

TAMING VUCA WITH EXPONENTIAL ORGANIZATIONAL MODELS: A LITERATURE REVIEW

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ABSTRACT

The paper organizes the scientific contributions to rigorously define Exponential Organizations (ExOs). A systematic literature review allowed highlighting some fundamental relationships and to develop the first attempt of a conceptual framework on these organizations.

Keywords: *Management Innovation, Exponential Organization, Innovation Ecosystem, Organizational Change, VUCA.*

1. INTRODUCTION

Technological, economical and sociological changes combined with the convergence of strategic forces – globalization and hyper-competition over the others – have generated an intensification of the management challenges (Hamel, 2012; Turner, 2018). Markets are changing and technologies continue to disrupt according to an exponential logic (Kurzweil, 2001). The dynamism of such changes is well described by VUCA – Volatility, Uncertainty, Complexity and Ambiguity –, an acronym introduced toward end of the Cold War (Bennis and Nanus, 1985) to describe the emergence of a completely new global landscape demanding innovative and diverse approaches in handling business (Stiehm and Townsend, 2002). In these settings, some firms such as Google (Iyer and Davenport, 2008; Parker, et al., 2017), Valve (Felin and Powell, 2016), Haier (Frynas, et al., 2018) and TEDx (Merchant, 2013) seem capable not only to be extremely resilient, but also of leveraging on these elements to produce impact that are disproportionately large – at least 10x larger – compared to their peers (Ismail, et al., 2014).

Practitioners call these firms Exponential Organizations (ExOs) to stress their capacity of taming VUCA and follow paths of exponential growth (Ismail, et al., 2014). ExOs are extremely popular in these days (Palao, et al., 2019) and empirical evidence suggests that they adopt flexible and digital organizational models able to support and leverage digital technologies through (Ismail, et al., 2014):

- MTP, short for Massive Transformative Purpose (Bonchek, 2016);
- External levers – summarized with the acronym SCALE (Staff on Demand, Community & crowd, Algorithms, Leveraged assets, Engagement) – which allow the ExOs to appropriately exploit the opportunities and richness coming from the external environment (Bonaccorsi and Rossi, 2003).
- Internal levers – summarized with the acronym IDEAS (Interfaces, Dashboards, Experimentation, Autonomy, Social technologies) – which allow the ExOs to appropriately filter what is coming from the outside, manage the internal operations and foster exponential growths (Baum and Haveman, 2020).

In literature there is still neither an holistic and clear design of ExOs (Millar, et al., 2018; Baum and Haveman, 2020) nor a precise area of reference to build an organization that can fully respond to the challenges of the VUCA world (Reeves, et al., 2020).

The purpose of this paper is to organize the scientific contributions belonging to various fields (management innovation, organizational design, strategy, entrepreneurship, etc.), in order to scientifically define which are the key elements characterizing an ExO, suggesting actionable knowledge about how to progressively make the shifts towards organizational models more appropriate for a VUCA world and to pursue exponential growths. According to that, we aim answering these questions:

- *How ExOs compete in a VUCA context and in the era of digital disruption?*
- *Which priority aspects should be considered to pursue an exponential growth?*

2. RESEARCH METHODOLOGY

This paper is based on a systematic literature review (Fink, 2014; Tranfield, et al., 2003) in order to leverage on a comprehensive methodology for assessing current knowledge and appropriately frame the topic of ExOs in the academic context. In this sense, we followed the key points proposed by Denyer and Neely (2004): the development of clear and precise aims and objectives; pre-planned methods; a comprehensive search of all potentially relevant articles; the use of explicit, reproducible criteria in the selection of the articles; an appraisal of the quality of the research and the strength of the findings; a synthesis of individual studies using an explicit analytic framework; and a balanced, impartial and comprehensible presentation of the results.

In order to meet the research questions and considering the origins of the topic (practitioner world), an initial scoping review was carried out, pinpointing academic and managerial contributions useful to retrieve all the information needed. Through these preliminary activities, we have identified the three streams of literature to interpret ExOs which are: organizational design, strategy and technological innovation.

We relied on Scopus and after having defined several keywords, we followed these steps: records identification using title, keywords and abstract to identify better potential useful documents (N = 5,057), first filter based on sector of reference – business, social sciences, decision science – to better circumscribe the topic (N = 2,791), second filter based on ABS Guide's rating to be sure about the relevance of the body of knowledge (N = 121). Starting from this, by looking at the consistency of their abstract with research purposes, a final list of 40 papers was selected to be studied, analyzed and inserted in this literature review.

3. RESULTS

From the literature review conducted it has emerged that there are many aspects that are widely studied by academics. These identify three paradigm shifts in the VUCA world.

The first refers to the transition from an economy based on raw materials processing and production activities that are scarce by definition to an economy based on knowledge and information and other intangible assets (Rothaermel, 2017; Höflinger, et al., 2018). In other words, it means moving from "owning" to "using" cloud computing, complementary assets – e.g. Waze and Nokia, Airbnb and hotels –, enabling a return of increasing scale. This term refers to the knowledge's unique characteristic of being continuously used at no additional cost, achieving a higher value with its repeated use (Moccia, et al., 2018).

From here the second paradigm shift is connected, saying that to pass from the physical to the information world means to join Moore's law on the "exponential doubling" (Moore, 1965) and the law of accelerated returns (Kurzweil, 2006; Moccia, et al., 2018). The third paradigm, in consideration of the two previous ones, calls for exponential thinking in order to succeed in scaling organizations at the same speed required by technology (Ismail, et al., 2014).

Literature (Ismail et al., 2014; Diamandis and Kotler, 2012; Hamel, 2012; Puranam, et al., 2014; Moccia, et al., 2019) affirms that companies, in order to compete in the 21st century, need a truly mindset change, which is well represented by the empirical evidence gathered on ExOs.

In the following sub-paragraphs, we conceptualize and relate the phenomenon with the identified literature, emphasizing the key aspects of this kind of organization and suggesting a first attempt of a conceptual framework to interpret it in scientific perspective.

3.1 EXOS INTERPRETATION

The concept of ExOs has been treated with the aim of conducting a backwards research process: starting from the track record and the characteristics of these firms, we have identified and merged scientific contributions. This allows on the one hand to simplify, identifying key elements, and on the other hand to validate the research in the scientific community, enhancing it with introduction of theoretical constructs. The first findings in the interpretation of ExOs are shown in Figure 1 below. From the analysis carried out, in fact, these four pillars seem to be the most authoritative to circumscribe the phenomenon and so, answer to our first research question.

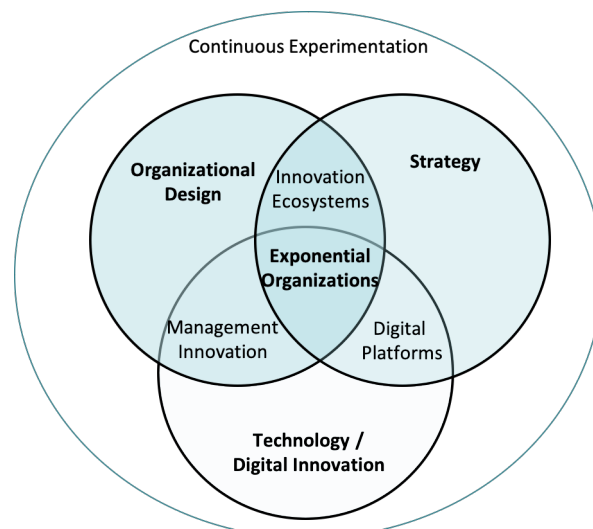


Figure 1: *ExO Interpretation.*

Management Innovation

This pillar emerged from the literature field that investigates unconventional organizational models, where attempts are made to innovate the way of dividing and coordinating work (Puranam, et al., 2014). To this field, also belong contributions aimed at the need for a new leadership that embodies the main purpose of ExOs – MTP – and reflect the heartbeat of the new dynamics (Schoemaker and Heaton, 2018).

This means answer the question “*Why are ExOs capable to handle VUCA and grow exponentially?*” which is pursued by ExOs with the introduction of the MTP and the

underlying “moonshot thinking”, a mindset that invites each individual to think big, choosing huge problems to solve and proposing radical solutions that exploits digital technologies (Alayón, 2018; Kobayashi, 2018).

In order to leverage on it, ExOs make also management innovation, defined as “the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals” (Birkinshaw, et al., 2008).

ExOs have moved in the direction suggested by academics in recent years, which has identified the need for firms to become less-hierarchical, decentralized, decreasing the number of levels of formal authority and favoring flexible information-processing behaviors (Lee and Edmondson, 2017). In fact, these forms of organizing are quite deeply analyzed, although there are some issues about the definition of flat organization (Wulf, 2012) and SMOs – Self Managing Organizations.

Regarding the former, with the aim of making companies flatter, several CEOs are eliminating layers, broadening managers’ span of control and delegating some decisions at lower levels. Nevertheless, often the phenomenon of flattening at the top and the broader role of the CEO, depending on the implementation, could ultimately appear more like a centralization (Wulf, 2012).

Regarding the latter, the term was introduced only in 2017 by Lee and Edmondson (2017) giving a name to the radical form of decentralization that occurs throughout all the organization. It has some points in common with ExOs – especially with extreme cases, e.g. Valve and Zappos – but it’s important consider the two terms independently, avoiding misleading conclusions.

Finally, ExOs have an advantage over their competitors, due to their ability to innovate on all levels: individual, meso (e.g. processes) and firm. These aspects are appropriately described by the Dynamic Capabilities (DCs) defined as the firm’s ability to integrate, build, and reconfigure internal and external competences to address changes in the business environment (Teece, et al., 1997; Teece, 2007). Furthermore, a positive relationship between the DCs and firm’s performance has been quantitatively demonstrated through an empirical assessment (Pezeshkan, et al., 2016) and this could explain the exponential growth of these organizations.

Innovation Ecosystems

This pillar emerged from the literature field that studies ecosystems (Moore, 1993). In particular, following the review accomplished by Jacobides, et al. (2018), ecosystems are subdivided in three stream of reference: “business ecosystems”, which centers on a firm and its environment, related to the above (Teece, 2007); “innovation ecosystem”, focused around a particular innovation or new value proposition and the constellation of actors that support it; and “platform ecosystem”, which considers how actors organize around a platform and will be covered in the third pillar.

The objective is to answer the question “*How do ExOs manage value creation?*” and so, it’s worth focusing on innovation ecosystem which are increasingly recognized as important vehicle to create and capture value from complex value propositions (Dattée, et al., 2018).

The anchoring point here is to provide innovations that allows customers to use the end product and it’s important to consider all the actors and the relationships of an ecosystems.

Different contributions (Adner, 2017; Jacobides, et al., 2018; Reeves, et al., 2020) suggest the importance to create modular structures and to use simple, common operating principles. Moreover, the Ecosystem Pie Model (EPM) provided by Talmar, et al. (2018) could offer the opportunity to position a significant number of ExOs and understand how

they are able to manage value creation, deepened all relevant elements that include actor level (individual perspective) and ecosystem level (meso and firm perspective).

Digital Platforms

This pillar emerged from the literature field that studies the adoption of digital technologies and how they affect changes in the underlying business models that are increasingly turning towards a platform-based business model (Agostini, et al., 2019; Constantinides, et al., 2018; Kim, et al., 2018). The objective is to answer the question “*What exactly do the ExOs?*”, which can be quickly responded saying that they do digital platforms capable of matching the supply and the demand side of an industry. Empirical evidence brought by some ExOs, such as Alibaba, Amazon, Facebook and Google have shown that this is the leverage by which they achieve exponential results.

Some firms, considering the results achieved by ExOs, are trying to switch their business model but it is always difficult due to the different elements to consider, such as technological interfaces and their governance, the business model and the organizational design (Cennamo, 2016; Parker, et al., 2017; Wareham, et al., 2014; Baldwin, 2012). Another aspect that emerged is the concept of platform’s scalability (Constantinides, et al., 2018). This implies a sense of urgency to scale quickly, which is grounded in the benefits of positive network effects, i.e. the increase of the platform value for all existing users generated by each new user added (Parker and Van Alstyne, 2005). Moreover, the importance of user base is growing and should be considered at the same level of traditional KPIs, such as revenues, market share or number of employees (Huang, et al., 2017). The opportunity of discussing about “Digital Platforms” from a managerial standpoint is to produce a comprehensive guide for traditional firms that, not being “born digital” like ExOs, have to consider and prioritize a multitude of aspects concerning the adoption of digital technologies – business models, governance, organizational systems, scalability, etc. –.

Continuous Experimentation

This pillar mainly emerged from the literature field of startups and entrepreneurship, to which ExOs – being companies born in the last decade – are connected. Building an MVP, for instance, is related to the Build-Measure-Learn loop approach that aims to maximize learning through incremental and iterative engineering, so through continuous experimentation (Blank, 2013).

The objective is to answer the question “*Where is the most likely to sprout the ExOs?*”. In literature, a considerable importance is given to the environment and for this reason, this pillar includes all the others (fig.1), because the experimentation must be embraced – in action and orientation – by each employee, from top to bottom (Thomke, 2019).

A continuous experimentation environment facilitates the setup of more effective and fact-based growth paths (Thomke, 2019), limiting the risks of producing something that no one wants and valuing innovation efforts (Adner and Kapoor, 2010; Blank and Dorf, 2012).

“Experimentation” is one of the ExO levers that focuses primarily on creating value for customers, but it is detected in each of its levers through the use of digital technologies. From the beginning, ExOs establish the culture of failure based on the assumption that innovation should be conceived as a path, where the only defeat is not to fail, but not to learn (Blank, 2013; Ismail, et al., 2014). This agile approach, in contrast with the traditional waterfall model, allows to test hypotheses on the target market with the aimed users, who become collaborators and help to design (Blank, 2013; Downes and Nunes, 2013). Here, the importance of ecosystems emerges again (Jacobides, et al., 2018) and the relevance of this experimental process is underlined in today’s VUCA world, where

it's extremely important to stick close to the market. Several academics agree that the organization should be thinking experimentally (Mintzberg, 1994; Levinthal, 2017) and that there is a need to design experimental processes in each department (Thomke, 2019). Even creating this kind of environment is undoubtedly complex, the ExOs showed how a correct implementation can give considerable results.

3.2 CONSOLIDATION OF EXOS INTERPRETATION

Considering what emerged from ExOs interpretation, the following aspects can be noted:

- It is possible to use two lenses: the first is characterized by a company vision from an individual, meso and firm viewpoint; the second sees the company in two dimensions: internal and external. Both perspectives recall the DCs that are the key to respond to the VUCA world and pursue exponential growths;
- The company is seen as an open system and for this reason the themes of experimentation and autonomy are recurrent. These are enhanced with the creation of unconventional models and processes of experimentation as well as with the emergence of ecosystems that give importance to all those who are part of it (i.e., not only employees but also consumers who participate in the product's co-creation);
- Digital technologies are confirmed to be a distinctive factor of ExOs (as indicated by practitioners) as well as an enabler for other levers.

The approach adopted so far allows a comprehensive analysis of the phenomenon, allowing us to reach a second level of abstraction, which wants to consolidate the interpretation of ExOs, answer our second research question. According to that, in the next sub-paragraphs, we want to exploit findings mentioned above to deepen the main relationships, or key aspects, that distinguish ExOs.

From these, we have drawn a first attempt of a conceptual framework (§3.3), which explains ExOs by providing an overarching view of the four pillars and the priority aspects identified to compete in a VUCA context and pursue exponential growth.

3.2.1 VUCA AND DYNAMIC CAPABILITIES

VUCA has become a well-known term among academics and practitioners to summarize the various challenges that firms face in an increasingly digitalized domain (El Hilali and El Manouar, 2019).

“Taming VUCA” means the ability of an organization to cope with this specific context and according to the literature, the answer can be found by deepening the DCs, using two lenses. The first lens suggests considering three dimensions of an organization – individual, meso and firm (Teece, et al., 1997; Teece, 2007) – and each one of these recalls various peculiarities of the ExOs. Individual level is related to the involvement – e.g. MTP and moonshot thinking –, autonomy and independence that is given to employees (Felin and Powell, 2016; Schoemaker and Heaton, 2018). Meso-level, defined as “the interpersonal connections among firm’s employees” (Salvato and Vassolo, 2017), has a strategic importance as a link among individual and firm level and it’s solved by ExOs organizing appropriate internal processes (Felin and Powell, 2016) and using new methodologies, such as OKR (Wodtke, 2016). Firm-level means to establish an appropriate culture and align the organizational structure. In this regard, the DCs at the basis of the ExOs are generally implemented through “new forms of organizing” and management innovation.

The second lens, focuses attention to the competence of the DCs definition: the internal, refers to the overall internal organization, including all the DCs levels (Schilke, et al., 2018); the external, refers to the environmental dynamism defined as the rate by which

competition, customer preferences and technology change within an industry (Eisenhardt and Tabrizi, 1995; Wilhelm, et al., 2015). Moreover, Helfat, et al. (2007) introduce the change of the firm's tangible and intangible assets, considering adaptation as the key notion to achieve a valuable output to the final customer. This recall to the first paradigm underlying the ExOs: from "owning" to "using".

Following these considerations, it is easy to understand why attention is growing, both on the academic and the managerial side. The reference articles on this relation are two: Schoemaker and Heaton (2018) in which they sought to examine how business model innovations, DCs, and strategic leadership intertwine to help organizations thrive in VUCA worlds; Moccia, et al. (2019) in which a strong focus has been given to human resources management, based on a new leadership model and wanting to propose new tools for this sector.

While the first lays the foundation for this work – identifying the six leadership disciplines in a VUCA world and the combination of the various components: Sensing, Seizing, Transforming –, the second adds a broader perspective, introducing the levels of external focus (ecosystems), internal collaboration and agility, and social enterprise. The various recall points confirm that it makes sense to use DCs to explain ExOs. These firms in fact, rely on MTP to enable a deep culture capable of inspiring employees and aggregating many people outside the company to engage and work for it (Ismail, et al., 2014). Each of these two aspects are linked to some ExO levers: the first, for instance, is related to the culture and the tools provided to encourage independence and creativity; the second refers mainly to "Community & crowd", through which people could participate in the co-creation of a product (e.g. GitHub, Quirky).

Following these considerations, ExOs give us the chance to solve a literature gap: understand how DCs are successfully implemented in organizations and which tools are used to enhance them.

3.2.2 *EXPERIMENTATION AND AUTONOMY*

Starting from the fact that “if organizations have to deal with uncertainties, then someplace in the organization there have to be people who bring information to bear on those uncertainties” (Stinchcombe, 1990), firms need to be aware that individuals at the boundaries of the organization are the ones who can most easily sense and seize opportunities (Eggers and Kaplan, 2013; Felin, et al., 2015; Helfat and Peteraf, 2014). In this regard, ExOs empower employees to provide new knowledge and organize appropriate internal processes to convert it into collective knowledge (Felin and Powell, 2016), such as implement experimentation and agile process to facilitate learning and well-informed decision making at the firm level.

“Experimentation” and “Autonomy” are considered ExO levers, but in our interpretation, we decided to deal them together because it's not possible to do continuous and pervasive experimentation without giving autonomy to its employees and, more generally, to its stakeholders. Through these concepts, ExOs are able to generate value by orchestrating innovation ecosystems.

Leveraging on ecosystems and collaboration, assumes a bureaucracy reduction in order to favor flexible information-processing behaviors (Lee and Edmondson, 2017) and an experimental thinking of the organization in order to maximize the efforts and develop a culture of failure (Mintzberg, 1994; Levinthal, 2017). Currently, there is plenty room for both ecosystem design and management of value creation. We believe that these two concepts should be analyzed together through the concept of poliarchy, defined by Sah and Stiglitz (1986) as an organizational practice that consists in having autonomous individuals, who are empowered to make significant choices about the nature and scope

of their own work. This can give the chance to find complete answers and offer solutions to firms that have approached them, but in a fragmented way.

3.2.3 *EXPERIMENTATION AND DIGITAL TECHNOLOGIES*

The concepts of this paragraph are central to the whole narrative, but more specifically the last two: digital platforms and continuous experimentation. The focus of the literature in these years is mostly on strictly technical aspects, but when we discuss about “digital platforms” from a managerial standpoint, it means position them from the DCs perspective with the role of powerful enabling factor to create the conditions for running better experiments in scope and scale, facilitating greater degree of experimentation (Autio et al., 2018). Implementing digital technologies means responding to all three levels of DCs, encouraging the use of experimentation and iterative cycles (Ries, 2011). Starting from the firm level, the choice of pursuing a platform business model allows the possibility to build an MVP – Minimum Viable Product – and test the market reaction in an extremely cheap and almost zero-risk way (Ries, 2011; Ismail, et al., 2014). The reason behind this, it is the essence of the exponential technologies and the new information paradigm that is reflected in the following dynamics (Kurzweil, 2001):

- price/performance ratio and information capacity performances are predictable, independent of exogenous factors and capable to follow exponential trajectories;
- the fuel driving of this phenomenon is the information;
- many of the technologies underlying digital platforms (e.g. AI) incorporate information at the core of their diffusion.

Supporting these observations, there are also the 6 D’s model by Diamandis and Kotler (2015) – Digitalization, Deception, Disruption, Demonetization, Dematerialization, Democratization – which emphasizes the relevance of digital technologies and somewhat explains the exponential path of firms, if they succeed in acting on ExO levers and facing the platform model challenges.

At the meso-level of DCs and at individual level it’s playing the game for a company that want to compete in the 21st century. The underlying variable derives from how the company is able to implement continuous experimentation methods and processes, knowing that each employee must have sufficient autonomy to propose, spread and test their ideas with their colleagues, the community and the surrounding ecosystem (Thomke, 2019).

3.3 *TOWARDS A CONCEPTUAL FRAMEWORK FOR EXOS*

From the reading, hypotheses and verifications carried out with a literature review, in order to provide a clear contribution to the management innovation literature, we want to provide a first attempt of a conceptual framework based on what we consider the key aspects to tame VUCA and pursue an exponential growth. In this regard, the following four propositions have been developed and deepened to validate the overall model.

P1: Taming VUCA is positively related to experimentation practices and autonomy.

Taming VUCA means having a strong level of adaptability. This can be guaranteed by an experimental and autonomous culture. In this regard, ExOs’ effort doesn’t stop at giving great autonomy to individual in establishing their tasks, but it goes further at a cultural and macro-organizational level. ExOs adopts flat organizational structures, to reduce hierarchy and bureaucracy, which is seen as an obstacle to reach full adaptability. Acting on cultural aspects and the autonomy of its employees, there is also a greater

incentive for people to propose ideas and so, confirms the considerations made in §3.2.1 and §3.2.2. Experimentation and Autonomy are two important levers of achieving DCs and it's important to consider them both to achieve the goal of creating an adaptive organization which is preferable to tame VUCA.

P2: Experimentation practices and autonomy are positively associated to the creation of DCs.

As already mentioned above, it is evident the association between experimentation, autonomy and the creation of DC. This is understood for example from the identification of the fundamental characteristics of this last one: sensing, seizing and transforming. ExOs leverage a polyarchic way of organizing, grounded on proactive, entrepreneurial and autonomous employees. In other words, they encourage intrapreneurship which, as stated by De Jong and Wennekers (2008), consists in “entrepreneurial behaviors engaged by individuals within the boundaries of corporations”. The fact that the operative employee is the enabler of an effective sensing capability in firms working in dynamic environments, as ExOs are, confirms what Felin and Powell (2016), Eggers and Kaplan (2013), Felin et al. (2015), Helfat and Peteraf (2015) already stated. In fact, all the ExOs are well aware of the outstanding power and effectiveness of the employee innovativeness, given its proximity with the market and therefore the relevant information he/she owns. Following the suggestion of Schilke et al. (2018), who argue the importance of deepening the key enablers to implement DCs within the firm, we could say that the search of an entrepreneurial attitude in individuals (connected with experimentation) and the vision of an employee as a “sensor” to find new opportunities on the market are the two characteristics which allow ExOs to implement it. What is new consists in two main elements: on one side, the fact that this kind of employees is required to engage in experimenting activities and an attitude typical of an intrapreneurial approach, which manages innovative ideas and projects in a “start-up way”; on the other side, the hiring process is different, an entrepreneurial, risk-taking attitude, rather than just the technical expertise of the person, which alone cannot guarantee the company a continuous adaptation over time. This is also coherent with the fact that, given the polyarchic way of working of these ExOs, it is difficult to a-priori define which is the work that a person is going to carry out within the company.

P3: Experimentation practices and autonomy mediates the relationship between the ability of taming VUCA and the creation of DCs.

Experimentation and autonomy are the link through which a company develops DCs, organizes itself to be resilient to a VUCA world and in some cases pursue exponential growth.

Here, the practical answer of the ExOs is the establishment of a polyarchy (defined in §3.2.2), which means structure an organization in which autonomous individuals are empowered to make significant choices about the nature and scope of their own work (Sah and Stiglitz, 1986).

Giving full autonomy to individuals, polyarchy favors local experimentation, creativity and market innovation, maximizing efficient decision-making and execution by individuals, improving also the organization's ability to adapt to external changes (Felin and Powell, 2016).

Considering the employee role in a traditional organization – albeit with various levels of “command and control”, consists in doing what manager tells him to do –, it’s easy to explain the higher development of DCs in a polyarchy, which consequently generates a better adaptability of ExOs to the VUCA world.

P4: Digital technologies moderates the relationship between experimentation practices and autonomy and the creation of DCs.

Digital technologies allow a greater use of experimental practices and models based on autonomy and collaboration between individuals. This gives life to the creation of DCs at all levels that contribute to greater adaptability in the context.

In ExOs, digital technologies not only allow better coordination and integration of efforts as suggested by Puranam et al. (2014) but are also a way to minimize duplication of competences, roles and projects. Having highly developed digital infrastructures/platforms, it’s easier to exploit information and avoid too much dispersion – which can result from the greater independency of individuals –, to keep track of both competences deployed across the organization and of the different roles and projects which are created by individuals. This is done through the implementation of numerous dashboards and interfaces that facilitate internal and external communication within the organization (meso level of DCs).

Summarizing what expressed in the previous paragraphs and in the propositions analyzed, we have developed this conceptual framework (fig. 2) that emphasizes the key elements to tame VUCA with exponential organizational models.

Considering the overall research model: the need to respond to VUCA translates into the adoption of organizational models that allow the development of DCs in the organization. The relationship between VUCA and DCs is mediated by experimentation and autonomy (mediator). To respond to such a context, you have to find a way to be flexible and seize opportunities more easily.

Digital technologies instead, have a moderator role in the relationship between experimentation and autonomy and the creation of DCs: through digital technologies it is possible to design better experiments in scope and scale, through digital technologies it is possible to multiply the experiments and make better use of their results, triggering learning and culture.

Moreover, it’s not possible develop an experimentation context without giving autonomy to employees and through digital technologies there is a better track of their results and engagement in the project. So, with these three factors it’s easier to develop DCs that are the management key for the creation of an ExO and Ecosystems.

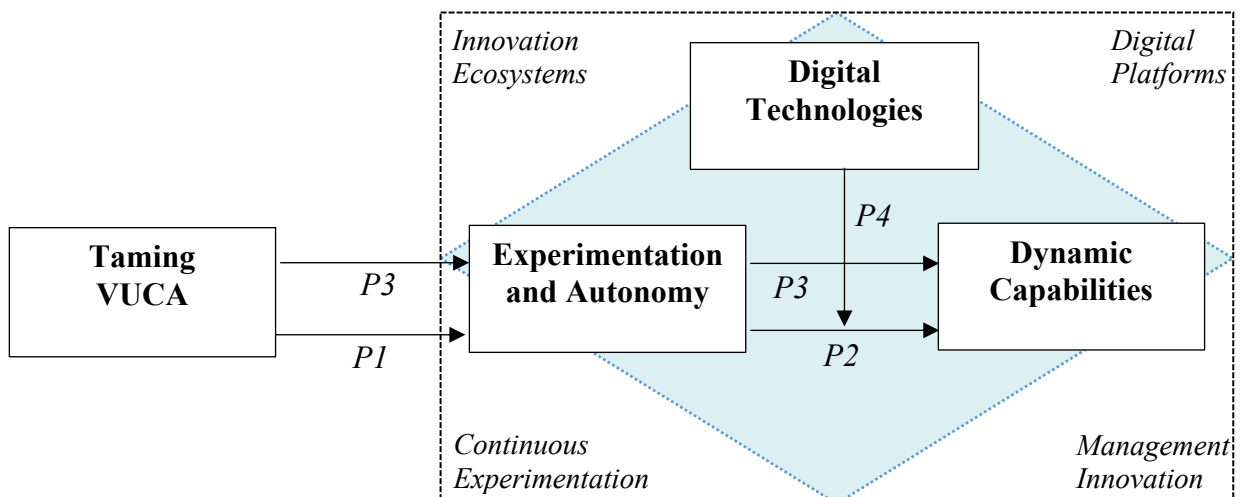


Figure 2: Conceptual Framework.

4. CONCLUSION

This paper proposed to organize the scientific contributions across different field of reference to rigorously define which are the key elements for successful, sustainable business and organizational models of ExOs. In this regard, two research questions were answered.

Being a concept coming from the practitioner's world (Ismail, et al., 2014; Palao, et al., 2019), it was necessary to work on the interpretation of the concept in relation to the literature, obtaining four main pillars capable of giving a first location to the phenomenon. From here, it was possible to observe the most recurrent and relevant aspects that allowed us to answer the second question, deepening the subject and realizing the conceptual model presented in paragraph 3.3.

Answering the first question, it can be said that ExOs are able to compete in a VUCA world by implementing unconventional organizational models (polyarchy, flat organization, etc.) that fully exploit innovative ecosystems and digital platforms. This is enhanced by a culture of continuous experimentation that allows to engage stakeholders (both internally, i.e. employees, and externally, i.e. community members and/or the crowd) and continuously challenge the organizational structure, processes and products proposed.

Adding an additional level of abstraction needed to provide tools both for academics and practitioners, we have highlighted the priority aspects that we believe should be considered to become an ExO: taming VUCA, experimentation, autonomy, digital technologies and DCs.

In this regard, we want to propose a possible academic definition of ExOs that on the one hand simplify what is proposed by Ismail, et al. (2014) and on the other hand help researchers to better locate the topic:

"An ExO is one that through the combination of digital technologies, experimentation and autonomy of organizational models, is able to enhance its dynamic capabilities, completely adapting to the context and achieving exponential results."

Having understood how ExOs are able to compete in this context, it was appropriate to focus on the propositions and relationships between the key aspects mentioned. Each of the propositions suggests guidelines that can be followed by companies that want to move towards an exponential organizational model.

This research should be considered as a first milestone for developing this topic in the academic context, aiming to give also a concrete contribution to the practitioners' world. In this regard, researchers can find a holistic view and in-depth analysis from which creating future case studies and surveys both in terms of numbers and company variety to validate and demonstrate the effectiveness, the opportunities and the risks in implementing this approach.

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