DEMYSTIFYING EXPONENTIAL ORGANIZATIONS: A BIBLIOMETRIC REVIEW

Stefano Marchese[1], Luca Gastaldi[1], Mariano Corso[1]

[1] Politecnico di Milano, Italia

stefano.marchese@polimi.it

luca.gastaldi@polimi.it

mariano.corso@polimi.it

ABSTRACT

Exponential Organizations (ExOs) are firms able to continuously disrupt their reference markets through an extremely ambitious purpose, unconventional ways of organizing, and an adaptive culture – all of which are catalysed through a proper usage of digital technologies.

Despite ExO concept is gaining momentum among practitioners, we have scant evidence on how "going exponential". This work is based on a comprehensive and systematic literature review with a twofold aim: (1) understanding and reviewing the theoretical lenses to better interpret the topic; (2) rigorously placing it in the scientific literature, understanding a potential future research agenda for further deepening it.

This research relies on an inductive approach and a bibliometric analysis carried out through VOSviewer to map ExO research with co-occurrences and bibliographic coupling analysis. As the term ExO is not yet systematically used into the scientific literature, we included several similar concepts that are related to this peculiar kind of organizations. Our findings allow demystifying the ExO concept and considering it as a way of thinking that allow fostering the development of dynamic capabilities, which are conducive to the generation of competitive advantages in highly turbulent contexts. Theoretical and empirical contributions are discussed together with a potential research agenda.

KEYWORDS

Exponential Organizations, Dynamic Capabilities, Innovation, Agility, Bibliometric Review

1. INTRODUCTION

In an increasingly dynamic competitive environment firms are pushed to continuously adapt and innovate. Companies are required to look for novel ways of organising, allowing them to manage continuous innovation (Burton, et al., 2020; Corso & Pellegrini, 2007; Martini, et al., 2013).

The concept of Exponential Organizations (ExOs) introduced by Ismail et al. (2014), and later expanded by Palao et al. (2019), fits precisely into this context, as it aims extracting the common traits of these organizations. Despite ExOs are gaining momentum, it is not clear if they have an intrinsic value or are just a managerial fad.

A first aspect to consider is related to the term ExOs itself and its storytelling. Thinking of the most common examples used to refer to ExOs – Airbnb, Uber, Google, etc. – one might be led to think of exponential growth from a financial standpoint. This is not true. Although the literature has shown that certain mechanisms foster better performance (Subramanian & Balanagarajan, 2018; Thomke, 2020; Teece, 2007; Zeitler, 2019), this

is a correlation and not a causation. ExO term derives from the underlying digital technologies that all these firms seem capable to handle, which exponentially improve in time (see Table 1) and open up novel ways of creating and capturing value (Kurzweil, 2001).

Technology	Average cost for equivalent functionalities	Scale Impact
3D Printing	From $40,000 (2007) to $100 (2017)	400x in 10 years
Industrial robots	From $500,000 (2008) to $1.000 (2017)	500x in 9 years
Drones	From $100,000 (2007) to $100 (2017)	1,000x in 10 years
Solar	From $30 (1984) to $0.02 (2018)	1,500x in 24 years
Biotech	From $10,000,000 (2007) to $100 (2017)	100,000x in 10 years

Table 1: *Exponential Technologies path (Ismail, et al., 2014).*

According to Ismail et al. (2014), an ExO is "*one whose impact (or output) is disproportionally large – at least 10x larger – compared to its peers, because of the use of new organizational techniques that leverage [digital,] exponential technologies.".* This "10x impact" is not rigorously defined or effectively compared. It is difficult to generalize as the metrics are different: for Valve it is about market capitalization (30x), for Google Ventures about design process (10x), for Airbnb about listings per employee (90x), etc. As stated by Díaz-Piloneta et al. (2021), the exponential growth approach was addressed long ago by Kendall (1997) and Mitchell (1999). These authors emphasized that the basic problem of any organization depends on its decisions on what to pay attention to and what to reject. The former addressed this issue by taking up the Theory of Constraints (Goldratt & Cox, 1984), while the latter identified the typical "stalls" of common thinking and proposed a new set of thought processes to overcome these habits and deal with continuous change. These considerations are explained in the ExOs concept from two viewpoints: organizational, with the term 'Corporate Immune System', exploring aspects of employee involvement and establishing a culture of experimentation and data-driven ('fail fast, learn faster') to overcome the human tendency to preserve the status quo (Ismail, et al., 2014); innovation and technology strategy, with the 6 D's of Diamandis & Kotler (2015) – Digitization, Deception, Disruption, Demonetization, Dematerialization, Democratization – or the six phases by which a technology achieves a massive impact through a chain reaction (Figure 1).

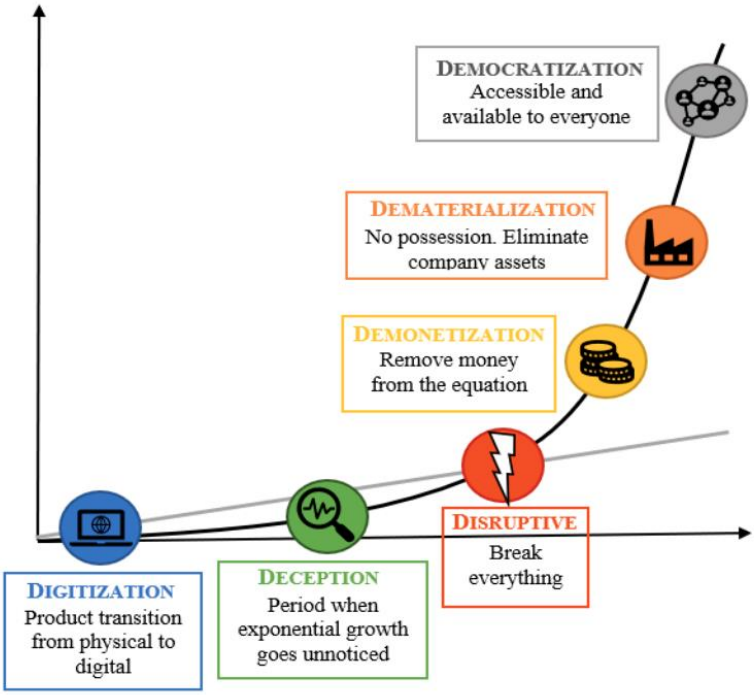

Figure 1: 6 D's of exponential model (Diamandis & Kotler, 2015).

These two issues also affect to the limitation of positioning ExOs in the academic scene. For instance, the ExOs cannot be analysed in the same way as the High-Growth Firms (HGFs) and scale-up concepts, which involve a more numerical lens and is attribute to firms with average annualized growth greater than 20% over a three-year period and ten or more employees at the beginning of the observation period (OECD, 2007; Coutu, 2014). In other case, the focus from this perspective is on three aspects: 1) growing revenue; 2) growing the customer base; 3) scaling the firm to serve a large and usually global market (Sullivan, 2016). As previously highlighted, the ExOs concept refers to the exponential growth of technology, "borrowing" evidence gathered from singularity research (Kurzweil, 2001; Kurzweil, 2006; Vinge, 1993; Eden, et al., 2013). Such research has gained particular attraction, as the focus on the acceleration of technological innovation allows an easy validation. Indeed, decades after the first suggestion, the trajectory still appears accurate. The question arises how far does the focus on the acceleration allow us to understand the changes in organization? It is not easy to connect the literature on singularity to the literature on organizational and innovation strategy, especially if there are still no clear and unambiguous definitions and positioning of the ExOs concept. Not by chance, probably, only recently there are scientific papers mentioning it, albeit from different organizational angles: computer and information science, sustainability, marketing, etc... (Pompa, 2019; Díaz-Piloneta, et al., 2021; Reynolds-Pearson & Hyman, 2020; Ananyin, et al., 2021).

It can be noted by reviewing the literature on firms defined by Ismail et al. (2014) as ExOs, that little is known about them. Moreover, each research stream has given similar but not equal definitions to describe these firms (hyper-scalable organizations, agile organizations, self-managing organizations, HGFs, etc.) further contributing and accentuating to blurring the reference context.

The value of the work of Ismail, et al. (2014) lies in having gathered a significant number of evidence on these firms, being able to be highly credible in answering the following questions: What do companies like Google, Airbnb, Spotify, etc. have in common? What are their main characteristics?

According to them, at least four of the attributes described by the acronyms SCALE and IDEAS are needed, as well as a Massive Transformative Purpose (MTP), an aspirational purpose that plays a key role in stimulating the company to achieve exponential value creation, because it should make each individual think about "why" they work for and with that company (Sinek, 2009).
What emerges and appears to be promising is the thinking underlying the concept of ExOs: leverage the abundance rather than scarcity (we live in a world full of information and resources), technology and knowledge rather than physical assets (awareness of the exponential trajectory of technology), the need to continuously change and adapt to the environment through a certain level of agility (Diamandis & Kotler, 2012; Ismail, et al., 2014; Diamandis & Kotler, 2015; Palao, et al., 2019; Diamandis & Kotler, 2020).
ExOs leverage the SCALE attributes – Staff on Demand, Community and Crowd, Algorithms, Leveraged Assets, Engagement – to allow the organization to tap into the abundance, i.e., exploit the richness coming from the external environment (access ideas, build knowledge, foster creativity and adapt to the uncertainty) while the IDEAS attributes – Interfaces, Dashboards, Experimentation, Autonomy, Social Technologies – to manage the abundance and drive culture (filter what is coming from outside, manage operations, build knowledge, engage in new projects, measure performance, foster communication and limit the chaos).
These aspects highlight three key points that are widely discussed and considered crucial by the literature – people, processes, and growth – and so we want to conduct this bibliometric research considering ExOs as an orientation, a thinking rather than as a real new organizational form or anything else. As such, I want to answer the following questions:

RQ1: *which are the theoretical lenses for interpreting ExOs?*
RQ2: *what is the future research agenda for the exponential orientation/thinking literature?*

2. METHODOLOGY

This paper mainly adopts an inductive approach, since our goal is of "demystifying ExOs": start from the track record of these organizations (observation) and the related concept from the practitioner perspective to build new theory or integrate some of them together to explain this phenomenon.
Initial reading of the seminal ExOs books and a snowball sampling of the literature, allowed to understand why it was relevant to study these types of organizations from an academic perspective. Then, I chose a systematic literature review (Fink, 2014; Tranfield, et al., 2003) to offer a crystalline method that would allow me to be explicit in identifying the perimeter of this concept, offer the chance to replicate and advance the research, and better elaborate a future agenda.
In line with this purpose, the possibility to use VOSviewer and thus perform a bibliometric analysis is the best solution to also allow the reader for some sort of visualization of the evidence collected.

2.1. SAMPLE SELECTION

Relying on Scopus, the largest citation database of peer-reviewed literature, it became immediately evident that scholars do not treat the aspects of the ExOs concept with this term. From a simple search – TITLE-ABS-KEY ("exponential organization*") – in fact, only 9 results emerge, of which only 3 come from journals. In this sense, the

preliminary search conducted in the literature was useful to identify and select synonyms that would allow to broaden the search results, ensuring competence and representativeness as well as avoiding bias.
The synonyms chosen for the string along with "exponential organization*" are hyper-scalable organization, hyper-scalable firm, hyper-scalable company, agile organization, digital organization, fast-moving company, fast-growing company, self-managing organization, high-growth firms.
According to our management perspective, the SUBJAREA limitation was used – business, social science, decision science –, also allowing you to limit where the Agile concept comes from in the IT world. In addition, I chose to select only papers written in English and originating from articles and reviews. This is intended to ensure greater rigor (articles have more reviews than books or conference papers) but at the same time not to limit the knowledge and identification of the concept to top journals. As we will see in a moment, an exception was made for the concept of High-Growth Firms (HGFs).
Some reasoning has also been done on "learning organizations" concept that is sometimes erroneously juxtaposed to the concept of ExOs, but then declined. Although there are some common traits, this concept is already very mature and refers to specific dimensions of knowledge management leaving out other crucial ones of ExOs.
The final string appears as below and allowed me to collect 493 papers.

> *TITLE-ABS-KEY ("exponential organization*" OR "hyper-scalable organization*" OR "hyper scalable organization*" OR "hyper-scalable firm*" OR "hyper scalable firm*" OR "hyper-scalable compan*" OR "hyper scalable compan*" OR "agile organization*" OR "digital organization*" OR "high-growth firm*" OR "fast-moving compan*" OR "fast-growing compan*" OR "self-managing organization*") AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "DECI")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re")) AND (LIMIT-TO (LANGUAGE , "English"))*

277 of these 493 papers come from the keyword "high growth firm" and so it was appropriate to find a way to standardize the database by taking advantage of the increased attention to this concept in the top journals. In the 216 papers with all keywords except HGFs, in fact, only 7 come from top journals. In the 277 papers of HGFs, there are 41.
In table 2 and 3 are represented respectively the top journals from which come the 7 papers of the string without HGFs, and the top journals referred to the papers of HGFs (we illustrate the journals with more than one publication).

Source	Documents	Year	Citations
Entrepreneurship: Theory and Practice	2	2017	0
Academy of Management Annals	1	2020	17
Journal of Financial Economics	1	2020	3
Public Administration Review	1	2009	5
Journal of Corporate Finance	1	2007	114
Accounting Review	1	2005	171

Table 2: Top j*ournals of the string without HGFs.*

Source	Documents	Years of Publ.	Avg Cit.
Journal of Business Venturing	10	1987-2012	172,7
Journal of Financial and Quantitative Analysis	4	1986-2010	161,3
Research Policy	4	2012-2021*	70,3
Journal of Finance	3	1997-2021*	415
Strategic Entrepreneurship Journal	3	2011-2014	45,7
Journal of Corporate Finance	2	2014-2016	30,5
Journal of Financial Economics	2	1995-2021*	396
Review of Finance	2	2008-2020	19,5

Table 3: *Top journals of the string of HGFs.*
**In the average citation count (Avg cit.), the paper published in 2021 is not counted.*

It can be seen again how fragmented the literature is on these concepts. Furthermore, from the 41 papers, the concept of HGFs receives considerable attention mostly from the world of finance and entrepreneurship.
Adding the 216 papers to the 41 papers from HGFs, we then reach 257 papers that are the body of knowledge in this bibliometric literature review. The choice of 41 papers from HGFs allows us not to unbalance our database and, at the same time, to leverage contributions from top journals in a context where we do not have many. In addition, this inclusion also allows us to "neutralize" the other more mature concept of these synonyms, agile organizations, going from 45% of results to 38%.
The breadth of the proposed synonyms makes it possible to be fairly confident that we have covered the areas of affluence of the ExOs concept (e.g., self-managing organizations comes from the world of organization design, agile organizations come from the world of technology innovation, HGFs and hyper-scalable come from the world of entrepreneurship and startups).

2.2. VOSviewer and Bibliometric Analysis

After defining the sample and before starting the analysis on VOSviewer, it was appropriate to "clean" the extraction made on Scopus. In this sense, plurals were eliminated (investments in investment, ecosystems in ecosystem, high growth firms in high growth firm) and other components that would have created errors (decision-making in decision making, small and medium size enterprise in SMEs, etc.). Once ready, I started the bibliometric analysis because it is the methodology that better allow to identify patterns, have a bigger picture of a phenomenon, and provide a contribution useful to advance the research on the topic. Bibliometric analysis in fact, have the potential to introduce a systematic, transparent, and reproducible review process that help researchers to map the field without subjective bias (Zupic & Čater, 2015).
Then, the use of VOSviewer as a text mining tool is perfect to highlight the intellectual roots of a concept/discipline and/or its use as a lens of analysis for other concepts/disciplines (Van Eck & Waltman, 2010; Randhawa, et al., 2016; Van Oorschot, et al., 2018).
The research focused mostly on co-occurrence analysis for the purpose of mapping constructs and illustrating research hotspots. Then, after having identified the most appropriate theoretical lens, I further investigated through a bibliographic coupling analysis.

3. Results and Discussion

This section is divided in three parts: the first one aims to highlight the increasing attention towards the topics covered by the ExOs concept; the second one shows the results collected with VOSviewer, mapping the body of knowledge, and identifying the most appropriate lens to interpret the ExOs concept: Dynamic Capabilities (DCs). Finally, in the third part, I further validated the chosen lens and by performing a bibliographic coupling analysis I highlighted some possible future avenues.

3.1 Publication Output and Growth Trends

The quantity of the publications is an important indicator that reveals the development trends of scientific research. As we can see in figure 2 below, there was a first peak in 2014 (13 papers), a slight decline in 2015 (7 papers) and then achieving a continuous growth until today. The highest peak was reached last year (30 papers), also because of the pandemic that have made academics as well as organizations even more aware of the importance of being adaptable and change continuously. For this year we are already at 29 papers, and it is therefore sure that the growth trend will continue.

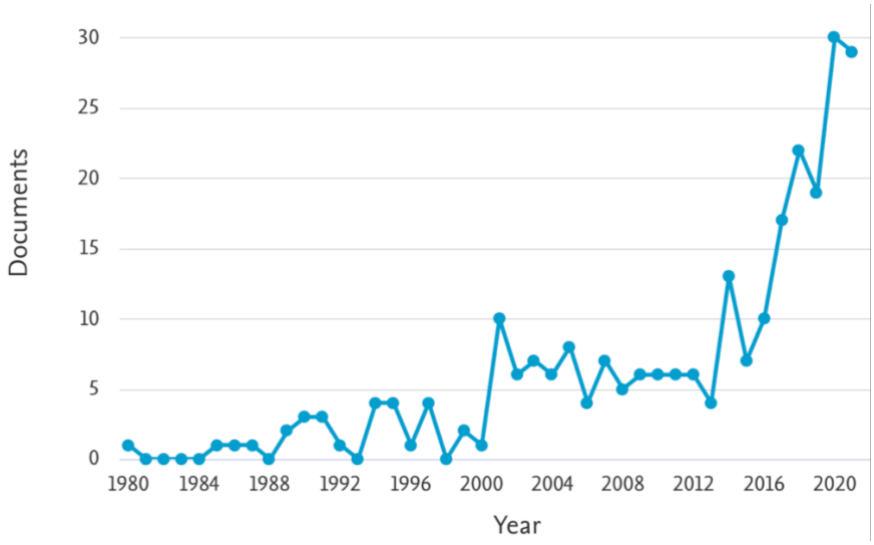

Figure 2: Documents by year of our 257 papers (Scopus).

By analysing the provenance of the publications, the concept is of interest across various academic communities. In Table 4, there are the top 5 journals per number of publications in the last 5 years (2017-2021). JOD is the journal with the most publications collecting the interest of the organization design community, then Sustainability Switzerland that also deals with issues related to project management and then the other three journals that are linked to the academic communities that study how technological innovation can help business (BI, CBTJ, TFSC). In the case of TFSC there is also a social relevance that aligns with what is called MTP in the ExOs concept.

Source	Documents	Years of Publ.
Journal of Organization Design	6	2017-2019
Sustainability Switzerland	4	2018-2021
Technological Forecasting and Social Change	4	2020-2021
Business Informatics	3	2018-2021
Cutter Business Technology Journal	3	2018-2018

Table 4: *Top 5 journals per number of publications on the topic.*

With one less publication (2 papers) than those shown in the table, there are 9 journals that also pertain to the strategy, entrepreneurship, finance, and knowledge management communities: Entrepreneurship Theory and Practice, Global Journal of Flexible Systems Management, Industrial and Commercial Training, Journal of Financial Economics, Journal of Knowledge Management, Management and Labour Studies, Organizational Dynamics, Research Policy, Strategy and Leadership.

3.2 Co-Occurrences Analysis with VOSviewer

The bibliometric data show that there are 1159 keywords in the selected 257 papers. To map the perimeter of the concept and illustrate the research hotspots, keywords co-occurrence was analysed with VOSviewer. The co-occurrence threshold of the keywords was set as 4 and 37 items – I removed 4 items that were not relevant: article, case study, industry, research – were brought into visualization (Figure 3).

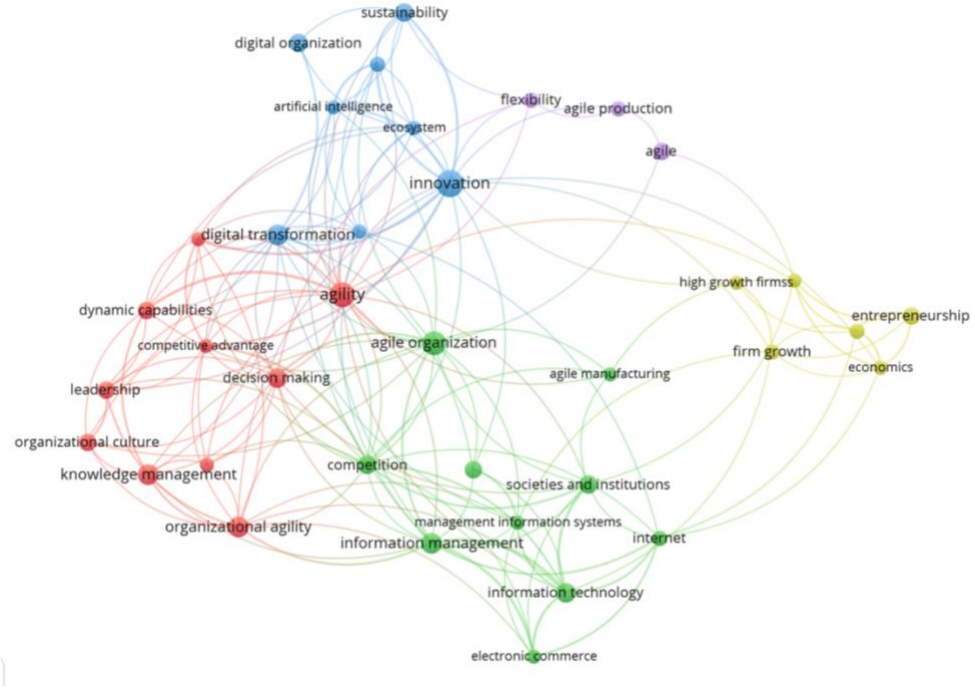

Figure 3: Co-keyword network visualization based on occurrences.

The size of the circle represents the occurrences of keywords. The larger a circle, the more a keyword has been co-selected in the publications. The keyword “innovation” and “agility” had the strongest relevance. The distance between the two keywords also demonstrated relative strength and topic similarity. Circles in the same colour cluster suggested a similar topic among these publications.

From the analysis, we can see the centrality of the intertwining among the cluster of "innovation" and "agility" which is particularly interesting for our research perspective. Regarding the other three clusters, the following considerations can be made:

- ***yellow cluster***: more distant from the others, it could be called "entrepreneurship and investments".
- ***purple cluster***: it refers to agile from a different perspective, that of production and manufacturing. For this reason, the 3 items are poorly connected with the rest.
- ***green cluster***: it refers to the IT world, is positioned in the middle of the visualization, denoting good connections with the other clusters. However, it should be considered that the best-connected items of the cluster can present bias (agile organization) or could be included in the red cluster. In the first case, it is plausible

that “agile organization”, being one of the initial keywords, could be present also in this visualization. As the connections show though, when we talk about “agile organization” we include three clusters: red, blue, and green. Regarding the second case, two examples: the keyword “competitiveness” has 7 connections out of 10 items in the red cluster, and 7 connections out of 10 items (including competition) in the green cluster; talking about “information management” today, also implies deepening the themes of knowledge management (“red cluster”) and digitalization (“blue cluster”).

In Figure 4, it can also be seen that the three most distant clusters are also the most dated from the viewpoint of the average year of publication.

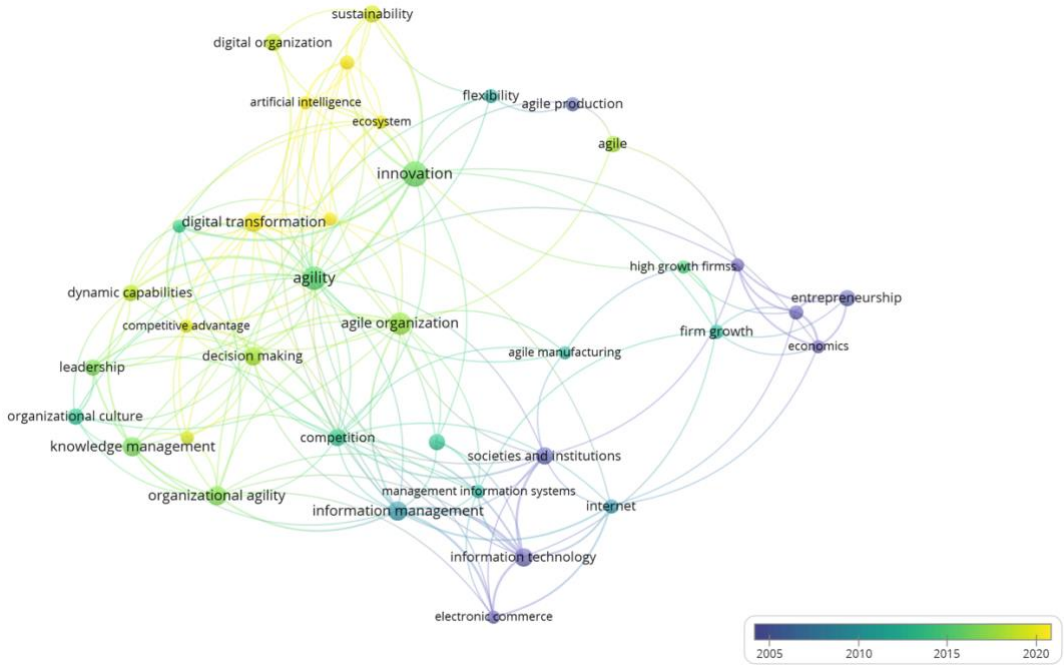

Figure 4: Co-keyword overlay visualization was based on the occurrences and average publication per year.

After clarifying the reasons for focusing on the intertwining of the two clusters of "innovation" and “agility” to identify the most appropriate lens for interpreting the ExOs concept, it is worth delving into the items of each:

- ***blue cluster (innovation)***: artificial intelligence, digital organization, digital transformation, digitalization, ecosystem, innovation, sustainability, technological development;
- ***red cluster (agility)***: agility, business performance, competitive advantage, decision making, dynamic capabilities, knowledge management, leadership, organizational agility, organizational culture, strategy.

As for the blue cluster, the keywords that present connections to the red cluster are digital transformation (7), innovation (5), digitalization (3), ecosystem (3) with the other four having one or zero. In the red cluster there are only three keywords that have more than one connection with the blue cluster: agility (7), strategy (4) and dynamic capabilities (3).

It is obvious that the lenses with the greatest number of connections cannot be taken into consideration because of their breadth, so we exclude from our choice: digital transformation, innovation, agility, and strategy.

This leaves us with three keywords from which to choose the theoretical lens with which to interpret the ExOs concept: dynamic capabilities, ecosystem, and digitalization.

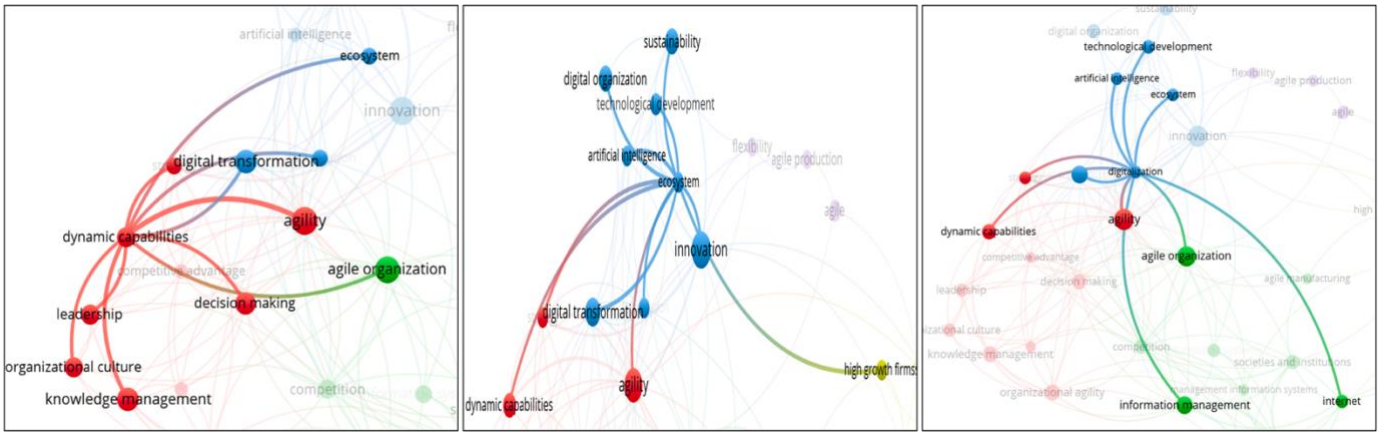

Figure 5: Connections of the three keywords to be selected as a theoretical lens for the study.

In figure 5 above, the various connections of the three keywords. Here some interesting aspects can be noted: in the DCs node, relevance is given to organizational aspects, to digital transformation and agile organization (green cluster); in the ecosystems node, the greatest attention is given to aspects of the blue cluster (artificial intelligence, technological development and sustainability) as well as to elements of strategy and high growth firms (yellow cluster); in the digitalization node, the focus is mainly on the blue cluster and the green cluster (with some dated elements at the level of definition: "information management" and "internet", as shown in fig. 4, belong to a nomenclature dating back on average to 2010). Also for this reason, the first two lenses seem to be more promising than the latter.

I decided to focus on DCs for the following reasons:

- DCs are among those with the highest occurrences and strength link; it is an established concept (see fig. 4) and has less variety within it. This is what is needed for an initial conceptualization of a practitioner concept.
- organizational agility (OA) which is one of the nodes in the red cluster, is considered in the literature as one of the DCs that an organization can develop (Walter, 2021). This obviously increases the relevance of DCs over other lenses.
- the distinctive aspect of the organizations described by the ExOs concept is the ability to adapt and continuously change through unconventional models, practices, and technological tools. Thus, an organizational perspective aimed at encompassing not only organizational but also innovation elements may be more promising than others.

Completing the considerations about this choice, it is worth highlighting three other aspects.

In Fig. 5, we can see that there is no connection between DCs and innovation. However, there is between innovation and OA. Based on our results, it seems that the literature deal with them in pairs: we talk about DCs and digital transformation or OA and innovation. This could be a gap in the literature that needs to be filled.

The second aspect concerns the lack of connection between DCs and HGFs. Literature has shown how the development of DCs affects performance and growth (Pezeshkan, et al., 2016), so potentially there could be a connection to HGFs that has not yet been explored.

3.3 Focus on DCs: Co-Occurrences and Bibliographic Coupling Analysis

Delving into our selection of 257 papers, it was found that the first paper which discusses both concepts is that of Sparrow & Cooper (2014). Considering that the ExOs concept was also formulated in the same year, it seemed appropriate to limit this latest analysis to the period 2014-2021. The results we are therefore going to comment on in Figures 6 and 7 will refer to 147 papers.

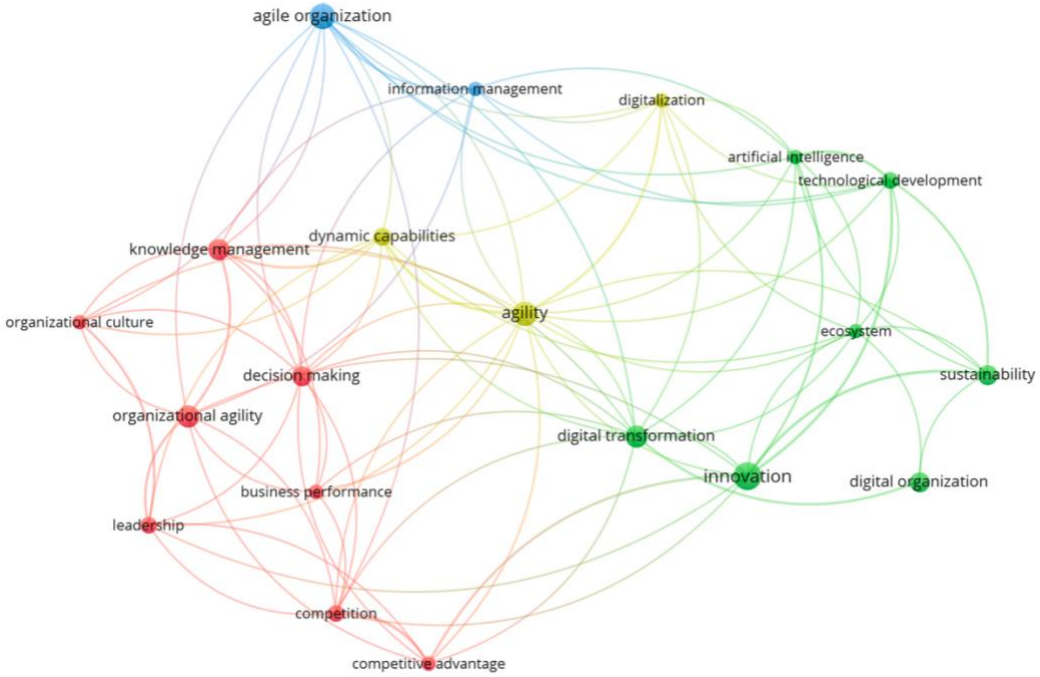

Figure 6: Co-keyword network visualization based on occurrences.

The co-occurrences analysis above is a validation of what was expressed in 3.2. Predictably, since the other two are still newer than the DCs, all three of the lenses I suggested are present. Four clusters are shown in which the yellow one (agility, DCs, and digitalization) is central and acts as a bridge for the others. The blue cluster is the one that in the previous visualizations referred to the world of IT without the most dated concepts, the green one is that of "innovation" and the red one, this time detached from "agility", probably due to the increasing relevance of concepts such as knowledge management and decision making. To be underlined also the increase of some circles such as digital transformation, agile organization and sustainability that are among the most discussed concepts at the time.

The second analysis of this paragraph is a bibliographic coupling, the analysis that allow to connect documents, author, or journals based on shared references. This analysis helps to identify and map research fronts, but often fails to identify which publication are truly important. Here a fairly established lens such as DCs can help. Figure 7 shows the analysis on documents with a threshold of 15 citations per document and 31 items in the visualization.

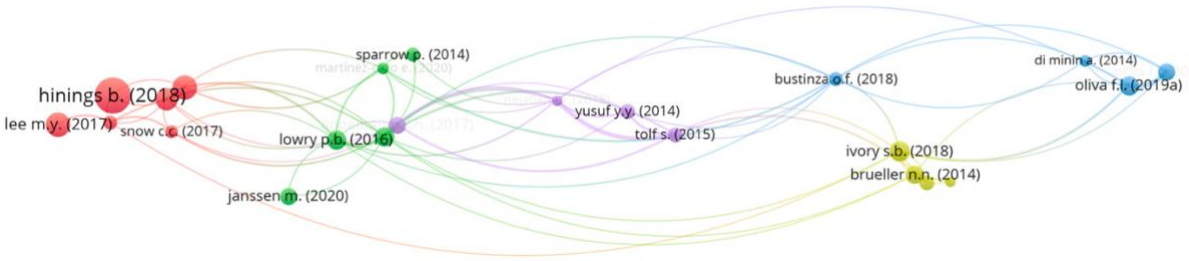

Figure 7: Bibliographic coupling analysis based on documents.

The results clearly show the transversality of the ExOs concept, confirming the intuition of interpreting it "simply" as an orientation, a thinking that tries to answer the question of how to design organizations in the 21st century. This perspective could meet the attention of many scholars (Burton, et al., 2020).
With such a wide range of fields, industries, and communities to which one could contribute, it is difficult to provide a future research agenda for each of these five clusters. However, I have named each of them and tried to give some hints:

- ***red cluster***: "organization design" (6 documents)

  Here are papers about self-managing organizations and digital organizations, digital transformation from an organizational perspective and the digital entrepreneurship ecosystem.
  In line with our lens of DCs, meaningful questions could be: *How do companies (or ExOs) structure themselves to sense and seize opportunities? How do companies transform/reconfigure themselves according to the changing context?*
  Alternatively, focusing instead on the individual, meso and firm dimensions considered by the DCs concept, we could ask:
  - *How does technology foster entrepreneurial behaviours within the firm?*
  - *Which strategies and practices are adopted to foster a more adaptive organizational model?*
  - *How do companies structure themselves to build effective experimentation processes?*

- ***green cluster***: "information management and technology" (5 documents)

  Here there are papers mainly related to the role of digital technologies associated with the theme of people and business performance. As the visualisation also shows, this area does not differ much from the previous one. As evidence of this, in both clusters we find a paper from TFSC. We then find other more specific journals such as International Journal of Information Management, Journal of Strategic Information System, Information Development and Journal of Organizational Effectiveness.

- ***purple cluster***: "production and manufacturing" (4 documents)

  Agility issues are also studied in production and manufacturing, but in a different way than years ago. In the future, this area might also include case studies of capital-intensive companies that have changed their business model to digital.

The four documents identified were published in Industrial and Commercial Training, International Journal of Healthcare Quality Assurance, International Journal of Production Economics.

- ***yellow cluster***: "leadership and strategic management" (4 documents)

  This area sees journals such as California Management Review, Journal of Business Ethics, Leadership and Organization Development Journal.
  The lens of DCs could lend itself well, for example in association with the VUCA context – Volatility, Uncertainty, Complexity, Ambiguity – which was the subject of a call for papers by CMR in 2018 (Millar, et al., 2018). MTP, a central attribute of the ExOs concept, perhaps analysed from an individual perspective could have a strong impact on this community: *how the C-level people could develop an "exponential" leadership?*

- ***blue cluster***: "knowledge management and decision making" (4 documents)
  Here much emphasis is placed on the concept of knowledge management and how it should be considered and exploited to tame change. Here the cited authors have published in Strategic Change, European Management Journal, Journal of Knowledge Management, Management Decisions.

Based on these clusters, it is worth focusing on some of them to make better use of the lenses identified for interpreting ExOs in the future. In this sense, for our innovation management perspective, it is worth focusing especially on the ***red*** and ***green*** cluster (Fig.7). From this bibliographic coupling analysis, three interesting elements also emerged: one reinforces the last choice, and two others should be explored.
The first is the reinforcing one. The theme of ecosystems emerges within the red cluster and therefore could be part of the reasoning regarding new organizational models and the meso level of DCs, as suggested by several authors (Moccia, et al., 2019; Schilke, et al., 2018; Thomke, 2020). Ecosystems are a very appealing part of the literature, not least because of their complexity. The fuzzy literature on them is also one of the reasons why we preferred DCs as a lens for this study. However, possible future avenues could be to investigate which DCs are best suited to orchestrate ecosystems. On this, it will first have to be defined which ecosystem to focus on among the many defined in the literature, often also in contrast to each other (Jacobides, et al., 2018; Cavallo, et al., 2019; Granstrand & Holgersson, 2020).
The second aspect, the first of the "question mark", is related to the fact that the blue cluster is opposite to the red and green clusters (Fig. 7). As much as even intuitively the organization-information-knowledge relationship and one would expect the blue cluster next to the other two. Nevertheless, this is not the case. Future research could explore with a larger number of papers whether indeed there is not such a poor connection when talking about these three themes in the ExOs concept.
Finally, the third aspect poses the question regarding the nature of ExOs. Since they are built on exponential technologies, I would have expected to find a cluster that gave prominence to product themes. There might have been themes related to creativity, experimentation, and innovation. There might have been another cluster related to start-ups (many ExOs were born that way) and entrepreneurship. This was not the case in this analysis, but from reading the papers it can be said that some of these aspects were mostly embedded in the papers of the red and green clusters. In considering future research, it might be interesting: playing with a DCs like ambidexterity to understand how companies deal with the exploit-explore dilemma; investigating the potential link between DCs and HGFs, adding evidence on the entrepreneurship area; conducting a

cross-industry analysis, understanding how hub companies of an ecosystem behave to orchestrate them to their advantage.

4. CONCLUSION

This paper aimed to demystify the ExOs concept, meaning the fact that it has been almost ignored in the academic literature to date. Scholars use other terms to describe concepts like ExOs and pertaining to their research streams. They mention agile organizations, self-managing organizations, high-growth firms, hyper-scalable companies and so on.

Our paper sheds light on this, pointing out in a structured and rigorous way the keywords to include for framing this concept in the literature. Furthermore, I highlight the growing trend in terms of publications on these topics. Subsequently, through bibliometric analysis, it was possible to visualise the intertwining of "innovation" and "agility". This intertwining led to the identification of three theoretical lenses through which we answered our first research question (*which are the theoretical lenses for interpreting ExOs?*).

Through the focus on DCs, perhaps the most appropriate lens of the three identified, I reasoned about the five clusters identified with VOSviewer, resolved some doubts (e.g., to which area do the ecosystems belong?) and answered the second research question (*what is the future research agenda for the exponential orientation/thinking literature?).*

Here I suggested some interesting research questions and oriented towards those "interesting elements" I wrote about in 3.3.

The value of this study lies in having demonstrated with good objectivity the perimeters of the ExOs concept and why it is convenient to consider it as a thinking. Little is still known about these organizations, and the evidence could also increase if we consider digital transformation paths that embody many ExOs concepts (not by chance that ExO Sprint, Purpose Launchpad exist).

To conclude, this work shows how it is promising and relevant to focus on two main areas that I have called "organization design" and "information management and technology" in Fig. 7. In identifying the questions (3.3), it is suggested to focus on those organizational domains aimed at fostering the development of DCs - e.g. adaptive organizational design, ambidextrous experimenting, innovation ecosystem orchestration -, which in turn lead to the tendency to continuously change and adapt to the context, generating competitive advantage.

There are plenty of opportunities for other researchers as well: starting with exploring the other theoretical lenses suggested or understanding which of the ecosystems (business, innovation entrepreneurship, etc.) best describes the ExOs concept.

5. BIBLIOGRAPHY

Adner, R. & Kapoor, R., 2016. Innovation ecosystems and the pace of substitution: Re-examining technology S-curves.. *Strategic Mangement Journal,* Issue 37, p. 625–648.

Ananyin, V., Zimin, K., Lugachev, M. & Gimranov, R., 2021. Statistical sustainability of a digital organization. *Business Informatics,* 15(1), pp. 47-58.

Anthony, S., Viguerie, S. & Waldeck, A., 2016. *Corporate Longevity: Turbulence Ahead for Large Organizations.* Lexington, MA: Innosight.

Beck, K., Schwaber, K., Sutherland, J. & al., e., 2001. *The Agile Manifesto.*. http://agilemanifesto.org/: Agile Alliance..
Burton, R., Håkonsson, D., Larsen, E. & Obel, B., 2020. New trends in organization design. *Journal of Organization Design volume,* 9(10).
Cavallo, A., Ghezzi, A. & Balocco, R., 2019. Entrepreneurial ecosystem research: present debates and future directions. *International Entrepreneurship and Management Journal,* 15(3).
Corso, M. & Pellegrini, L., 2007. Continuous and discontinuous innovation: overcoming the innovator dilemma. *Creativity and Innovation Management Journal,* 16(4), p. 333–347.
Coutu, S., 2014. *The scaleup review on UK economic growth. ScaleUp Institute.*. [Online]
Available at: http://www.scaleupinstitute.org.uk/wp-content/uploads/2018/02/scaleup-report_2014.pdf
Dass, M. & Kumar, S., 2014. Bringing product and consumer ecosystems to the strategic forefront.. *Business Horizons 57, (2014),* Issue 57, p. 225–234.
Demir, R., Wennberg, K. & McKelvie, A., 2017. The Strategic Management of High-Growth Firms: A Review and Theoretical Conceptualization. *Long Range Planning,* 50(4), pp. 431-456.
Diamandis, P. & Kotler, S., 2012. *Abundance: The Future is Better Than You Think.* New York: Free Press.
Diamandis, P. & Kotler, S., 2015. *Bold: How to Go Big, Create Wealth and Impact the World.* New York: Simon and Schuster.
Diamandis, P. & Kotler, S., 2020. *The Future Is Faster Than You Think: How Converging Technologies Are Transforming Business, Industries, and Our Lives.* Exponential Technology Series a cura di s.l.:Hardcover.
Díaz-Piloneta, M., Ortega-Fernández, F., Morán-Palacios, H. & Rodríguez-Montequín, V., 2021. Monitoring the implementation of exponential organizations through the assessment of their project portfolio: Case study. *Sustainability (Switzerland),* 13(464), pp. 1-20.
Eden, A., Moor, J., Soraker, J. & Steinhart, E., 2013. *Singularity Hypotheses: A Scientific and Philosophical Assessment.* s.l.:Springer-Verlag.
Fink, A., 2014. *Conducting Research Literature Reviews: From the Internet to Paper.* 3rd a cura di Los Angeles, CA: Sage.
Goldratt, E. & Cox, J., 1984. *The Goal.* NY: Croton-on-Hudson, The North River Press.
Granstrand, O. & Holgersson, M., 2020. Innovation ecosystems: A conceptual review and a new definition. *Technovation,* Volume 90-91.
Ismail, S., Malone, M. & Van Geest, Y., 2014. *Exponential Organization: Why new organization are ten time better, faster and cheaper than yours (and what to do about it).* s.l.:ExO Partners LLC.
Jacobides, M., Cennamo, C. & Gawer, A., 2018. Towards a theory of ecosystems. *Strategic Management Journal,* 39(8), pp. 2255-2276.
Kapoor, R. & Lee, J., 2013. Coordinating and competing in ecosystems.. *Strategic Management Journal ,* Issue 34, p. 274– 296.
Kendall, G., 1997. *Securing the Future: Strategies for Exponential Growth Using the Theory of Constraints.* Boca Raton, FL, USA: CRC Press.
Kurzweil, R., 2001. The Law of Accelerating Returns. In: C. Teuscher, a cura di *Alan Turing: Life and Legacy of a Great Thinker.* Berlin, Heidelberg: Springer, pp. 381-416.

Kurzweil, R., 2006. *The Singularity is Near: When Humans Trascend Biology.* New York-London: Penguin Books.
Lütjen, H., Schultz, C., Tietze, F. & Urmetzer, F., 2019. Managing ecosystems for service innovation: A dynamic capability view.. *Journal of Business Research,* Issue 104, p. 506–519.
Leemann, N. & Kanbach, D., 2021. Toward a taxonomy of dynamic capabilities – a systematic literature review. *Management Research Review.*
Martini, A., Laugen, B., Gastaldi, L. & Corso, M., 2013. Continuous innovation: towards a paradoxical, ambidextrous combination of exploration and exploitation. *International Journal of Technology Management,* 61(1), p. 1–22.
Millar, C., Groth, O. & Mahon, J., 2018. Management innovation in a VUCA world: Challenges and recommendations.. *California Management Review,* 61(1), pp. 5-14.
Mitchell, D., 1999. *The 2000 Percent Solution: Free Your Organization from 'Stalled' Thinking to Achieve Exponential Success.* Bloomington, IN, USA: iUniverse.
Moore, G., 1965. Cramming more components onto integrated circuits. *Electronics,* 38(8), p. 114 ff.
OECD, 2007. *Eurostat-OECD Manual on Business Demography Statistics,* Paris, FR: OECD.
Osterwalder, A., Pigneur, Y. & Clark, T., 2010. Business Model Generation: A Handbook For Visionaries, Game Changers, and Challengers.. In: *Strategyzer series.* Hoboken, NJ: John Wiley & Sons..
Palao, F., Lapierre, M. & Ismail, S., 2019. *Exponential Transformation.* New Jersey: John Wiley & Sons Inc..
Pezeshkan, A. et al., 2016. An empirical assessment of the dynamic capabilities–performance relationship. *Journal of Business Research,* 69(8), pp. 2950-2956.
Pompa, L., 2019. Exponential Atlases: A Metaphysical Approach to the Organizational Rapid Growth. *International Journal of Business and Management,* 14(4).
Randhawa, K., Wilden, R. & Hohberger, J., 2016. A Bibliometric Review of Open Innovation: Setting a Research Agenda. *Journal of Product Innovation Management,* 33(6), pp. 750-772.
Reynolds-Pearson, A. & Hyman, M., 2020. Why consumers' 'New power' will change marketing. *Australasian Marketing Journal,* 28(3), pp. 14-21.
Ries, E., 2011. *The Lean Startup: How Today's Entrepreneurs Use Continous Innovation to Create Radically Successful Businesses.* New York: Crown Business.
Schilke, O., Hu, S. & Helfat, C., 2018. Quo Vadis, Dynamic Capabilities? A content-analytic review of the current state of knowledge and recommendations for future research. *Academy of Management Annals,* 12(1), pp. 390-439.
Sinek, S., 2009. *Start with Why: How Great Leaders Inspire Everyone to Take Action.* s.l.:Portfolio.
Sparrow, P. & Cooper, C., 2014. Organizational effectiveness, people and performance: new challenges, new research agendas. *Journal of Organizational Effectiveness,* 1(1), pp. 2-13.
Subramanian, K. & Balanagarajan, K., 2018. Exponential entrpreneurs: entrepreneurs achieving exponential growth through digital technology and innovation - A review. *Internation Journal on Recent Trends in Business and Tourism (IJRTBT),* 2(4).
Sullivan, T., 2016. Blitzscaling: The chaotic, sometimes grueling path to high-growth, high-impact entrepreneurship.. *Harvard Business Review ,* 94(4), pp. 44-50.

Teece, D., 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal,* 28(13).
Thomke, S., 2020. *Experimentation Works : the surprising power of business experiments.* Boston Massachusetts: Harvard Business Review Press.
Tranfield, D., Denyer, D. & Smart, P., 2003. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management,* Issue 14, p. 207–222..
Van Eck, N. & Waltman, L., 2010. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics,* Volume 84, pp. 523-538.
Van Oorschot, J., Hofman, E. & Halman, J., 2018. A bibliometric review of the innovation adoption literature. *Technological Forecasting and Social Change,* Volume 134, pp. 1-21.
Vinge, V., 1993. The coming technological singularity. *Whole Earth Review,* Volume 81, pp. 88-95.
Walter, A., 2021. Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization. *Management Review Quarterly,* Volume 2.
Zeitler, J., 2019. *Stock performance of leading experimenters.* Boston, MA: Harvard Business School's Baker Research Services.
Zupic, I. & Čater, T., 2015. Bibliometric Methods in Management and Organization. *Organizational Research Methods,* 18(3), p. 430.