

## **A Bibliometric Analysis of Open Strategy: A new Concept in Strategic Management**

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### **Abstract**

Strategy development has traditionally been an exclusive and secretive matter. However, some organizations have recently used IT to enable openness for making a strategy. The aim of this paper was to research the trends of open strategy by applying bibliometric mapping. The method involves identifying open strategy-related documents, including a sample of 1717 existing documents from 2000 to 2016. Major trends in open strategy research literature including variations across publication years, identifying active research areas, co-authorship collaboration, and contribution of different countries were explored. The results indicated that the use of open strategy concept is growing in strategic management, despite the initial nature of strategy making. Based on the results and according to the amount of published documents, the most productive year has been 2015.

### **Keywords**

Open Strategy; Bibliometric analysis; Research Trends; Bibliometric Mapping

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## **Introduction**

Typically, strategic management means that top managers of a company formulate and implement the main goal and initiatives by considering the resources and assessing the environment (both external and internal) in which it competes (Nag et al., 2007).

Traditionally, strategy making is considered as an inherently secretive activity in which top management team (Gast & Zanini, 2012) and the group of elites who engaged inside the organization works on it. However, nowadays information technology advances and social media expansions are important forces to make the strategy clearer and more open than before as an informal process including more internal and external stakeholders.

During the last decade, there has been a deep change worldwide in sociological, cultural, technological, and organizational factors, contributing to the appearance of open strategy concept. Chesbrough and Appleyard (2007) developed the concept of open strategy based on "Open Innovation". So, open strategy originated from open innovation and involves a broader group of people in the strategy making process; also here the emphasis is on the role of information technology.

According to Chesbrough and Aooleyard (2007), this concept has been presented in various studies with titles including jamming, open strategy, strategy crowdsourcing, strategy blogs, and wikis, or simultaneous online games strategy.

As there is an increasing interest in open strategy, it could be worthy to investigate open strategy trends. Therefore, the aim of this research is bibliometric analysis of open strategy. Bibliometric analyses have been widely applied to evaluate research papers and provide information on growth trends (Fu & Ho, 2015). It is actually used as a quantitative method that is based on the analysis of related publications citation indices and the identification of the most prolific countries and institutes, highly cited publications the authors examine, research field development and the structure of knowledge (Shakiba et al.2016).

The current bibliometric research examines the magnitude of research on open strategy in journals in related papers for publishing strategic management research from 2000 to 2016. The related papers are extracted from Web of Science (WOS), which as one of the most popular databases contains various qualified academic publications.

In the next section, we present a brief theoretical foundation on open strategy. Then, it will be continued by introducing bibliometric studies

and mapping. In the third section, the research methodology is explained. The fourth section is related to the division of the results section into some subsections and finally, the results and avenues for further research will be discussed.

### **Theoretical Foundation of an open strategy**

The traditional balance between customers and suppliers has been changed due to global economy development. Ever increasing competition and change put companies under pressure due to emerging complexity of tasks, digitalization, innovation, ever-increasing cost of communications, high levels of uncertainty, geographic diffusion, networking, self-managing employees and shorter strategic life cycles. In trying to keep or adapt to the global changes in the environment, strategy openness is considered as a way in order for companies to remain competitive (Friis, 2015). Essentially, strategy-making openness shows that the transparency and the number of participants in the process of strategy making at different steps are increasing (Gegenhuber & Dobusch, 2017).

Researchers have noticed a trend in strategic initiatives, which is caused by the organizational environment. Chesbrough and Appleyard (2007) called such a trend “Open strategy” which actually as a movement has contributed to the process of strategy compared to those strategic decisions that are made by experts in the organization from high position. Open strategy are those strategic decisions which are diffused across different levels of organization and are supported by various stakeholders from inside and outside of organizations and also from different sections (Pittz & Adler, 2016). This new kind of strategy making (open strategy) challenges the traditional one because it is done by exclusive members in high levels of organizations (Gegenhuber & Dobusch, 2017).

In other words, it is different from traditional one in the sense that it is not “top-level strategizing” or “bottom-up strategizing” from the qualitative point of view empowered by IT and numerous external and internal members involved in accomplishing it. Traditional top-level strategizing as it is shown by its name is done by a limited number of executives of high rank and is secretive and exclusive. On the other hand, bottom-up strategizing is made by a specific number of employees from lower positions in organization or middle managers. (Tavakoli et al.2017).

As Whittington et al. (2011) mentioned, open strategy involves two important principles; inclusion which points to taking part in ‘strategic conversation’ in an organization and proposals, viewpoints and information which should be exchanged in order to continuously modify the organization’s strategy; and transparency which means that during strategy articulation process, specifically by considering the final produced strategy designation, the related information should possibly be observable.

Birkinshaw (2017) identified four aspects for “Open Strategy” as follows:

**Commons-based production:** This aspect is considered voluntary. In other words, people come together with the aim of creating information, knowledge or cultural goods such as Wikipedia and software outputs with open source such as Linux, Firefox and Apache.

**Crowd-based input to decision making:** The crowd refers to numerous individuals both internal like staffs and external like stakeholders who share their ideas. In comparison with the first aspect, the individuals have considerable lower level of commitment and input.

**Collective buy-in and action consistent with a specific performance:** It simply means having people change their outlook and/or behavior to accomplish a selected approach forward rather than asking them to donate their time, opinions or judgment in developing the strategy. The role of social media and technology in changing behavior is more significant here.

**Making sense of a company’s selected strategy collectively in capital markets:** This aspect is considerable regarding the large information gap between investors and executives, leaving room for intermediaries to make the information gathered by executives more meaningful and explain them.

Open Strategy has improved to contain two basic dimensions: a process which evaluates the impact of considerably vast participation in the process of strategy and the other one is content dimension in which the sustainability of open innovation approach matters (Appleyard & Chesbrough, 2017).

Considering the importance of this new trend in the literature of strategy management, it seems worthy to provide a comprehensive literature review on open strategy in order to show what has been done in this field during 2000-2016 and also the gaps in this regard.

With the help of bibliometrics, we represent a generic picture of open strategy in the following sections.

### **Bibliometric studies and Bibliometric mapping**

The function of a bibliometric study is to study and analyze scholarly publications such as books and articles and their citations through combining various tools, methods and frameworks which finally lead to the improvement of various metrics in order to achieve a perception about the intellectual structure of a vast academic discipline and to assess the impact of scientific journals, studies, and researchers (Ponce & Lozano, 2010).

Bibliometric mapping is a major research subject in bibliometric studies literature. Two aspects of bibliometric mapping that can be identified are the creation of bibliometric maps and the graphical representation of those maps.

Bibliometric mapping is used to visualize research literature with various visual maps providing a structural overview of articles (Vošner et al., 2016). One way of using bibliometric mapping is to distinguish the research districts with the aim of providing a survey of the topology, themes, topics, and terms of publications (Van Eck & Waltman, 2011).

Visualization of Similarities (VOS) is one of the popular mapping techniques which has been implemented by Leiden University, Netherlands, as a computer application called VOSviewer. This computer program visualizes bibliometric maps in different ways in order to analyze the publications comprehensively. Mapping and clustering are two advantages of the software “based on the normalized term co-occurrence matrix and a similarity measure” (Van Eck et al. 2010; Van Eck & Waltman, 2014).

In this paper, we employed the Web of Science (WoS) Core Collection database to collect the most relevant open strategy documents published between 2000 and 2016. Then on the basis of the publication year, document type, keywords, co-authorship collaboration, and highly cited articles, variations were analyzed to explore the main trends in open strategy researches.

### **Research Methodology**

The bibliometric analysis was applied to develop the explained objectives in the introduction. Garfield introduced this technique and

argued that it gathers a series of mathematical methods and statistics in order to analyze publications such as articles and books and measure them. It contains statistical methods to change scientific research topics qualitatively and quantitatively in order to Figureure out the publications profiles on the topic and to identify trends within a discipline (Albort-Morant et al., 2016).

A valid database should have been chosen for collection in this study. Accordingly, our data were collected from “Web of Science Core Collection” which includes “SCI-EXPANDED”, “SSCI”, “A&HCI”, “CPCI-S”, and “CPCI-SSH” to capture standard articles. Our search encompassed articles published from 2000 to 2016.

The keyword “open strategy” was searched in order to attain relevant documents. Then, these relevant documents were analyzed with the aim of showing research trends, publication, and citation number in each year and area.

The results of our search have been represented through tables and maps. For this reason, we used VOSviewer version 1.6.2. VOSviewer is a computer program which draws maps on the basis of network data. It can also be used for visualizing and exploring these maps. In other words, VOSviewer is chiefly applied to analyze bibliometric networks, but it can also be used as a program to generate, visualize, and explore maps based on any kind of network data. In the current research, the mentioned software was used for constructing and visualizing bibliometric map from topics and abstracts of articles which were published in the WoS over the period 2000-2016.

Then, as the average number of citations per year, a citation index for each study was calculated. Thereafter, the studies in our sample based on this index were ranked to identify the top 500 articles with the highest citation index. This sub-sample was used for our main analyses. However, for more general analysis, the full sample (i.e. 1717 studies) has been used as described in the results section.

## **Results**

The results of the bibliometric analysis of open strategy is shown in this part. As the purpose of this research was to achieve a comprehensive overview of open strategy studies progress, the analysis has not been limited to any special language, document type, or country. This paper surveyed scientific studies published between 2000 and 2016. As mentioned previously, VOSviewer version 1.6.2 was used for creating and visualizing bibliometric mapping from titles and abstracts of

articles published in the WoS. The results were clustered in different categories.

**Document type**

In our analysis of data set, 1717 information sources published from 2000 to 2016 were identified within 7 document types. Table 1 presents the frequency of each type of document.

**Table 1. Document types of open strategy research**

<b>Document Types</b>	<b>Records</b>	<b>% Of 1717</b>
Article	1051	61.211
Proceedings Paper	592	34.479
Review	43	2.504
Editorial Material	19	1.107
Book Review	5	0.291
Book Chapter	4	0.233
Retracted Publication	3	0.175

As Table 1 indicates, articles are the most dominant source of sharing knowledge of open strategy. According to the table, 1051 (61.21%) articles were published in this field during the determinant period. Articles were followed by proceedings papers (n=592; 34.48%) and reviews (n=43; 2.50%). The next ranks were claimed by editorial material (n=19; 1.11%), book review (n=5; 29%) and a book chapter (n=4; 0.23%) for developing knowledge on open strategy.

The minimum number of published information sources belonged to retracted publications (n=3; 0.18%).

The next analysis was applied using bibliometric mapping in order to show journals containing the largest number of papers on open strategy. According to the results, 302 journals were published papers on open strategy. As Figure 1 shows, journals of Research Policy along with European Journal of Operation claim the largest number of papers related to open strategy.

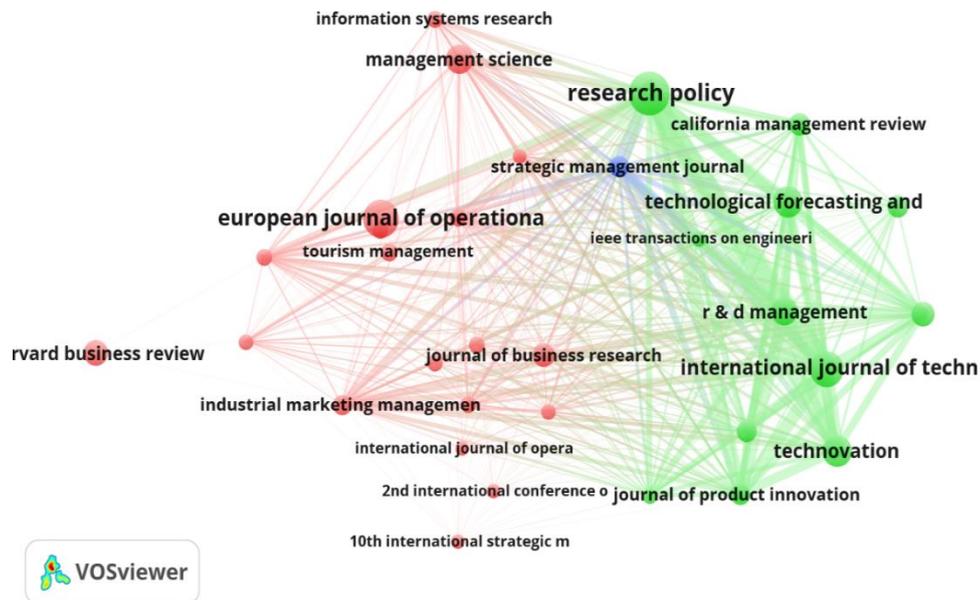
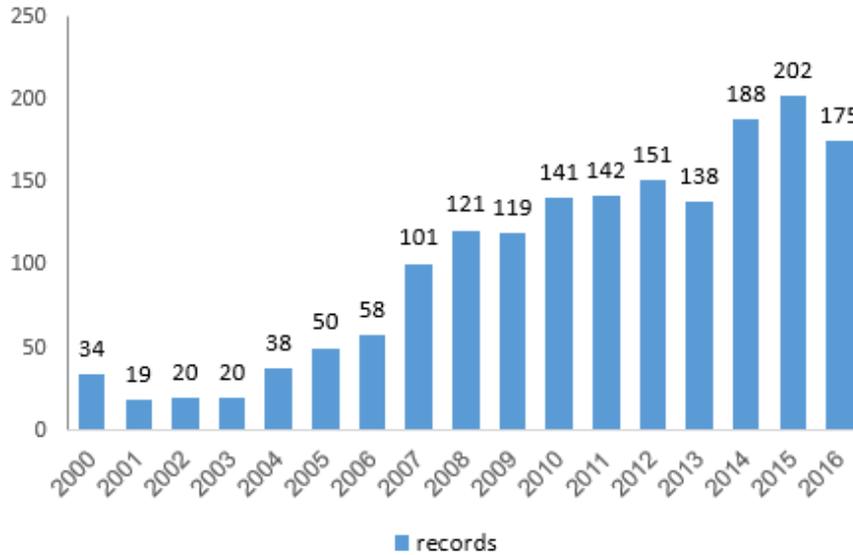


Figure 1. Top Journals

### The trend of publications and citations

Figure 2 displays the number of studies published on open strategy since 2000. Based on the Figure, the publication trend can be divided into three stages. The first step relates to the years between 2000 and 2006, when the works in this field were less than 100 per year, with 239 studies published during these years on open strategy. The second step spans the period from 2007 to 2013, when research grew considerably, suggesting the growing attention of researchers to open strategy. The annual volume during this step was more than 100 studies and the whole number of studies during these years was 913. At last, during the third step, from 2014 to 2016, the number of researches rose significantly. The largest number of studies on open strategy is related to 2015 with

202 papers. In addition, 565 studies were published during these 3 years.



**Figure 2. Number of open strategy publications per year**

Figure 3 shows the annual number of citations of open studies. Based on the diagram, over the past few years, the increase in a number of citations has been signed to such an extent that it reached as many as 3560 citations in 2015. The highest number of citations over the period of 2000-2016 relates to “Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms” written by Laursen K. and Salter A. (2006) published in *Strategic Management*, which has totally received 1070 citations.

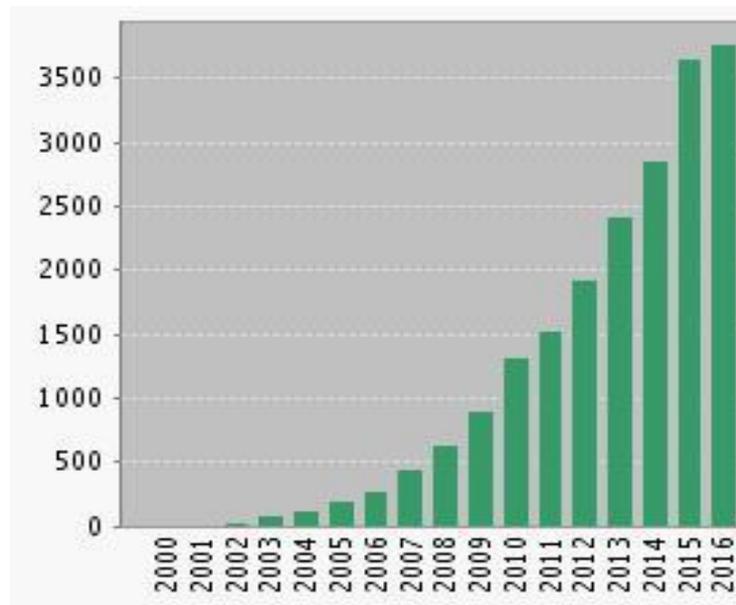


Figure 3. Citations per year

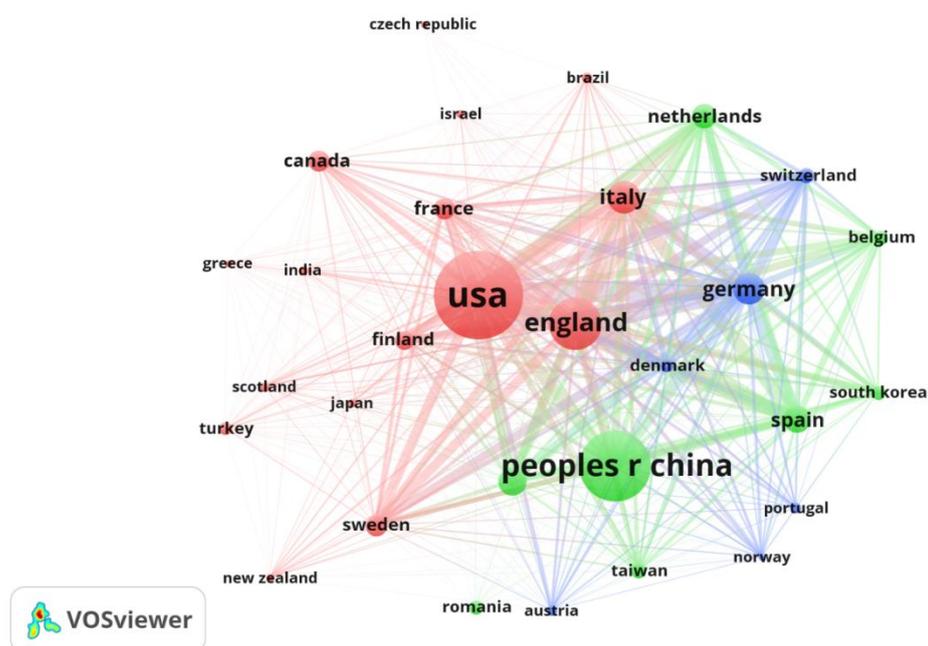
Table 2 presents the studies conducted specifically on open strategy and mentioned this concept in the topic. Other 1715 studies pointed to open strategy indirectly. Their focus has been on open innovation. Regarding the publication year of these two studies, there is nearly a start point for direct investigation of open strategy. Considering the importance and dominance of open strategy in the content and process of strategy making, more attention ought to be paid to this factor. In spite of this important consideration, unfortunately, the number of studies on open strategy and considering it as an independent factor is rare.

Table 2. Specific studies on Open Strategy

Rank	Title	Authors	Source Title	Pub. Date	Total Citations
1	Opening Strategy: Evolution Of A Precarious Profession	Whittington, Richard; Cailluet, Ludovic; Yakis-Douglas, Basak	British Journal Of Management	2011	21
2	Open Strategies And Innovation Performance	Barge-Gil, Andreas	Industry And Innovation	2013	7

### The major language





**Figure 5. Co-authorship collaboration between most collaboration intensive countries**

Figure 5 presents the co-authorship collaboration between researchers from various countries. As the Figure shows, countries including USA, China, England, Italy and Germany have the highest number of researches in this regard. In addition, the frequency of co-authorship collaboration among countries is obvious from the thickness of the lines. The whole list is indicated in the following Figure:

The most productive institutions from a total of 478 have been Harvard University (n=24, 1.4%) followed by the University of Cambridge (n=18, 1.04%). As mentioned above, the results showed institutional co-authorship between 478 institutions. Figure 6 reveals the co-authorship collaboration between institutions. Interestingly, Harvard University collaborates seriously with the University of Cambridge. According to the Figure, notably institutional co-authorship exists between all universities.

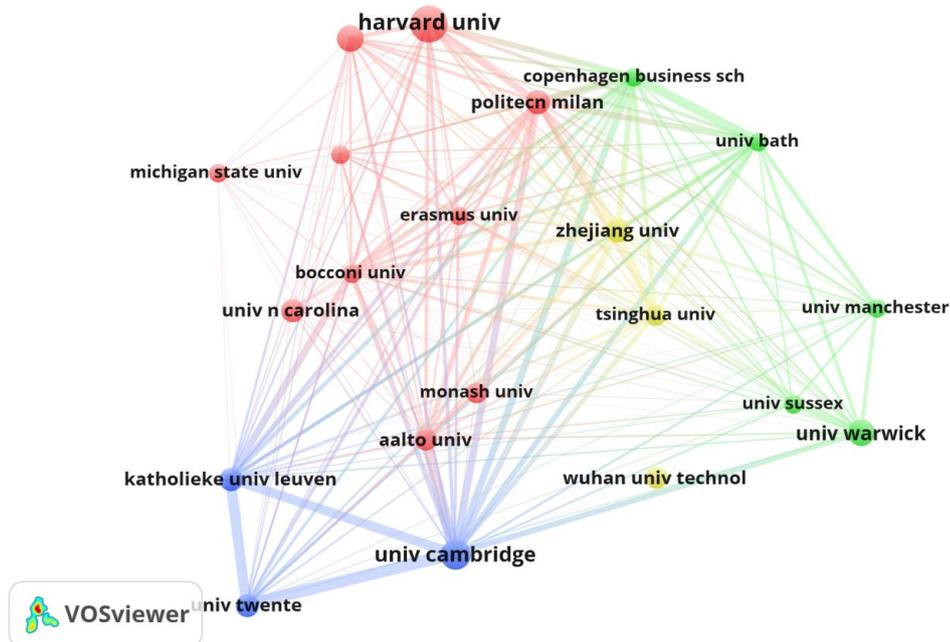


Figure 6. Co-authorship collaboration of the most collaboration intensive institutions

## Discussions and Conclusions

According to Whittington et al. (2011), the open strategy is considered a collaborative strategic plan based on information technology and knowledge sharing in the processes of strategic management. Note that this collaboration is expanded beyond the organization's boundaries.

This research presented a bibliometric analysis on open strategy between 2000 and 2016 based on the publications available in the Web of Science (WOS). It provided a general outline of studies on open strategy for determining its trends and popular issues. Our study can be considered a guide to those who intend to work on open strategy by providing different related information about previous studies, citations, searched keywords, important journals, institutions, etc.

The current study also shed light on the research trends of this field. "Open innovation strategy", "innovation strategy", "knowledge management", "supply chain management", "competitive strategy" and "game theory" were found to be the most related topics with an open strategy. Furthermore, the searches suggested that nearly all studies are around innovation. Only two of the studies found directly pointed to open strategy in their topics. One of these studies relates to Whittington

et al. (2011) with the title of “opening strategy: evolution of a precarious profession” published in the journal of Management International Review with a total citation of 21. Notably, all these 20 citations were related to the last four years of our investigation period (i.e. 2013, 2014, 2015, and 2016). This study adopted a long-term approach to the development of strategy as a profession. The authors claimed that four forces drive the evolution of strategy including societal, organizational, cultural and technological forces.

The second was “open strategy and innovative performance” by Barge-Gil (2013) published in the journal of industry and innovation with a total citation of 7. All these seven citations were related to the years 2014, 2015, and 2016. This study examined the relationship between open strategies and innovative performance. The author defined four kinds of openness (closed, semi-open, open and ultra-open). Based on this study, 85% of firms were shown to be either closed or semi-open innovators. They observed no willingness for open innovators.

As was observed, even these two specific studies are turning around innovation in the field of open strategy. We can justify it by these sentences of Whittington et al. (2011) that “open strategy builds on the concept of open innovation by which corporations show interest in innovation by sharing knowledge and ideas with communities of external agents”. Therefore, open strategy has several characteristics in common with open innovation.

As mentioned above, all citations of the two specific articles were related to recent years beginning from 2013. We can conclude that researchers are moving towards adopting open strategy as an independent field of study and are becoming interested in searching it completely in order to clarify all its unknown aspects and applications. One of the fields that has recently attracted great deal of attention is strategy making in organizations. The open strategy has broken the boundaries and extends the work of strategy making beyond the scope of executives.

Finally, our study suggests a growing trend in the contents and processes of strategic management. Therefore, it is recommended that organizations predict and provide mechanisms to gain benefit from the potentials of open strategy that is based on collective wisdom and remodel their businesses.

For future researches, researchers are better to consider a bibliometric analysis using other databases like Google Scholar or

Scopus which would be useful for collecting more information, thereby reaching a comprehensive apprehension of the topic. Future research could also use structural indicators to measure the alliance between publications, authors, and area of knowledge using sociograms. In spite of the importance of open strategy, we did not find any studies examining the antecedents and consequences of open strategy during the mentioned period. Thus, it is worthy to work on this part and many other unclear aspects of open strategy that is always defined with the help of open innovation.

In addition, considering the fact that strategy making is often considered a secret process in organizations, it could be interesting to study the extent of popularity of this trend, i.e. open strategy across organizations. Future studies could investigate which type of organizations is interested in following an open strategy.

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