on e-marketplaces has been evolving according to the development of the e-marketplaces themselves, shifting the core of studies from advanced countries in the beginning of the century mainly to China along the last two decades. Although there is a certain concentration of research in specific countries, there are no strongly dominating journals, with the most popular taking less than 0.5% of the publications in the area.

Core topics in the research group around three areas - strategy, business aspects and organisation of commerce, covering both business and technical aspects.

Citation patterns vary over time in line with the shifts in thematic focus, in combination with the emergence of China as a dominant global economy. Contributions from Chinese authors become the most influential over time.

Journals covering topics on e-marketplaces are in principle multidisciplinary, from two main areas - business and technology/ engineering, with no strongly dominating journals.

Our study provides a comprehensive bibliometric analysis of e-marketplaces research, with findings revealing intersections of business related science with technology domains. The impact of academic research reflects the core questions of development of e-marketplaces over time.

Our analysis is based on English research published in high-impact journals only, and this is a limitation of the study. Extensions to other languages and groups of journals are a possible direction of further research.

Bibliography

Abdi, H., & Valentin, D. (2007). Multiple correspondence analysis. *Encyclopedia of measurement and statistics*, 2(4), 651-657.

Aria, M. & Cuccurullo, C. (2017) bibliometrix: An R-tool for comprehensive science mapping analysis, *Journal of Informetrics*, 11(4), pp. 959-975, Elsevier.

Batagelj, V., & Cerinšek, M. (2013). On bibliographic networks. *Scientometrics*, 96(3), 845-864.

Costello, A. B. & Osborne, J., (2005) "Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis", *Practical Assessment, Research, and Evaluation*, 10(7), 1-9.

Cudeck, R. (2000). Exploratory factor analysis. In *Handbook of applied multivariate statistics and mathematical modeling* (pp. 265-296). Academic Press.

Derviş, H. (2019). Bibliometric analysis using bibliometrix an R package. *Journal of scientometric research*, 8(3), 156-160.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of business research*, 133, 285-296.

Howard, M. C. (2016). A review of exploratory factor analysis decisions and overview of current practices: What we are doing and how can we improve?. *International journal of human-computer interaction*, 32(1), 51-62.

Le Roux, B., & Rouanet, H. (2010). *Multiple correspondence analysis* (Vol. 163). Sage.

Merigó, J. M., & Yang, J. B. (2017). A bibliometric analysis of operations research and management science. *Omega*, 73, 37-48.

Preacher, K. J., Zhang, G., Kim, C., & Mels, G. (2013). Choosing the optimal number of factors in exploratory factor analysis: A model selection perspective. *Multivariate behavioral research*, 48(1), 28-56.

R Core Team (2024). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria. <<https://www.R-project.org/>>.

Van Nunen, K., Li, J., Reniers, G., & Ponnet, K. (2018). Bibliometric analysis of safety culture research. *Safety science*, 108, 248-258.

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