

Landlords with no lands: a systematic literature review on hybrid multi-sided platforms and platform thinking

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Abstract

Purpose – This article is based on a systematic and comprehensive review of the literature on two-sided platforms, the business structure based on the concept of matchmaking groups of customers (e.g. Uber or Airbnb). The research aims to identify gaps in the existing literature while providing a structured summary of the existing knowledge in the field. Finally, we propose a conceptual framework enabling platform thinking, the ability to see hybrid multi-sided platforms as a useful resource-orchestration structure to unveil innovation opportunities.

Design/methodology/approach – This study adopts a bibliometric approach, combing co-citation and text mining analyses of 196 papers, also implementing a longitudinal analysis that highlights the evolution of the field since its inception till today.

Findings – The novel aspect of the paper consists in taking a purely managerial stance of a very peculiar kind of platform, merging existing knowledge in comprehensive frameworks while providing potential avenues for research.

Research limitations/implications – From an academic perspective, this research highlights the double nature of two-sided platforms: as an operational choice or as a way to exploit (digital) assets and reach the economic sustainability. A research agenda is proposed, based on three pillars: a side-based standpoint, a business model perspective and an evolutionary stance to see how these businesses may evolve.

Practical implications – The research identifies different literature streams that may help practitioners in identifying how two-sided platforms may help them in fostering innovation.

Originality/value – The identification of two-sided platforms as a different way to create value (transaction platforms) or to capture value (non-transaction platform), enhancing the debate on this innovative business model. A research agenda to bring the field forward is proposed.

Keywords Systematic literature review, Business model innovation, Multi-sided platforms, Digital platforms, Two-sided platforms

Paper type Literature review

Introduction

The relative weight of platform-based businesses is growing continuously and becoming more and more relevant (e.g. Choudary *et al.*, 2016; Cusumano *et al.*, 2019). Unicorns like Uber and Airbnb, along with their multi-billion valuation, are often used as key examples for this paradigm (e.g. Guo *et al.*, 2020).

These companies aim to link two different groups of customers, which may be hosts and guests, drivers and passengers or readers and advertisers. In the literature, this kind of businesses has been defined as two-sided platforms, relying on the original concept of two-sided markets (e.g. Rochet and Tirole, 2003). Two-sided platforms are characterized by three



necessary conditions: (1) the existence of two (or more) groups of customers, (2) linked through indirect network externalities and (3) with a platform provider able to internalize (at least partially) the externalities (Evans, 2003a).

The credit card industry (with companies like Visa or MasterCard linking cardholders and merchants) and the game consoles one (with producers like Sony, Nintendo or Microsoft linking gamers and game developers) are typical cases leveraged to describe two-sided platforms (see e.g. Parker and Van Alstyne, 2005; Rysman, 2009). Interesting digital payment followed up in the electronic commerce leveraging the same two-sided model (e.g. Jocevski *et al.*, 2020; Staykova and Damsgaard, 2015).

In the last decade, though, this kind of businesses became much more popular. The spreading of digital technologies enabled companies to act as orchestrators of external resources, acting as *Landlords without owning any land* (consider the famous quote that claims how the greatest hotelier service on Earth – Airbnb – does not own any room, or similar statements on Uber). This article aims to shed lights on these orchestrators, studying and showing the evolution of the field from an academic perspective.

Dealing with these businesses, experts, managers and even scholars often use the term “platforms”, which is a broader term and has different meanings in different domains. Over the last years, a few literature reviews have been published, in some cases focusing on the broader concept of platforms (e.g. McIntyre and Srinivasan, 2017), in other cases taking very focused perspectives (such as de Reuver *et al.*, 2018, focusing on the information system field, (Sriram *et al.*, 2015), taking an economic-driven perspective or (Wan and Chen, 2019) taking an ambidexterity perspective on the platform governance) or focusing on related phenomenon – such as the sharing economy (Sanasi *et al.*, 2020) rather than the business structure behind it. This research aims to focus on a specific kind of platforms, respecting the necessary conditions of a two-sided platform (Evans, 2003a). In particular, we want to enhance academic research that let this research field evolve in order to understand its theoretical foundations, its key themes and its evolution, finally providing an agenda for future research.

This paper combines two bibliometric methods (network-based citation analysis and text mining) to analyze 196 papers published on the topic (following and being inspired by the structure of recent bibliometric research such as Randhawa *et al.*, 2016). The decision to rely on different bibliometric methods – and not just a traditional systematic literature review – enables a more robust and structured analysis of this expanding domain.

The contribution of this research is two-fold. First, from the academic point of view this paper provides both a comprehensive backward look on the evolution of the knowledge in the field of Two-Sided Platforms, focusing on its role from innovation, strategic and marketing perspectives, rather than the traditional economic view on this business structure. Second, this paper can help managers and entrepreneurs in exploring an extensive – and quite disperse – body of knowledge that is proving to be more and more crucial in the digital revolution era.

Finally, we close the paper proposing the Platform Thinking conceptual framework showing how Two-Sided Platforms can be a relevant frame to unveil innovation opportunities that lead to Hybrid Multi-Sided Platforms starting from simple platforms and even established firms.

The evolution of the field

Rochet and Tirole, back in 2003, published the seminal article on the concept of two-sided markets, considering those markets “*characterized by the presence of two distinct sides whose ultimate benefit stems from interacting through a common platform*” (Rochet and Tirole, 2003, p. 1). Later on, they formalized one of the first definitions of the phenomenon: “*two-sided (or,*

more generally, multi-sided) markets are roughly defined as markets in which one or several platforms enable interactions between end-users and try to get the two (or multiple) sides 'on board' by appropriately charging each side" (Rochet and Tirole, 2006, p. 645).

It is important to point out as at a very first sight each market may be labeled as "two-sided", involving two sides (a customer and a supplier), but this is not enough to be part of this particular kind of businesses (Hagiu, 2007).

As in any debated research field, many other definitions have been proposed over the years (e.g. Evans, 2003a; Jullien, 2005; Armstrong, 2006; Rysman, 2009; Hagiu and Wright, 2015). Some definitions focused on the necessary conditions to have a two-sided platform (Evans, 2003a), others considered the role of the dimensions of the sides to enhance the externalities (Armstrong, 2006) or the chance to create value enabling a matchmaking process between the sides (Hagiu and Wright, 2015).

Different scholars highlighted the role of indirect network externalities between the two sides (Evans, 2003a). Others focused mainly on the control of the "transaction" between the two sides (e.g. setting the price) as another discriminant between a two-sided platform and a traditional business (i.e. in Two-Sided Platforms the platform provider enables the transaction, but it does not own all the rights on it, therefore – for example – the merchant is the one setting the price of the transacted good) (Hagiu and Wright, 2015).

Many authors focused their attention on the peculiarities of this business structure, paying particular attention to the pricing mechanisms (this field is broad enough to have a specific literature review, see for example Zingal and Becker, 2013). Later on, the peculiarities of Two-Sided Platforms started to become more and more spread in the business environment. Due to the massive popularity of companies like Uber or Airbnb, clearly linking two different kinds of "customers" (the end users and drivers or the hosts) through an enabling platform (the mobile app), the concept of "platform business model" has spread quite quickly (e.g. Choudary *et al.*, 2016).

Nevertheless, the concept of platform in the management literature seems quite open to different interpretations. Back in the decades, the concept of platform was mainly related to the product development field, relying on a shared basis to develop new products in a faster way (e.g. Meyer and Lehnard, 1997). The concept of platform later evolved toward the "external" or "industry-wide" platforms or "innovation platforms" (Cusumano *et al.*, 2019): "*products, services, or technologies that are similar in some ways to the former but provide the foundation upon which outside firms (organized as a 'business ecosystem')* can develop their complementary products, technologies, or services" (Gawer and Cusumano, 2014, p. 418).

Notwithstanding, this last definition can be only partially overlapped with the concept of Two-Sided Platforms (as highlighted by Gawer (2014), trying to bridge the different perspectives on technological platforms). Indeed, in cases like an operating system (e.g. Windows, iOS or Android) both the definition may fit. An operating system has two sides (the end users and the developers), a platform provider (the operating system provider) and indirect network externalities between the two sides exist (a growth on the user side lets the OS become more valuable for the developers and vice versa); therefore, it can be considered a two-sided platform. At the same time, it is a product that can "*provide the foundation upon which outside firms can develop their own complementary products*", enabling them to foster innovation.

The overlap between the Two-Sided Platforms and industry-wide platforms is only partial, though. The abovementioned cases (i.e. Uber and Airbnb) are not enabling someone else (i.e. drivers or hosts, which may represent the counterpart of the developers in these cases) to foster innovation through the platform. Another reason why Two-Sided Platforms and industry-wide platforms are not completely overlapped is that in the first case the platform itself does not have any value without both sides on board (this explains the

importance of the analysis of the chicken-and-egg paradox in the field, see [Caillaud and Jullien, 2003](#)), while some industry-wide platforms may be meaningful even without the developer side (e.g. Apple relied on an operating system in a close perspective for years, directly developing most of the applications).

The overlap between these two worlds is mainly related to their different roots. The economic perspective on “Two-Sided Platforms” and the managerial stance on the broader concept of “industry-wide platforms” pinpoint a significant gap in the managerial peculiarities of businesses based on a two-sided structure. Therefore, this research aims to focus on the concept of “Two-Sided Platforms”, relying on the economic definition of “two-sided market”, taking a strong managerial orientation.

Indeed, the research questions that this article aims to fill are: how did the field of Two-Sided Platforms evolve? What are the main gaps in the current body of knowledge that management scholars may pay attention to?

Previous research partially answered to these questions, either by taking specific perspective (e.g. [de Reuver et al., 2018](#)), focusing on the information system field) or with a broader “platform” perspective (e.g. [McIntyre and Srinivasan, 2017](#)) or paying more attention to the economic-driven perspective on this businesses (e.g. [Sriram et al., 2015](#)).

Methodology

Sample selection

In order to review, with a management perspective, the body of knowledge on Two-Sided Platforms, this study used Scopus, one of the most extensive databases of peer-reviewed literature. The search has been based on a two-step process (e.g. [Dikert et al., 2016](#); [Magistretti et al., 2020](#)). The first step is a preliminary search based both on papers and books, aiming to define the most relevant papers, the most influential authors and the keywords for the second step. The second step aims to explore the body of previous studies to identify the most useful papers for the aim of this study.

The screening procedure brought to the identification of 196 articles published in leading business journals (according to the criteria necessary to be indexed in Scopus). To reach the final sample of focal articles, this study adopted a systematic approach (see e.g. [Dikert et al., 2016](#); [Randhawa et al., 2016](#)); summarized in [Figure 1](#).

The process started with a preliminary search to identify the most influential and seminal papers in the field, without any constraints in terms of years, keywords of field of research. The purpose of the preliminary searches was to develop and evaluate different search strings, while identifying key authors and key papers, relying also on cross-references among them and searching for other papers of the same authors.

20 focal papers have been read and analyzed to help framing the field and the problem, while defining the keywords for the next steps. The list of the 20 papers is reported in [Table 1](#).

Furthermore, five books have been considered in the initial preliminary search, to better understand how Two-Sided Platforms have been described and presented to a wider non-academic audience. The books are summarized in [Table 2](#). Following the example of previous research (e.g. [Dahlander and Gann, 2010](#); [Randhawa et al., 2016](#)) the books have not been added to the final sample used for the following analyses for three main reasons. First, Scopus and other databases are not consistent and reliable regarding books, therefore bibliometric studies tend to exclude this kind of outlet. Second, unlike papers, books do not go through the same kind of review process. Third, it is difficult to obtain the same kind of file enabling text mining analysis for all the books considered.

It is important to highlight that even if books are not part of the dataset used for the analysis, they can be part of the co-citation analysis.

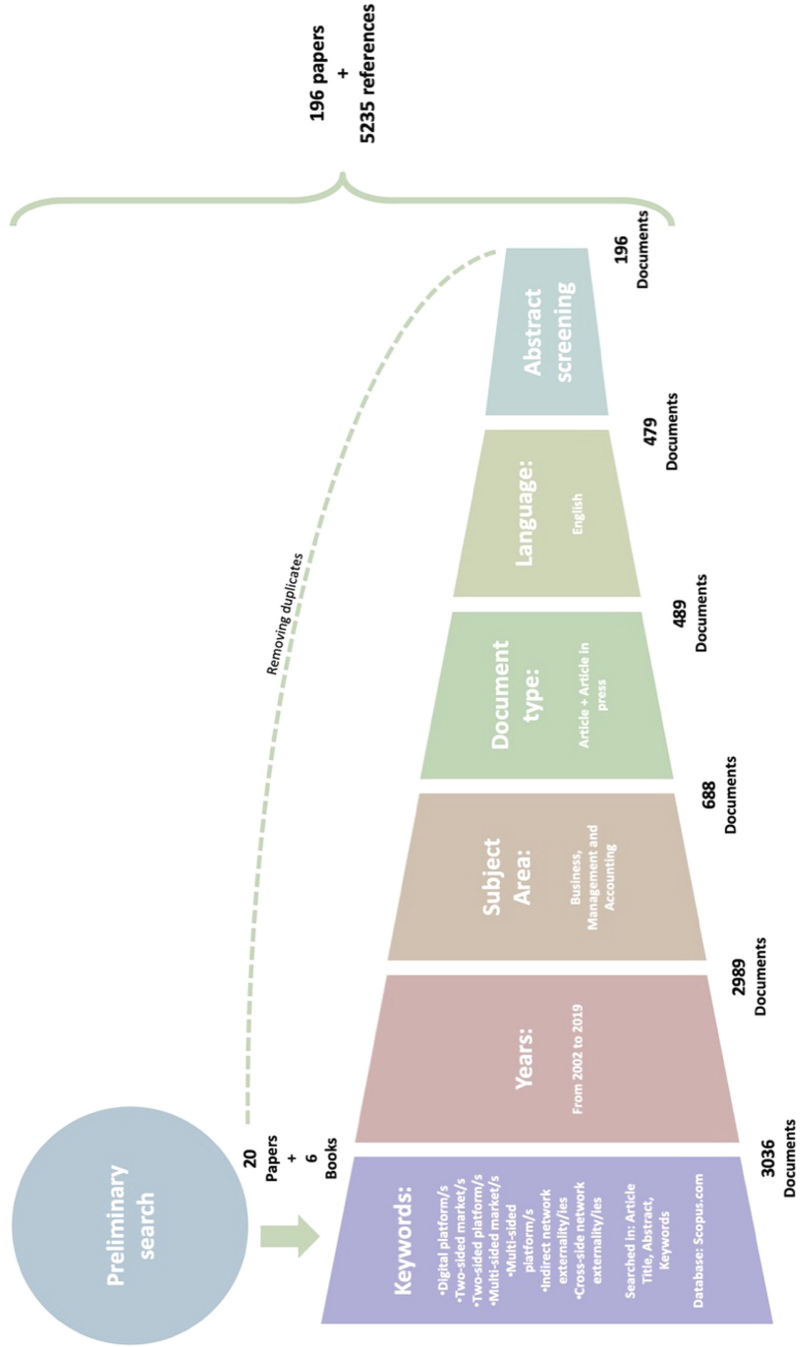


Figure 1.
Filtering process and
definition of the final
database

Authors	Title	Year	Journal	# Of citations (Scopus)	Reason why
Armstrong, M.	Competition in two-sided markets	2006	RAND Journal of Economics	634	Among the most cited papers in the field, defining the concept of multi-homing
Armstrong, M., Wright J.	Two-sided markets, competitive bottlenecks and exclusive contracts	2007	Economic Theory	102	Among the most cited papers in the field, defining the concept of multi-homing
Caillaud B., Jullien B.	Chicken and Egg: Competition among Service Providers	2003	RAND Journal of Economics	407	Among the most cited papers in the field, defining the chicken and egg paradox
Eisenmann T., Parker G., Van Alstyne M.	Platform envelopment	2011	Strategic Management Journal	116	Among the most cited papers in the field, one of the seminal papers
Eisenmann T., Parker G., Van Alstyne M.W.	Strategies for two-sided markets	2006	Harvard Business Review	355	Among the most cited papers in the field, one of the first contributions with a strong managerial perspective
Evans D.S.	Some Empirical Aspects of Multi-sided Platform Industries	2003	Review of Network Economics	453*	Among the most cited papers in the field, defining the necessary conditions to designate a two-sided market
Filistrucchi L., Geradin D., Van Damme E., Affeldt P.	Market definition in two-sided markets: Theory and practice	2014	Journal of Competition Law and Economics	12	It clearly states the differences between the transaction and non-transaction two-sided markets
Gawer A.	Bridging differing perspectives on technological platforms: Toward an integrative framework	2014	Research Policy	90	Key paper in linking the platform and the two-sided market streams
Gawer A., Cusumano M.A.	Industry platforms and ecosystem innovation	2014	Journal of Product Innovation Management	132	Key paper in re-defining (or expanding) the concept of platforms
Hagiu A., Jullien B.	Search diversion and platform competition	2014	International Journal of Industrial Organization	2	One of the papers of the two seminal authors in the field
Hagiu A., Spulber D.	First-party content and coordination in two-sided markets	2013	Management Science	35	One of the papers of the two seminal authors in the field
Hagiu A., Wright J.	Multi-sided platforms	2015	International Journal of Industrial Organization	30	One of the seminal papers moving from two- to multi-sided platforms

(continued)

Table 1.
Relevant papers highlighted in the preliminary search

Authors	Title	Year	Journal	# Of citations (Scopus)	Reason why
McIntyre D.P., Srinivasan A.	Networks, platforms and strategy: Emerging views and next steps	2017	Strategic Management Journal	3	Recent literature review on the topic published in a top management journal
Parker G.G., Van Alstyne M.W.	Two-sided network effects: A theory of information product design	2005	Management Science	341	Among the most cited papers in the field, one of the seminal papers
Rochet J.C., Tirole J.	Platform competition in two-sided markets	2003	Journal of the European Economic Association	949	Among the most cited papers in the field, one of the seminal papers
Rochet J.C., Tirole J.	Two-sided markets: A progress report	2006	RAND Journal of Economics	579	Among the most cited papers in the field, one of the seminal papers
Rochet J.C., Tirole J.	Tying in two-sided markets and the honor all cards rule	2008	International Journal of Industrial Organization	16	One of the papers of the two seminal authors in the field
Rysman M.	The economics of two-sided markets	2009	Journal of Economic Perspectives	195	Among the most cited papers in the field, one of the seminal papers
Rysman M.	An empirical analysis of payment card usage	2007	Journal of Industrial Economics	65	One of the papers of the two seminal authors in the field
Wright J.	The determinants of optimal interchange fees in payment systems	2004	Journal of Industrial Economics	67	One of the papers of the two seminal authors in the field

Table 1. Note(s): *Citations from Scholar

Authors	Title	Year	Publisher	# Of citations (Google Scholar)
Choudary, S. P., Parker, Geoffrey G., Van Alstyne, M. W.	Platform revolution: How networked markets are transforming the economy and how to make them work for you	2016	New York: WW Norton	751
Gawer, A., and Cusumano, M. A.	Platform leadership: How Intel, Microsoft, and Cisco drive industry innovation	2002	Harvard Business Press	1,646
Iansiti, M., and Levien, R.	The keystone advantage: what the new dynamics of business ecosystems mean for strategy, innovation, and sustainability	2004	Harvard Business Press	1,674
Libert, B., Beck, M., and Wind, J.	The network imperative: how to survive and grow in the age of digital business models	2016	Harvard Business Press	35
Evans, D. S., and Schmalensee, R.	Matchmakers: the new economics of multisided platforms	2016	Harvard Business Press	260
Cusumano, M.A., Gawer, A. and Yoffie, D.	The business of platforms	2019	Harper Business	6

Table 2. Books considered in the preliminary search

The first step was related to the identification of concepts relevant to the area of investigation (definition of the keywords for the literature search). Indeed, having as a keyword only “two-sided market” would not be enough to satisfy the aim of the research, since we are trying to gather all the relevant scientific studies concerning platform businesses based on a two-sided structure. Therefore, the initial search has been done considering concepts as “multi-sided market”, “platforms”, “digital platforms”, “sharing economy” and “gig economy” (along with their combinations, like “Two-Sided Platforms” or “two-sided”). After analyzing the kind of results gathered through the different keywords, we focused on the second step of the systematic process. Through a discussion between the co-authors and other scholars working in the field, the final list of keywords has been defined, aiming to have the most relevant results for the goal of the research. The final list is made of seven keywords: “two-sided market”, “multi-sided market”, “two-sided platform”, “multi-sided platform” (often used to consider the same kind of businesses but involving more than two groups of external players), “digital platform” (used to include the wider literature on platform but only related to the main enabler of the spread of this kind of businesses), “indirect network externality” and “cross-side network externality” (since the two concepts represent the base of the entire mechanism that links the two sides). The search engine considered all the keywords both in the singular and in the plural form (e.g. “two-sided markets”), and the first search has been done on the pure term (searching the keywords between quotation marks) in the category “Article, Abstract and Keywords”. This phase brought to the first database of 3,036 documents. In the third phase the initial database was reduced applying specific filters. First, a time-span between 2002 and 2019 (updated until June 2019) has been forced (since the original article by Rochet and Tirole defining two-sided markets was first published as a conference paper in 2002 and then published in 2003). Second, the subject area has been limited to “Business, Management and Accounting”, as, according to the aim of the research, we did not include “Economics, Econometrics and Finance” (which would have brought purely economic papers, since a lot of economic journals are included also in the “Business, Management and Accounting” tag of Scopus) and other unrelated disciplines that share these keywords (e.g. “Computer Science”, “Engineering”). Third, the document type has been limited to “Article” and “Article in press”, aiming to keep only those papers that went through a rigorous peer-review process. In the end, the language of the documents has been limited to English. [Figure 1](#) shows the impact of the different filters, going from the 3,036 documents of the initial sample to the 479 documents in the database at the end of this phase.

Finally (fourth phase of the systematic review process), the authors independently reviewed all the abstracts, to define the final sample. This process led to the exclusion of some articles unrelated to the field under analysis. For example, some articles on digital platforms did not deal with the kind of businesses or structure we aim to study (e.g. [Spagnoletti et al., 2015](#)), others relied on the concept of Two-Sided Platforms but featured a unit of analysis not aligned with our scope (e.g. users’ perception of marketing activities in [Albuquerque et al., 2012](#)), finally other papers considered only a policy perspective on the concept, which is out of the scope of this research (e.g. [Behringer and Filistrucchi, 2015](#); [Salinger and Levinson, 2015](#)).

This list has been cross-checked with the initial sample of 20 seminal papers, and after removing the duplicates 13 papers coming from the preliminary search have been added to the final dataset. This process resulted in the final set of 196 documents. Finally, the list and the bibliometric information of the 5,235 references of the 196 papers have been added.

Co-citation analysis

To analyze the structure of the theoretical foundation of the field a co-citation analysis has been performed. This technique is becoming more and more popular in the management field, e.g. in innovation (e.g. [Randhawa et al., 2016](#)) or business ethics (e.g. [Calabretta et al., 2011](#)).

According to this kind of analysis, references in a paper may be the manifestation of silent relationships (Gmür, 2003; Small, 1973). Co-citation is operationalized by measuring the frequency with which two items (papers, authors, sources, . . .) are cited together. The aim is to provide an indicator of the affinity and proximity between the two items (White and Griffin, 1981).

This article relies on a co-citation analysis at the paper level, having the chance to analyze at the same time multiple contributions by a single author (which is particularly relevant in a field like this where few authors published several highly cited works). The analysis is based on steps. At first, a network is drawn showing the links between the most co-cited papers. To increase the network readability articles with less than ten citations were excluded (e.g. Randhawa *et al.*, 2016).

The co-citation network is then analyzed using a smart local moving algorithm (Waltman and Van Eck, 2013) to provide a cluster analysis of related publication (Waltman *et al.*, 2010).

The software sets the number of clusters on the basis of the resolution parameter. The parameter has been added to avoid the failure of identifying small clusters (Fortunato and Bartheélemy, 2007). Indeed, the algorithm is based on the modularity function, which is particularly popular for network scientists (see Fortunato, 2010). Nevertheless, it is affected by the resolution limit problem, which is here limited by the resolution parameter.

Gmür (2003) and Osareh (1996) provide a detailed overview of the advantages and disadvantages of this kind of analysis. Nevertheless, it is important to highlight how, when conducting a co-citation analysis, all the references in a publication assume the same relevance. This limitation can be overcome when the sample is sufficiently large, as it is in this case, reducing the random noise among the references (Schildt *et al.*, 2006; Randhawa *et al.*, 2016).

Text mining analysis

Text mining aims to find detailed conceptual insights through an unstructured ontological discovery using the words as the unit of analysis, aiming to show a systematic, unbiased and content-driven review of the literature (e.g. Biesenthal and Wilden, 2014; Randhawa *et al.*, 2016).

To accomplish the result of this last quantitative analysis, the textual data mining software Leximacer 4.0 has been used (e.g. Randhawa *et al.*, 2016).

The software is based on a Bayesian learning algorithm that performs a bootstraps analysis, considering an expanded list of related terms that signify a concept from the text data. Previous research showed that these tools present a close agreement with expert judgment (Campbell *et al.*, 2011; Rooney, 2005). The analyses performed by the software aim to highlight the most frequently used concepts in a text and to define the relationships between them.

The software has been used to systematically reveal key concepts in the field, through the identification of seed words (thematic analysis of the documents) that have been linked through the frequency and the co-occurrence within their contexts (semantic analysis) (Mathies and Burford, 2011).

As suggested by Randhawa *et al.* (2016) the text mining analysis has been done in different time spans. In particular, three time periods have been considered (i.e. 2002–2007, 2008–2012 and 2013–2019) aiming to show the evolution of the field over time. The three-time phases have been selected to have an homogeneous time span in the analysis, as done in similar studies (e.g. Randhawa *et al.*, 2016). Therefore, the analyses have been performed on the full texts of the 196 papers included in the final sample divided according to the year of publication (16 in the time span 2002–2007, 45 between 2008 and 2013 and in the end 134 between 2014 till 2019).

Results

Descriptive analysis of the database

The journal that counts more papers in our sample is the “International Journal of Industrial Organization”, which still has a strong industrial economic perspective. Nevertheless, the sample also includes journals of marketing (Marketing Letters), general management (e.g. Management Science), strategy (e.g. Technological Forecasting and Social Change), innovation (e.g. Journal of Product and Innovation Management), information systems (e.g. Journal of Management Information Systems) and other economics journal (e.g. Rand Journal of Economics, Journal of Industrial Economics). This brief overview (summarized in Figure 2) shows how this literature is still sparse (the second most popular journal in the field has “only” 10 papers and only nine journals published more than three papers, in the entire database there are 96 journals).

A preliminary analysis of the sample also shows a growing attention along time (Figure 3). After an initial peak (2003), when the first seminal papers were published, the field went through slow but continuous growth. In particular, over the last five years under observation

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Figure 2.
Top journals in the
sample

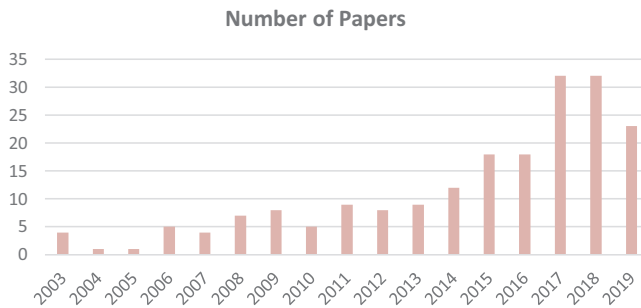


Figure 3.
Papers published
per year

(2014–2019), a positive trend started, going from the six papers published in 2012 to the 32 papers published in 2017 and 2018, with 23 papers published in the first six months of 2019.

The analysis of top contributors allows some interesting results as well (Figure 4). Wright, Hagiu, Parker and Van Alstyne are the authors with the highest number of papers, all of them – along with Rochet, Tirole and Armstrong – can be considered the founders of the whole research field. Besides them, the contributors to the field appear very rarified, having only 15 authors with three or more papers in the database.

Co-citation analysis

In order to delve deeper into the intellectual roots of Two-Sided Platforms, a co-citation network of the references in the article included in the sample has been mapped (Figure 5). The network shows the centrality of four main works: the seminal papers by Rochet and Tirole (2003, 2006), Evans (2003b) and Caillaud and Jullien (2003). The network nodes represent the single document, while the edges between them the fact that they have been cited together. The distance between two nodes represents the strength of the relation between them (Van Eck and Waltman, 2014). Finally, the dimension of each node represents the number of links that the paper has in the network.

Interestingly, the clustering algorithm highlights three meaningful clusters of intellectual streams that – together – compose the intellectual roots of this growing literature.

The “Economic roots” cluster is the first from a time perspective (papers published between 1985 and 2002). It contains six papers which represent the first stream of theoretical roots of the literature on two-sided markets. In line with the basic definition of two-sided market, the entire field has significantly drawn from economic-based theories, namely network externalities (Katz and Shapiro, 1985), standardization and compatibility dynamics (Farrell and Saloner, 1986). The cluster is completed by the first papers which complemented the initial papers dealing with two-sided dynamics taking a purely economic perspective, such as interchange fees between the sides and the platform (Evans, 2003b).

The second cluster, which can be labeled as “Defining Two-Sided Markets”, reinforces the idea that two-sided market research developed its idiosyncratic base. This cluster is the

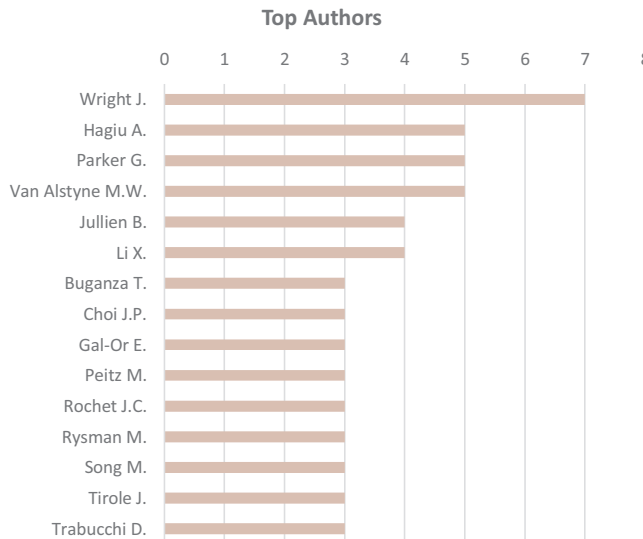


Figure 4.
Top authors in the sample

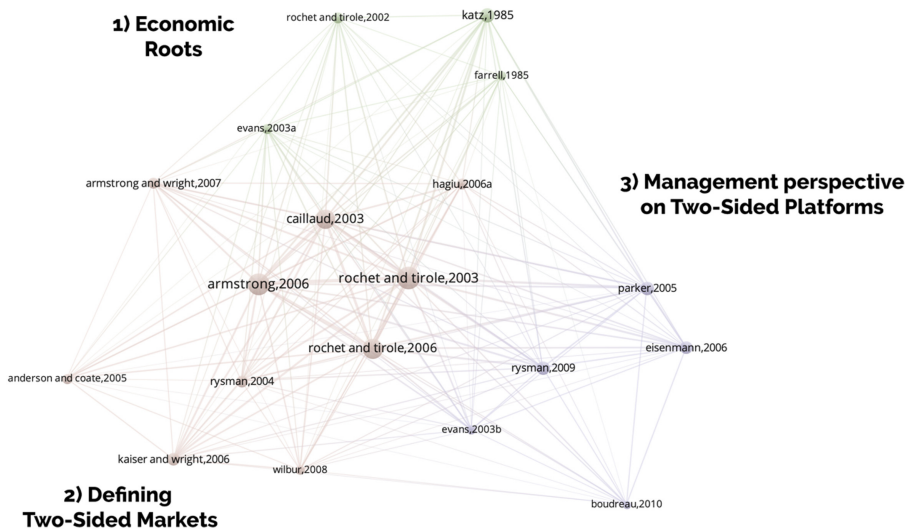


Figure 5.
Co-citation analysis,
among the references
of the 193 papers of the
sample (minimum
citations: 13)

biggest of the three and is centered from a time perspective (covers the years between 2003 and 2008). It contains almost all the seminal papers of the field. Starting from the defining papers (i.e. [Rochet and Tirole, 2003, 2006](#)) and moving to the seminal papers of the first key issues related to these businesses: the chicken and egg paradox ([Caillaud and Jullien, 2003](#)), the competitive dynamics in terms of user base ([Armstrong, 2006](#); [Armstrong and Wright, 2007](#)) and the pricing difficulties ([Anderson and Coase, 2005](#); [Kaiser and Wright, 2006](#)).

Finally, the third and last cluster points out the “Management perspective on Two-Sided Platforms”, it is medium in size and the youngest in time (from 2005 to 2010, with only one exception in 2002). In this group of papers, we can find the first authors talking about strategies to manage these businesses ([Eisenmann *et al.*, 2006](#)), discussing the openness issues of the sides ([Boudreau, 2010](#)), the role of these mechanisms to offer free products ([Parker and Van Alstyne, 2005](#)) and the concept of platforms ([Gawer and Cusumano, 2002](#)).

Text mining analysis

The (co-)citation analysis revealed that the main focus of research on Two-Sided Platforms remains within the field itself. Therefore, the next step of this research focuses on how the field evolved along time. We used text mining to systematically decipher the main concepts and topics that the literature focused on. To better understand the next figures note that the software provides a so-called map of meaning, relying on a thesaurus of words that are closely related to a concept (the dots in the next figures). The concepts are then aggregated in themes, when they share a related meaning ([Campbell *et al.*, 2011](#)), and shown through the bubbles in the next figures. The relative relevance of a theme is shown through two dimensions: the color (the brighter, the more important) and the size (the bigger, the more concepts are in it). The distance between the themes shows the degree of relationship between them ([Campbell *et al.*, 2011](#); [Rooney, 2005](#)).

The analysis of the articles of the sample is separated into three time periods: 2002–2007 (16 papers), 2008–2013 (45 papers) and 2014–2019 (134 papers) to investigate how the concepts and themes of research in the field of Two-Sided Platforms evolved.

In the earliest period ([Figure 6](#)), two-sided platform research had a strong focus on the economic aspects previously introduced. Three central themes emerged: matchmaking, pricing dynamic and advertising.

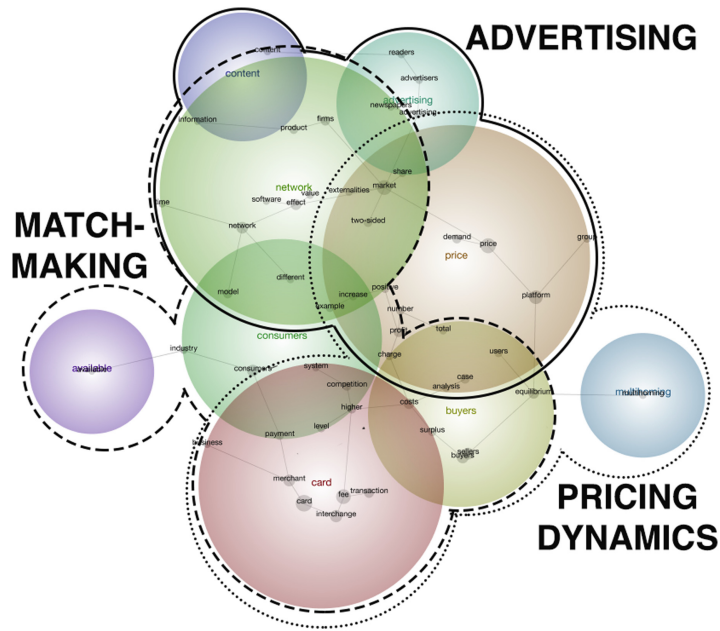


Figure 6.
Text mining analysis on the full text of the 16 papers published between 2002 and 2007 included in the final sample

Note(s): Dots are concepts (collections of words which carry related meaning) and circles represent themes, which are an aggregation of related concepts. The brightness of the circle shows the importance of the themes, while the distance between concepts denotes how related they are

The “matchmaking” cluster focuses on the way through which Two-Sided Platforms create value: matching the two sides. This cluster has different souls in it. It includes those researches that define the market structure (e.g. [Parker and Van Alstyne, 2005](#)), focusing significantly on the kind of network externalities that link the two sides (e.g. [Chen and Xie, 2007](#)) and on the main challenges in creating the underlying structure ([Caillaud and Julien, 2003](#)). In these papers some of the fundamental features of these platforms have been studied and defined, such as the focus on the cross-side network externalities ([Katz and Shapiro, 1985](#); [Rochet and Tirole, 2003](#)). Another set of papers focus instead on the need to get on board and to convince consumers (e.g. [Basu et al., 2003](#)) and the related issues of Chicken and egg paradox ([Caillaud and Julien, 2003](#)) and on the competition between platforms looking at the same group of customers defining the concept of multi-homing (e.g. [Armstrong, 2006](#)).

The second cluster, based on the “Pricing dynamics”, starts from the role that pricing mechanisms may have in dealing with multi-homing phenomena ([Armstrong, 2006](#)) and explores the dynamics that drive the externalities through the price and the strategies to maximize the overall profit for the involved parties (e.g. [Guthrie and Wright, 2007](#)).

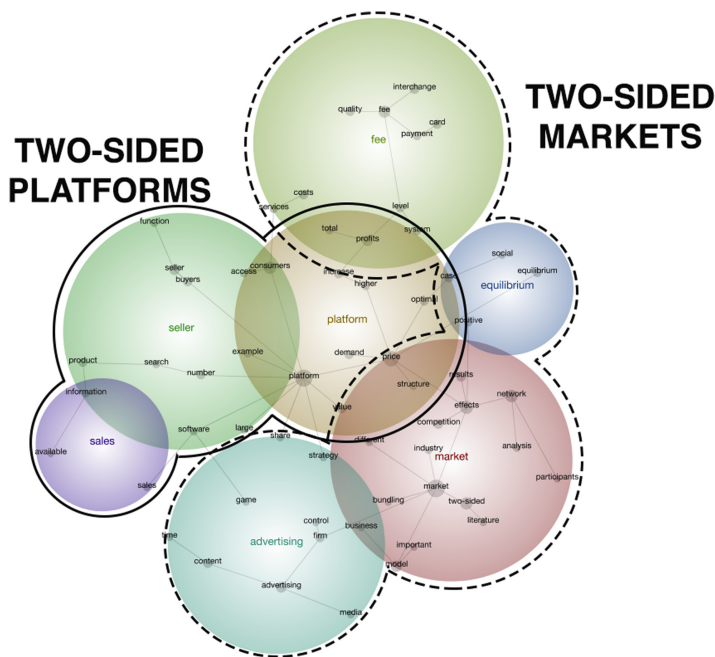
The last cluster, “Advertising”, is based on the intersection between two different topics: markets and newspapers. Their merging points out the second category of Two-Sided

Platforms, typical of the media industry and in particular of the newspapers, which is based on advertising mechanisms (Gal-Or *et al.*, 2012). Those businesses match the definition of Two-Sided Platforms, but with different peculiarities, since the platform is not enabling a direct transaction between the parties (Evans, 2003a), which later have been defined as Non-Transaction Two-Sided Platforms (Filistrucchi *et al.*, 2014).

The second time frame under consideration (Figure 7) discloses a dyadic macro clusterization: the gradual movement from “Two-Sided Markets” to “Two-Sided Platforms”.

First, the main topics and themes that got attention in the first time window (2002–2007) are somehow enhanced. Research still focuses on pricing mechanisms and market structure (e.g. Verdier, 2012; Wang, 2010; Chou *et al.*, 2012) and on the economics of this market structure (Rysman, 2009).

Furthermore, the relevance of the non-transaction structure is even more significant, taking a different perspective on advertising, focusing on pricing dynamics in this context (Yao and Mela, 2011) and on the role of the platform provider in the system (Godes *et al.*, 2009). Here we can also observe a deviation from the newspaper industry (Peitz and Valletti, 2008; Wilbur, 2008) and the analysis of the phenomenon from the customers’ perspective (e.g. Kaiser and Song, 2009).



Note(s): Dots are concepts (collections of words which carry related meaning) and circles represent themes, which are an aggregation of related concepts. The brightness of the circle shows the importance of the themes, while the distance between concepts denotes how related they are

Figure 7. Text mining analysis on the full text of the 45 papers published between 2008 and 2013 included in the final sample

Moving to the Two-Sided Platforms macro cluster, we can see a gradual shift from the market to the platform concept.

Scholars start deepening in managerial issues regarding these kinds of businesses. For example, the role of the design of the relationships between the parties started being considered (Bakos and Katsamakas, 2008). Moreover, the perception of the central platform as an organization increased. On the one hand, because the evolution of the central platform has been considered (Eisenmann *et al.*, 2011). On the other, because of the focus on the co-opetition dynamics between similar platforms (Mantena and Saha, 2012). Interestingly, also rooted management theories started being applied in the field, such as a Resource-Based View of the firm applied to this kind of businesses (Sun and Tse, 2009).

The third and last time snapshot (2014–2019) still presents the dualistic view of the second time frame. Indeed, the two macro-clusters have been labeled as “Two-Sided Economics” and “Two-Sided as a Business Model” (Figure 8).

The first one, is the natural expansion of all the streams previously mentioned, still focusing on pricing dynamics (e.g. Jin and Rysman, 2015) and the economic dimensions of this kind of businesses, such as the quantification of cross-side network externalities (Chu and Manchanda, 2016) or the market definition through the lenses of the two-sided market theory to manage anti-trust issues (Filistrucchi *et al.*, 2014). Also the advertising stream continues here (e.g. Burguet *et al.*, 2015).

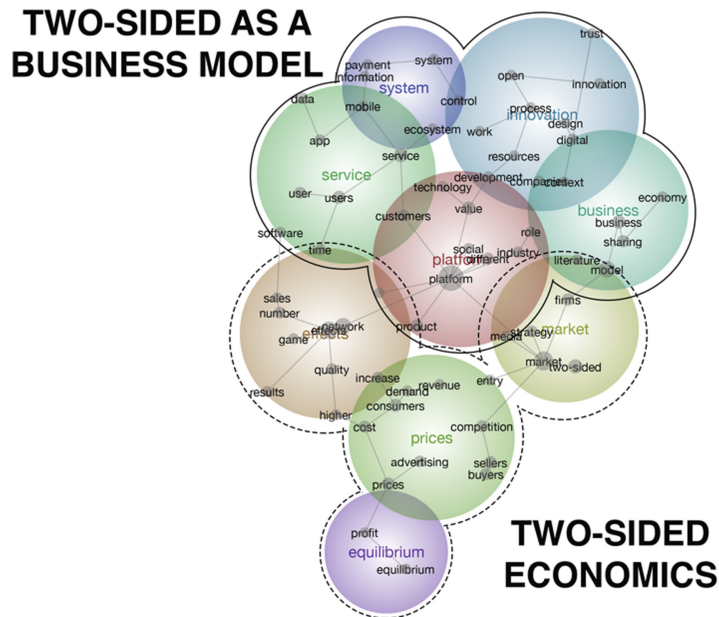


Figure 8. Text mining analysis on the full text of the 134 papers published between 2014 and 2019 included in the final sample

Note(s): Dots are concepts (collections of words which carry related meaning) and circles represent themes, which are an aggregation of related concepts. The brightness of the circle shows the importance of the themes, while the distance between concepts denotes how related they are

More interestingly for the objectives of this paper, the second macro-cluster starts to show a significant number of keywords for the first time. Along with previously mentioned dimensions, such as “design” or “online”, research on Two-Sided Platforms moved its focus also in other fields, talking about “ecosystems”, “innovation”, “app”, “mobile” and so on.

In this final cluster, we find papers that link the overall concept of a two-sided platform with different theoretical views, such as open innovation (Holzmann *et al.*, 2014; Gawer and Cusumano, 2014) and business model innovation (e.g. Dreyer *et al.*, 2017). Taxonomies and ways to highlight relevant variables emerged (e.g. Täuscher and Laudien, 2018), as well as the impact on traditional industries (e.g. Hämmänen *et al.*, 2017). A life cycle perspective also emerged, both concerning marketing needs to get the sides on board (e.g. Muzellec *et al.*, 2015) and in terms of capabilities (e.g. Teece, 2017). The role of the digital environment and mobile apps in this kind of businesses arose even in a more precise way (e.g. Roma and Dominici, 2016; Roma and Ragaglia, 2016; Trabucchi *et al.*, 2017).

Interestingly, even more classic topics of the field have been re-studied with a higher management perspective, for example questioning the role of (One-Side) Value-Added Services on the prices (Dou *et al.*, 2016).

Discussion

Based on the text mining results this study addresses how the concept of Two-Sided Platforms evolved over the years. It is interesting to note how the economic perspective that brought to the first definition remained constant over time, still tackling typical economic dimensions even in the latest years (e.g. equilibrium, entry). Nevertheless, the economic perspective has been widely enlarged over time, embodying and considering more and more the managerial dimensions for this kind of businesses.

Scholars started considering the peculiarities of Two-Sided Platforms as an interesting object of the study also from a managerial perspective, considering the opportunities and the challenges that this market structure offers.

The two perspectives, economic and managerial, contaminated themselves over the years, offering a merged view of the topic.

Considering a purely managerial perspective, two main lines of research emerged. They respectively look at Two-Sided Platforms as: (1) an operational choice (Transaction Two-Sided Platforms) or as (2) a value capturing opportunity (Orthogonal Two-Sided Platforms) to make a single side business sustainable.

Two-sided as an operational choice: transaction two-sided platforms

The very first papers in the field (e.g. Rochet and Tirole, 2003; Parker and Van Alstyne, 2005; Rysman, 2009) discuss the peculiarities of Two-Sided Platforms mentioning examples such as payments cards, game consoles and even brick-and-mortar businesses such as shopping malls. All these examples are based on the idea that two different groups of players (the sides) get together to exchange some transaction through the intermediary platform. This seems to be an intrinsic characteristic of specific industries, affected by indirect or cross-side network externalities (Katz and Shapiro, 1985) and on the idea of complementors (e.g. Gawer and Cusumano, 2002) that can enhance the value of a central platform developing products or services through it. Scholars defined this kind of platforms in different ways, such as “Market Makers” and “Demand Coordinators” (Evan, 2003a) or “Transaction Two-Sided Platforms” (Filistrucchi *et al.*, 2014). In some cases, they have even been – more broadly – defined as “Marketplaces” (Täuscher and Laudien, 2018).

The body of literature that has been developed over the years allows for a different perspective – if compared with this original notion – considering these platforms as a clear

operational choice to create a business venture. The diffusion of digital technologies enhanced and somehow even enabled the chance to get two different groups of players on board at the same time, even without a direct physical interaction. Digital technologies were the fertile ground that enabled the birth and the growth of the Transactions Two-Sided Platforms we all know today. Companies like Airbnb and Uber, or even rising stars like Deliveroo, are not based on industries or sectors which are intrinsically linked to the need to have a two-sided structure, they are the result of an operational choice in their business model, which aims to act as an intermediary between a demand and a supply side enabling new business models even in traditional industries.

Two-sided as a value capturing opportunities: orthogonal two-sided platforms

From the early days in the field, different kinds of Two-Sided Platforms have been considered. In 2003 Evans already mentioned “Audience-makers” platforms, referring to businesses based on advertising messages such as newspapers or Yellow Pages (Evans, 2003a). More recently, they have been mentioned as “Non-Transaction Two-Sided Platforms” (Filistrucchi *et al.*, 2014) highlighting how the intermediary platforms are not directly putting in contact the two sides enabling a transaction, while they are creating a critical mass on one side (e.g. readers) that can be further exposed to stimuli coming from the second side (i.e. advertisers).

Over the 15 years that this review is considering these kinds of businesses have been often studied, both directly by focusing purely on the advertising industry and treating it through the lenses of Two-Sided Platforms (e.g. Peitz and Valletti, 2008; Wilbur, 2008; Kaiser and Song, 2009) and directly by aiming to contribute to the knowledge in the two-sided platform field (e.g. Godes *et al.*, 2009; Reisinger, 2012; Burguet *et al.*, 2015). This overview explains how very often these researches are directly focusing exclusively to this type of Two-Sided Platforms, but without taking directly into consideration the fact that they are somehow intrinsically different from other Two-Sided Platforms and that these differences have been pointed out and should be taken into consideration.

Non-Transaction Two-Sided Platforms connect the second side to monetize the service offered (often for free or subsidized) to the first side (e.g. readers, viewers and in general end users) (Parker and Van Alstyne, 2005). Consider for example the act of buying a newspaper, where the reader is partially covering the costs of production and delivery, or the usage of the search engine by Google: the economic sustainability of the service is related to the existence of a second side (the advertisers). Recent developments highlighted non-transaction dynamics based on the usage of data gathered during the interaction with the first side, building on similar mechanisms and still staying in the value capturing arena while changing the perspective on the first side from a target to a source (Trabucchi *et al.*, 2017; Rizk *et al.*, 2020; Trabucchi and Buganza, 2019).

The basic characteristics of Two-Sided Platforms are still in place, having an intermediary that connects two different kinds of customers (and the platforms are still offering a service to both sides) while internalizing the indirect externalities (which often are not bi-directional, having an increase in terms of value for the advertisers if the number of readers grow, but not the vice versa). Nevertheless, the value received by the first side (end-users) is internally produced and managed by the platform through a very typical linear value chain, while the value capturing mechanisms are entirely based on the existence of a second side.

We referred to these businesses as “Orthogonal Two-Sided Platforms” to highlight the different role of the second-side players, which move from the transaction line to play a significantly different role in the system (see Figure 9). These businesses have been largely studied in literature and have also been defined more than once. Still, scholars often do not consider the differences between the two kinds of Two-Sided Platforms deeply, creating an ambiguous space on the relevance of some studies for a particular kind of Two-Sided Platforms.

Taking a multi-sided perspective, the two different kinds of Two-Sided Platforms can be easily merged in a Hybrid Multi-Sided Platform, but the literature so far does not directly tackle this kind of businesses, even if empirical examples can be easily found with all the Transactional Two-Sided Platforms that also rely on advertising mechanisms to increase the profitability of the system (Figure 9).

The literature is still missing depth and differentiated understanding of the commonalities and differences of these kinds of configurations, which might enhance the possibilities to study and dig in the dynamics that let platforms move from two- to multi-sided businesses.

This discussion may extend previous researches that aimed to define different kinds of Two-Sided Platforms (Evans, 2003a; Filistrucchi *et al.*, 2014), but also those researches that tried to investigate what are the key variables to describe these platforms, highlighting for example the kind of players involved or the nature of the service (Täuscher and Laudien, 2018). This comprehensive overview on the types of Two-Sided Platforms adds another variable (Transactional vs Orthogonal) questioning if and how previous variables – and related research – apply to the different kinds of platforms. In particular, considering the different triggers of the two models: an operational choice when creating a business and or a new value capturing mechanism to make a single side business sustainable.

It is not just a matter of money: flows in two-sided platforms

The last section of this discussion aims to summarize the insights derived from the literature review, regarding the kind of interactions and exchanges on the basis of this market structure.

Besides differentiating transactional and orthogonal platforms looking at if they enable (or not) a direct transaction between the two sides, it is also relevant to investigate the nature of what these platforms exchange with both sides.

As previously mentioned, the initial focus of the entire field was related to pricing dynamics, and the historical analysis of the field shows that they are still today a relevant perspective on these businesses.

Still, the initial modeling of Two-Sided Platforms was based on the exchanges between the platform provider and the sides: a product (i.e. the newspaper) or service (i.e. the possibility to give or receive a payment in the case of the credit cards) from the platform to the side(s) and (possibly) money from the side(s) to the central platform.

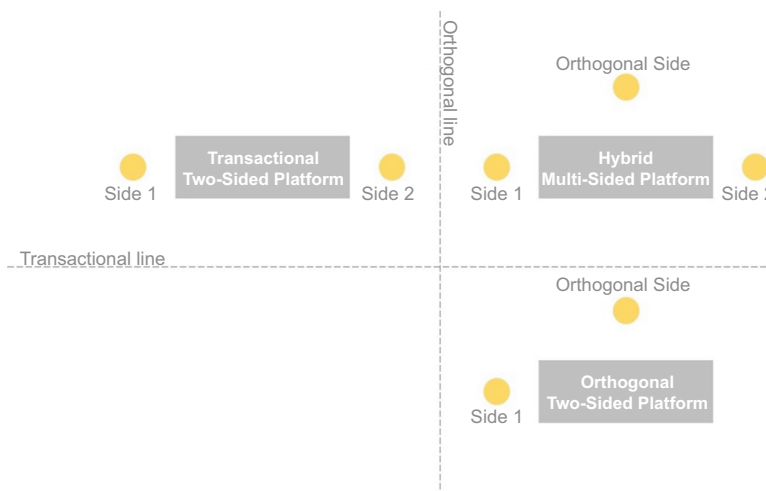


Figure 9.
A comprehensive view
of the different kinds
of two-sided platforms

Over the years, the relevant body of literature suggested some other exchanges that flourish in the systems.

First, the sides exchange something, which may be a product or a service from a Transactional perspective (i.e. a physical product looking at sellers and buyers on a marketplace like eBay), or an Indirect relationship in the Orthogonal dimension (such as the readers' attentions towards the advertisers).

Moreover, the growing attention to the business model dynamics, the need for engagement and the differences related to the typologies of players on the two sides also unveiled other kinds of offerings and exchanges, which have even enlarged through the digital opportunities that raised over the years.

Among the relevant flows that may be considered, recent literature highlights the possibilities to develop and target specific services to one of the sides, labeled as Value-Added Services, aiming to engage with that side to have different kinds of impacts on the overall system (Dou and He, 2016; Dou et al., 2016).

As previously mentioned, the digital transformation and the flourish of digital opportunities played a significant role in the spreading of Two-Sided Platforms using the Internet and mobile apps as the channel to matchmake the sides (e.g. Trabucchi et al., 2017). This allows to gather and eventually exchange a considerable amount and variety of data in the system, having a data flow with all the parties involved in the system. The flows are generically summarized in Figure 10, considering a generic Multi-Sided platform with both a Transactional and an Orthogonal side.

Platform thinking: hybrid multi-sided platforms as lenses to foster innovation

Our review highlights three main points: Two-Sided Platforms (1) are an operational business model choice, (2) can enable value capturing opportunities through orthogonal players and (3) manage various flows with various parties. The evolution of the flagship cases of the last decade – Airbnb and Uber – clearly shows how these logics can be joint together, creating complex Hybrid, Multi-Sided Platforms that evolve adding sides to the initial transactional two-sided structure (Trabucchi et al., 2021).

We would like to close our review by taking a step back from our results and providing a conceptual framework that may transform Two-Sided Platforms into useable tool to think about innovation and business model evolution.

We can talk about Platform Thinking as the ability to see Hybrid Multi-Sided Platforms as a useful resource-orchestration structure to unveil innovation opportunities.

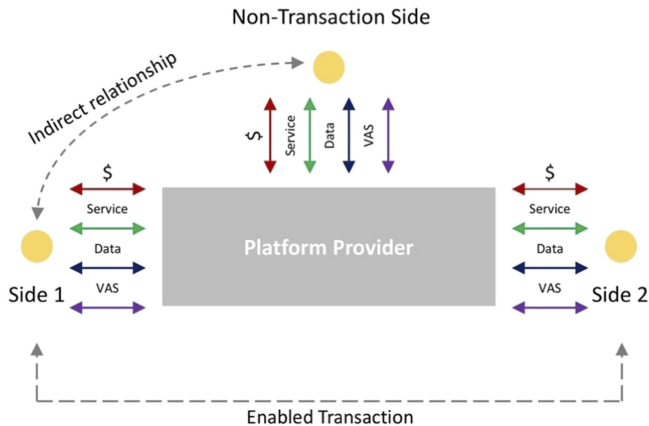


Figure 10.
A comprehensive view of the general exchange flows between the platform provider and the sides

In doing so, we propose four propositions that can open future research opportunities.

Proposition 1. Transactional Two-Sided Platforms can further exploit their untapped value by evolving toward Hybrid Multi-Sided Platforms.

Transactional Two-Sided Platforms are the basic structure that created the concept of Two-Sided Platforms (Rochet and Tirole, 2003). Even the original definition by Rochet and Tirole suggests the possibility of having even more than two sides, but still, the vast majority of ventures relying on this structure tend to be created with only two sides. Nevertheless, it is becoming evident how successfully Two-Sided Platforms tend to evolve toward more complex configurations, adding new supply sides and even orthogonal players that can exploit the value of data generated through the platforms. Possible examples are the abovementioned Airbnb and Uber, which added for examples experiences (Airbnb Experiences) and restaurants (Uber Eats) generating new transaction lines, but also orthogonal players that exploit the data as in the case of Uber Movement. The key point seems to be the platform provider’s ability to see that the basic two-sided structure embeds untapped value that can be exploited acting as an idle asset hunter (Trabucchi *et al.*, 2021) (Figure 11).



Figure 11. From transactional two-sided platforms to hybrid multi-sided platforms

Proposition 2. Orthogonal Two-Sided Platforms can exploit their ability to manage different sides by externalizing part of the value creation process and evolving towards Hybrid Multi-Sided Platforms.

Orthogonal Two-Sided Platforms have the peculiarities in the world of Two-Sided Platforms: (1) the value creation process is basically managed by the platform provider and still, (2) they manage a second side to capture the value they create. In other words, from a management perspective, Orthogonal Two-Sided Platforms look like traditional “one-sided” businesses, having a straightforward customer side to address and managing the value creation process toward them completely. Nevertheless, they have the ability to manage also a second value proposition and to exploit the value generated by the first side users while they enjoy the service (Trabucchi *et al.*, 2017). Their existing ability to manage a double value proposition (Muzellec *et al.*, 2015) and more broadly the peculiarities of Two-Sided Platforms (Täuscher and Laudien, 2018) can push the platform provider in exploiting these ability evolving toward a hybrid multi-sided platform, exploiting at least partially the value creation to a supply side. A great example here is Facebook that having only end-users on one side and advertisers on the second, became a Hybrid Multi-Sided Platforms welcoming companies, developers, sellers (with the marketplace) and many others (Figure 12).

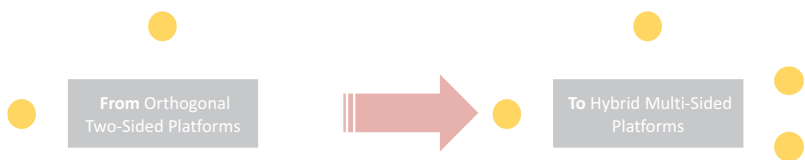


Figure 12. From orthogonal two-sided platforms to hybrid multi-sided platforms

Proposition 3. Established businesses based on a linear value chain can exploit their assets, resources and relationships by evolving toward Hybrid Multi-Sided Platforms.

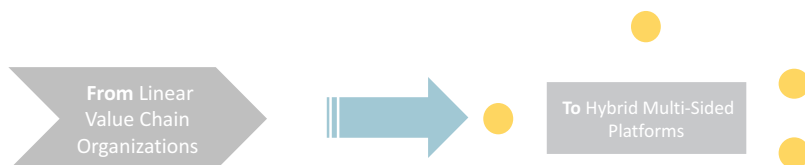
There are evidence in the literature that show how Two-Sided Platforms acted as a trigger for business model innovation in mature industries, such as the retail (Hänninen *et al.*, 2017). Nevertheless, from a value perspective they are considered an innovative architecture that may push scholars and practitioners to re-think the basic assumptions of the value chain (Amit and Han, 2017). Established companies based on traditional linear value chain, with suppliers that provide raw materials, internal processes, resources and knowledge that transform them in something valuable for the end-customers may exploit the value of Two-Sided Platforms (Figure 13). There are relevant cases like Amazon that started with a traditional value chain buying and distributing books, that now is one of the greatest cases of Hybrid Multi-Sided Platforms, with features as their marketplace or their Mechanical Tuck. Established companies have assets, existing relationships, knowledge, a customer base and many other resources that – through platform thinking – can be re-arranged in a hybrid multi-sided platform to unlock new value flows and innovation opportunities (Dell’Era *et al.*, 2021).

Proposition 4. Hybrid multi-sided platforms can exploit some of their basic underlying mechanisms by relying on the opportunities that emerging technologies may provide, by exploring a new level of business model innovation becoming Distributed Platforms.

We tend to think about Two-Sided Platforms as an innovative business model. On the one hand, some of the most successful start-ups of the last decade – and many in the Unicorns’ club – rely on a two or multi-sided structure. The previous three propositions show how the value of Hybrid Multi-Sided Platforms can still be exploited in many ways from many companies, being them Transactional Two-Sided Platforms (Proposition 1), traditional services that capture value through an orthogonal side (Proposition 2) or even established businesses that may rethink their entire business model (Proposition 3). Still, new emerging technologies have already set the basis for a new resource configuration that may challenge the current knowledge on Hybrid Multi-Sided Platforms. Blockchain emerged as the leading technology that is re-shaping the platforms’ model by enabling Distributed Platforms (Pereira *et al.*, 2019). Many young companies are using the blockchain technology to create a different kind of business models, where the blockchain itself is managing some of the activities usually in charge to the platform provider, while enabling different kinds of mechanisms and interactions among the users (Trabucchi *et al.*, 2020, 2021). Future research and future ventures may explore also how Hybrid Multi-Sided Platforms will evolve thanks to the opportunities unveiled by new technologies (Figure 14).

These four propositions show what we define as Platform Thinking, considering Hybrid Multi-Sided Platforms as a conceptual model that may help in unveiling the value embedded in existing Two-Sided Platforms, but also to re-think established (traditional) businesses and to exploit opportunities hidden in emerging technologies.

Figure 13.
From linear value chain organizations to hybrid multi-sided platforms



Avenues for further research

The four propositions propose four directions that scholars and practitioners can take to explore the world of Two-Sided Platforms further. Still, we would like to close this systematic literature review by pointing out specific avenues for future research. Two-Sided Platforms are considered as a peculiar resource configuration that challenges the traditional rules of value creation and value capturing (Amit and Zott, 2015). At the same time, traditional management theories have been used to understand Two-Sided Platforms. Transaction costs theory (Williamson, 1991) has been used to assess the fundamental definition of Two-Sided Platforms, highlighting how this structure facilitates the matching between the two sides (Rochet and Tirole, 2003). The Resource-Based View (Barney, 1991; Grant, 1999; Wernerfelt, 1984) of the firm has also been used to assess the relevance of the market context in defining the role and the relevance of different kinds of resources, using Two-Sided Platforms as a very unusual setting (Sun and Tse, 2009). Still, a number of theoretical perspectives are missing in this literature arena. In this section we explore possible avenues for future research, relying on the evolution of the field that has been described throughout the paper, along with the critical perspective that has been taken in the review and suggesting the Platform Thinking. Indeed, specific theories and concepts that may be applied and used to dig into the potential research questions are going to be presented as well (see Table 3).

First of all, future studies might focus on developing a more comprehensive understanding of Two-Sided Platforms merging different perspectives. In particular, the standpoint of the different kinds of players involved in the system should be considered (referring to Propositions 1 and 2). In particular, players taking part in a transactional two-sided platform may be considered under many different perspectives. Are they perceiving any difference regarding the fact of being on a platform? Why do they participate? Are their expectations somehow biased by the platform structure? Are there differences regarding the kind of players considered (Consumers VS Businesses)? These different questions may be tackled relying on some different theories of concepts that go from motivational drivers (Ølander and Thøgersen, 1995; Füller, 2006) to engagement mechanisms (va Doorn *et al.*, 2010; Brodie, 2011). They can even be expanded taking a more business-oriented perspective and considering co-opetition dynamics (Bengtsson and Kock, 2000; Dagnino and Padula, 2002) or strategic alliances (Liebeskind *et al.*, 1996; Rosenkopf and Almeida, 2003).

All these theories and concepts may be challenged and expanded considering the intrinsic peculiarities of these businesses.

Taking an orthogonal perspective, some of the previous questions and standpoints may still be relevant (e.g. the role of the expectations toward the platform or the impact of different kinds of consumers). Furthermore, it would be interesting to dig in the role of externalities in this setting (Katz and Shapiro, 1985) or in the innovation process that let this kind of business models emerge (e.g. Cooper, 1990).

Moving from a side-related standpoint, future avenues for research may explore in a holistic way the business model implication derived from this kind of businesses (Propositions 1, 2 and 3). The way in which resources are configured in Two-Sided Platforms is peculiar (Amit and Zott, 2015). Therefore, peculiarities in the way in which these

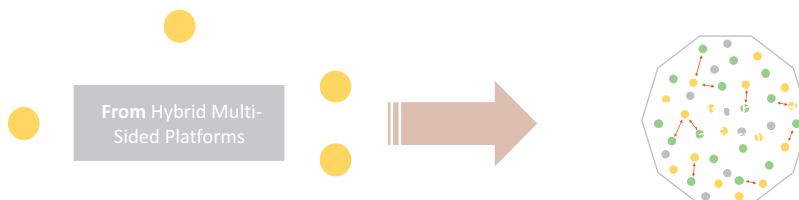


Figure 14.
From hybrid multi-
sided platforms to
distributed platforms

Table 3.
Research gaps and
future research
directions

Research gap	Potential research questions	Theories/concepts that can be applied
(1) Developing a more comprehensive understanding of Two-Sided Platforms by merging different perspectives <i>Transactional sides: Demand Side or Supply Side</i>	<p>What are the motivational drivers that influence participation in two-sided platforms? What is the perception of customers regarding the other sides of the platform? How does the platform provider engage different sides at the same moment? What are the opportunities and challenges of involving different kinds of players (C2C VS B2C or C2B or B2B platforms)? What are the competitive and/or cooperative dynamics in the area of same-side interaction?</p>	<p>Motivational drivers (Ølander and Thøgersen, 1995; Fuller, 2006) Engagement mechanisms (Van Doorn <i>et al.</i>, 2010; Brodie <i>et al.</i>, 2011) Co-opetition (Bengtsson and Kock, 2000; Dagnino and Padula, 2002) Strategic alliances (Rosenkopf and Almeida, 2003; Liebeskind <i>et al.</i>, 1996) Innovation process and new product development (Cooper, 1990; Johnson <i>et al.</i>, 1986; Scheuing and Johnson, 1989; Donnelly <i>et al.</i>, 1985; Alam and Perry, 2002; Melton and Hartline, 2015)</p>
(2) Business Model Perspective <i>Transactional Two-Sided Platforms</i>	<p>How can orthogonal players be engaged in such platforms? How does timing impact in the engagement process of orthogonal players? What is the role of externalities regarding orthogonal sides?</p> <p>What are the value creation drivers of Transactional Two-Sided Platforms? How can companies operationally solve the Chicken and Egg paradox? What are the drivers to feed cross-side network externalities between the sides? What are the business model design variables that platform providers need to consider in such environments? What are the innovation drivers that lead to the creation of two-sided platforms? What are the organizational challenges to manage a two-sided platform? How can companies outsource critical activities to the supply side? How can platform providers control and manage the two sides? How can technological opportunities (e.g. big data, blockchain) enhance and/or challenge transactional platforms?</p>	<p>Business Model Innovation (Zott and Amit, 2010; Massa <i>et al.</i>, 2016) Innovation process and Innovation triggers (Von Hippel, 1986; Tushman <i>et al.</i>, 1997; Verganti, 2009) New product or service development (Cooper, 1990; Johnson <i>et al.</i>, 1986; Scheuing and Johnson, 1989; Donnelly <i>et al.</i>, 1985; Alam and Perry, 2002; Melton and Hartline, 2015) Technology push innovation (Anderson and Tushman, 1990; Abernathy and Utterback, 1978; Tushman <i>et al.</i>, 1997; Christensen, 1997)</p>

(continued)

Research gap	Potential research questions	Theories/concepts that can be applied
<i>Orthogonal Two-Sided Platforms</i>	<p>What are the antecedents to the creation of an orthogonal structure?</p> <p>What is the innovation process behind such businesses?</p> <p>How can technological opportunities enhance and/or challenge orthogonal platforms?</p>	Network orchestration theory (Hitt <i>et al.</i> , 2011; Sirmon and Hitt, 2009)
(3) Evolutionary perspective: from Two- to Multi-Sided Platforms	<p>How can platform providers orchestrate the variety and complexity of relationships with the other sides?</p>	Service expansion (Sawhney <i>et al.</i> , 2003)
<i>Hybrid Multi-Sided Platform</i>	<p>How can the platform provider move from two to multi-sided platforms?</p> <p>What are the antecedents to let the platform provider add different sides?</p> <p>What are the innovation practices suitable for such businesses?</p> <p>How can businesses move from traditional linear value chain to two-sided platforms?</p> <p>What are the strategies to scale up internationally two-sided businesses?</p>	International expansion (Zahra <i>et al.</i> , 2000)

Table 3.

firms create and capture value may be further explored. In particular, it may be worth to build on the well-developed economic roots of this literature, to further explore the managerial dynamics that are affected by the intrinsic characteristics of these businesses (e.g. the existence of externalities or the chance to have multiple kinds of customers on board together). In this vein, Business Model Innovation (e.g. [Zott and Amit, 2010](#); [Massa et al., 2016](#)) may be an interesting and relevant theoretical lens to explore these issues further. Furthermore, digging in triggers that generate such businesses, taking an innovation perspective (e.g. [Von Hippel, 1986](#); [Tushman et al., 1997](#); [Verganti, 2009](#)) may reflect different views in the innovation landscape.

Moreover, the chance to consider how Two-Sided Platforms may be enhanced or even challenged by growing technological trends ([Proposition 4](#)) – such as the increasing relevance of Big Data or the emerging hype on Blockchain – might open relevant and interesting spaces for further development. Similarly, social trends – like sharing economy (e.g. [Basili and Rossi, 2018](#); [Huang, 2018](#); [Guo et al., 2018](#)) should be further exploited in lights of Two-Sided Platforms ([Sanasi et al., 2020](#); [Trabucchi et al., 2019](#)).

In the end, it may be interesting to develop a further and holistic understanding of this kind of platforms. The Network Orchestration Theory ([Hitt et al., 2011](#); [Sirmon and Hitt, 2009](#)) may offer new insights to further deploy the analysis and understanding of the comprehensive relationships between the platform provider and all the sides. Similarly, an ecosystem view may help (e.g.).

The holistic standpoint could also be taken into the time perspective, having an evolutionary view of the platform system and ecosystems. In particular, previous researches often considered Two-Sided Platforms in a static environment, analyzing how the two or multi-sides interact between them and/or with the platform provider. Still, these businesses go through a traditional lifecycle like any other and this may lead to evolutionary dynamics and innovation. What does foster innovation mean for a two-sided platform? Is there more than just innovating and improving the kind of relationships with the existing sides? Are there processes to add new sides and expand the business horizons? These questions may be tackled taking an innovation perspective and studying the development process of these businesses from a longitudinal perspective (e.g. [Sawhney et al., 2003](#)).

Over the last years, the field has seen an increase both of qualitative papers and of empirical papers. Still, coherently with the economic roots of the concept, a huge portion of the research is based on theoretical models. It may be relevant for researchers to explore further the opportunities for empirical research, both from a qualitative and a quantitative perspective. These empirical studies should be facilitated by the growing diffusion of new Two-Sided Platforms. Nowadays the number of companies – both start-ups and established businesses – based on this peculiar structure is much higher than just a few years ago, opening relevant and intriguing possibilities for research.

Conclusion and implications

Hybrid Multi-Sided Platforms are Landlords with no Lands: we are dealing with companies that manage many value flows, mainly coming from outside their boundaries, but having the power to orchestrate the flows and to set the rules of the games. Still, the characteristics and peculiarities of these Landlords may unveil various innovation opportunities if we embrace a Platform Thinking mindset.

Our study combines co-citation analysis and text mining of articles taking a managerial perspective on Two-Sided Platforms (and more broadly Hybrid Multi-Sided Platforms) to present a novel, systematic and comprehensive review of the field. The results suggest a field which evolved significantly over the last 15 years, moving from a purely economic concept to a wider one, with a number of opportunities and implications for managers and entrepreneurs.

In doing so, we have double contribution. The first and foremost is academic oriented. The aim is to offer the chance to have a clearer view in the vast and complex world of Two-Sided Platforms, while providing a useful summary and potential starting point to let the field flourish from a managerial perspective considering the peculiarities of these businesses which offer relevant opportunities hiding significant and intriguing challenges to be faced.

The second contributions can be referred to the practitioners' community, offering comprehensive models that may enhance the understanding of this particular kind of businesses, while offering a compass to dig in the existing literature and knowledge in the field.

In particular, over the years we have seen a gradual movement from economic research with managerial implications to the existence of purely management-oriented studies, which led the field to evolve from "Two-Sided Markets" to "Two-Sided Platforms". This gradual shift went along the integration of a number of various perspectives and topics which have been further developed, starting from the seminal issue of pricing dynamics.

One of the main findings of this research is to show an extensive field, which already took into consideration potential insights but still has a huge unexpressed potential. This is also connected with the second contribution of the research, which showed how the knowledge in the field is still highly fragmented, lacking an integrated view.

Building on these observations, this article offers a comprehensive view of the underlying structures behind the concept of Two-Sided Platforms (Transactional VS Orthogonal) and also provides a comprehensive framework of the flows that may play a relevant role in the interaction between the platform provider and the sides. These frameworks work as the foundation upon which some avenues for further research have been proposed. In particular, a research agenda based on three main pillars is suggested, taking a single side perspective, moving it to a business model orientation and adopting an evolutionary and longitudinal perspective.

This work let us highlight the emergence of Platform Thinking as a conceptual framework. We closed our review with four propositions that future research may explore, while proposing our view of how the conceptual Hybrid Multi-Sided framework emerging from the literature may unveil innovation opportunities for existing platforms, established organizations and also to exploit new technological opportunities.

This study is not free of limitations. The usage of a systematic research method has been used to reduce the biases traditionally associated with purposeful reviews, but still this method can be affected by other biases. Indeed, the findings and the models are intrinsically influenced by the scope and nature of the research design, taking a specific perspective in creating the database of papers. To minimize the sampling biases, the authors employed a rigorous sample selection procedure, as previously described, even if the need and willingness to go through a screening process of the abstract had an inevitable impact on it. Furthermore, the structure results of co-citation and text mining have been qualitatively analyzed, improving the level of structure of the literature review, but remaining a subjective reading of the authors.

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