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Tales from the disruption world

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Key words: Disruption, Innovation, Digital Technologies, Exponential Organizations

Abstract

The purpose of this article is to describe and explore the phenomenon of disruption by providing a model for interpreting it. Examples from the Hospitality & Tourism industry will be used for this goal. Within this observation, the concept of Exponential Organizations is presented as possible model, designed to strive in such a turbulent environment.

1. Introduction

The term disruption has been very popular lately. Associated with the development of internet and digital technologies, as well as the topic of evolution, scholars agrees on defining it over-used. Its application and consequences such as the economic and social impact it entails have been studied and documented from different perspectives and are not in dispute however, the debate about its meaning have accompanied the term since its first appearances. In this article we want to provide a red thread on the topic in order to frame a solid outlook on how to interpret disruption made of different contributions to the ongoing debate.

The work starts with a definition of disruption and of the role played by technologies in the process. As second moment, we will describe how industries are

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evolving as result of the process. The perspective of the Chain Reaction of Technological Progression will be explained as possible framework to illustrate the disruption process and each of the six phases will be deepened with examples and data coming from the Hospitality & Tourism industry. Following that, we will investigate how companies are reacting to the process. Finally the perspective of Exponential Organisations is proposed as emerging concept to face disruption and respond with an ever-changing logic to the process.

2. Defining Disruption

During his last interview published in the MIT Sloan Management Review by Karen Dillon on February 4th, 2020 only a few days after his death, Professor Clayton Christensen defined "disruption" for the last time. The author who has devoted a meaningful part of his career to studying why companies fail (Lepore, 2014) clarified once again: Disruption is a process and not a single event.

This happens, according to Christensen, as a simultaneous combination of changes: the process of resources allocation in the firm, the constant change of needs of actual and potential customers, and the permanent evolution of technology (Christensen, 2020).

Highly influential for "a generation of CEOs" (Wadhwa, 2015) and cited by the world's best known thought leaders, the concept has roots in 1995 with the release of the article "Disruptive technologies: catching the wave" in Harvard Business Review by Bower and Christensen, and since then, it has been used by several organisations such as Procter&Gamble, GE and Salesforce. It is built upon Schumpeter's idea of a "Creative Destruction" (1942) that, through time, ends up creating a discontinuity with the existing "technological paradigm" (Kuhn, 1962; Dosi, 1982; Gans, 2016). Disruptive technologies have the potential to revolutionise markets thanks to their trajectory, creating a new form of competition. For the management of an organization it is crucial to identify their strategic significance in order to exploit them on time (Bower and Christensen, 1995). Christensen's book "The Innovator's Dilemma" (1997) provided the perspective of the role of time in this context, defining the reason of this all in the "velocity of history" (Lepore, 2014).

Few years after, the concept gained relevance in the macroeconomics debate for policymakers "to transform relatively stagnant economies" (Christensen et al., 2001, p.81). Finally, it has been object of essential refinements through time (Christensen et al., 2015) and the theory is considered of prominent position on any assessment of relevance (Christensen et al., 2018). American History's Professor at Harvard University Jill Lepore, considers disruption an atavistic theory of history, following the principle that events in history can find an explanation "by prior events in historical time" (Ross and Weinstein, 1982; Lepore, 2014). Moving from the eighteen century's idea of "progress" to "evolution, growth and innovation" respectively in the nineteenth and twentieth, the time for disruption is built upon "profound anxiety about financial collapse" (Lepore, 2014), yet bringing hope and salvation: "disrupt and you will be safe" (Lepore, 2014).

Christensen theory's core concepts still are widely misunderstood (Christensen, 2006; Raynor, 2011; Christensen et al., 2015), debated (Adner and Zemsky, 2003; Danneels, 2004; Utterback and Acee, 2005; Henderson, 2006; Markides, 2006; Christensen, 2006; Christensen et al. 2018) and inconsistently applied (Chesbrough, 2001; Danneels, 2004), although the diffusion of the world "disruption" in business lexicon (Christensen et al., 2015; Loucks et al., 2016; Schneider, 2017) and its popularity are signs of the need for ways to give an explanation of today's world identity (Lepore, 2014; Chima and Gutman, 2020).

The necessity to explain the contemporary business landscape and the relative challenges can be found from academia to thought leaders and practitioners. On September 2016, the release of California Management Review (CMR) Special Issue "Management Innovation in an Uncertain World" has been anticipated with a dedicated Call for Papers. On a similar note, Rotman Management, from Toronto School of Management has released two "Disruptive Issues" in the Fall of 2016 and Winter 2019 collecting perspectives and experiences from the academic and business worlds on this topic. A special issue of the MIT Sloan Management Review on disruption in memory of Clayton Christensen has been released in 2020 and a Virtual Symposium on the topic was organised a few months later.

The rationale behind the California Management Review issue is explained by the guest editors, Professor Millar, Groth and Roos (2016) in the Call for Paper. There is a growing interest in how decision makers are dealing with a disrupted environment as well as there is an explicit need of understanding "how VUCA environment lead to management innovation in different organizational settings" (Millar et al., 2016).

The mention to the VUCA world is not casual. Few years before, the McKinsey Quarterly described the current moment as characterised by great changes in the way competition happens by "a rising tide of volatility, uncertainty, and business complexity'' (Doheny et al., 2012).

Practitioners and Scholars agree on defining today's world as "a VUCA world", by extending the use of an acronym originally from the U.S. military (Whiteman, 1998). The current context is at the same time Volatile, Uncertain, Complex and Ambiguous, and each of these elements could generate great gain for the company "if its leaders master the accompanying challenges" (Bennett and Lemoine, 2014). This VUCA concept is considered at the same time an outcome of disruptive innovation and a driver of it (Millar et al., 2018). It increases complexity and turbulence and generates concerns about the fact that firms are not able to adapt quickly enough (Hamel and Prahalad, 1994; Thorén and Vendel, 2019).

In this situation, we observe the evolution of different disruptive phenomena, from the emergence of technologically driven products and business models innovation to global business environments and the evolution of various technologies (Millar et al., 2018).

NYU Stern School of Business's Professor Amy Webb has identified 11 macro sources of disruption that operate outside a leader's control. These "Future Forces" (Webb, 2020) range from Wealth distribution to Education, to Government, Public health, Environment and counting; each of them is connected with the others through technology and eventually impacting the firms' business. A constant scanning of these

areas is recommended to help the organisation reading and anticipating an upcoming wave of disruption.

The effects of disruption are tangible. This evolution generates real world business and social problems like the fear and insecurity of losing jobs due to the creation of new automation models (Dahlin, 2019; Kozak et al., 2020) and the necessity to update and learn how to relate with several new technologies that will reach their tipping point in the next ten years (Dutta et al., 2015).

To confirm the trend, recent COVID19 events have contributed to accelerate the disruption phenomenon even more to the point that 2020 has been defined a year of disruption. (Chima and Gutman, 2020; Toribau, 2020). The previously described conditions for accelerating change have been building for years (Chima and Gutman, 2020), progressively contributing to increase the difficulties for business planning (Dreborg, 1996). As result, 2020 is now considered "the year when everything changed" (The Economist, 2020), the beginning of a "new normal" (Hinssen and Chellam, 2010; Chima and Gutman, 2020).

The change can be observed looking at the exponential growth of different phenomena like virtualization of the workspace, online learning, virtual health, and e- commerce (Chima and Gutman, 2020): all of this is possible thanks to the advancements in information technology, Artificial Intelligence (AI), blockchain, Internet of Things (IoT), 3D printing, and in many other exponential technologies.

The concept of exponential growth associated with technology reflects the empirical evidence of a doubling improvement in digital technologies that is unprecedented in history and that has been as such for many years (Hagelet al., 2013; Lund and Safouhi, 2019). Exponential growth is "a compound doubling: 1 becomes 2 becomes 4 becomes 8, and so on" (Diamandis and Kotler, 2016b, p.40).

These technologies have seen a meaningful growth since the mid twentieth century, with dramatic increase in processing speed and data storage while processing and storage costs have fallen together with hardware prices (Baum and Haveman, 2020). In the essay "The law of accelerating returns", dated 2001, Ray Kurzweil, futurologist and Director of Engineering at Google stated that, because of the rapid rate of change of technology "we won't experience 100 years of progress in the 21st century, it will be more like 20,000 years of progress" (according to today's rate) (Kurzweil, 2005; Alier and Casany, 2017; Pompa, 2019).

A visual representation of disruption can be found in the Financial Times of December 18th, 2019. In John Gapper's farewell article "Goodbye to all that creative destruction", the illustrator Ingram Pinn depicted on paper feelings and effects that accompany the concept of disruption when associated with markets and change.

Gapper's piece is meant to illustrate 16 years of work in a domain characterised by fast change in technology and globalisation. Pinn managed to represent disruption by a huge and powerful vortex that destroys skyscrapers and buildings, swallowing up objects and symbols from different industries and throwing them back out after having transformed them into a 'smart' upgraded version. The change is rapid, and no sector is immune to such a powerful phenomenon, from automotive, to home appliances, from fashion and beauty to logistics and delivery: it is creative destruction at work.

3. The Digital Vortex Research

The idea of associating disruption with a vortex has been used to conceptualize the impact of digital disruption on firms and industries also by the Global Center For Digital Business Transformation in Lausanne, Switzerland. The Digital Vortex research is a joint initiative of the IMD Business School and Cisco, the IT worldwide leader. It is a series of biennial studies launched in 2015 with the aim of better understanding management attitudes and behaviors towards digital disruption in 14 industries.

Three dynamics explain this association (Loucks et al., 2016):

- the dynamic of "power and exponential velocity" that happens towards the centre of the phenomenon. This is called irrotational vortex.
- the dynamic of "chaos" that happens during the phenomenon. Hence no prediction can be made for an object's path once in the loop.
- the dynamic of "collision". Objects within a vortex collide, break and recombine while converging towards the center.

Digital Disruption happens then as the impact of digital technologies and business models on a company's value proposition and resulting position (Loucks et al. 2016): consequently, every sector is inevitably converging towards a "digital center" in which "business models, offerings and value chains are digitised to the maximum extent" (Loucks et al., 2016, p.17), physical components that inhibit competitive advantage are discarded and "everything that can be digitised is digitised" (Wade et al., 2019, p.5). According to this dynamic, the closer industries get to the center, the higher the pressure for competitiveness increases and new competitive forms are created. The centre of the vortex represents a "new normal" (Hinssen and Chellam, 2010; Loucks et al., 2016; Chima and Gutman, 2020) characterised by a rapid and constant change, not a stable end state while the industry's position relative to the centre "reflects the state of competition in that sector" (Loucks et al., 2016).

The Digital Vortex 2021 research named "Digital Disruption in a Covid World" and released April 2021, documents the state of the industries and the relative positions from the center of the Vortex between 2019 and 2021. The research is made of both qualitative and quantitative measures in four dimensions collected through surveys to various executives and from industry sources across the globe. Moreover, the scoring system combines investment attractiveness, like venture capital initiatives and interest for startups, timing, industry specificities like the presence of barriers to disruption and the magnitude of the impact. Despite some changes of position compared to the previous surveys, the 2021 saturation point (Wade, 2021) impacts without distinction in terms of size or location: every sector is heading towards the area of highest velocity and magnitude of change.

The Digital Vortex 2021 is characterised by three macro-groups according to the relative position from the center.

The first group is the closest to the center, the one with the highest competitiveness; among the various industries, for the third edition in a row, "Media

& Entertainment" ends up showing the highest disruption intensity. "Retail" occupies now the second place, after gaining two positions from the 2019 previous edition of the research while "Telecommunication" confirms a stable third position. "Technology, Products & Services" occupies now the fourth place, two position lower from 2019 and "Financial Services" is confirmed at the fifth position.

Great changes happened in the second group of industries where almost all the sectors have gained positions compared to the pre-Covid era. "Education", "Professional Services", "Healthcare and Pharmaceuticals", "Consumer Packaging Goods" are now closer to the centre of the vortex than in 2019. The case for "Hospitality & Tourism" is one of a kind; the industry dropped four places compared to the previous edition. This can be explained by the fact that the study is about digital disruption and not disruption in general. The pandemic has clearly impacted the industry and attempts to replace physical experiences with digital ones have been limited. Moreover, little activity has been measured from the venture capital world towards startups acquisition: another consequence for the pandemic.

The third block of sectors is the furthest from the centre of the Vortex. Nevertheless, each industry had some movement: "Transportation & Logistics" lost four positions from 2019, while "Real Estate & Construction" gained two places towards the centre. Finally, "Manufacturing" and "Energy and Utilities" lost one position each.

4. The Chain Reaction of Technological Progression

An interesting perspective about how the disruption evolves through time, is provided by Diamandis and Kotler (2016a). Their "Chain Reaction of Technological Progress" is a map that identifies six phases of technology evolution towards a massive impact (Díaz-Piloneta et al., 2021), evolving from the linear and local life that have characterised the world before digital, to the global and exponential life we are starting to know today (Diamandis and Kotler, 2016a). Also known as the "6Ds", the model is useful to understand the growth pattern (Díaz-Piloneta et al., 2021): the change is irreversible and it happens every time a sector gets in touch with digital and information technology (Derchi, 2021b).

Let's take the example of the Hospitality & Tourism industry: the impact of digital technologies is massive and the change is constant. According to George Corbin, Marriott International Inc.'s senior vice president of digital, during his 14 years of tenure in the company the travel industry has seen a continuous disruption (Kane, 2017).

In the first phase, DIGITIZED, the industry gets to know the digital potential, progressively. This explains the transition from physical to digital. Any digitised product, therefore representable by zero and one, becomes accessible, sharable and distributable via computer. The exponential growth is the same phenomenon happening in computing. In the case of Hospitality & Tourism, the first wave of disruption was about a change in the consumer purchase experience. The advent of

online sites like Expedia, evolved the industry from call centers and offline travel agencies to the new OTA model (online travel agents) (Kane, 2017).

The birth of innovative business models of the insurgents generated a creativity effect on several levels. From one side Marriott and the other incumbents reacted as followers: new digital channels like Marriott.com were implemented to reach the consumer directly. On the other hand, new creative ideas emerged like in the case of Tripadvisor in 2000, leveraging user generated reviews, or Airbnb in 2007, born just as a smart way to monetise the founders apartment costs by renting a few air-mattresses during a design fair in San Francisco (Oskam and Boswijk, 2016).

The second phase, DECEPTIVE, is characterized by a period of unnoticed development. Exponential growth trends, in their initial stages, are linked to very low numbers, and therefore do not seem to yield concrete results: at this stage, doubts may arise about the effectiveness of the initiative as exponential thinking is not easy to apply.

In this delicate moment, Airbnb's offering is growing yet not recognised by the hospitality industry as relevant; it is just a niche platform for back-packers (Chesky et al., 2021). The initial Airbnb's proposition is, according to the former Global Head of Civic Partnerships, Molly Turner, built for whomever "can't afford their homes and need extra money, so they rent out their homes" (Oskam and Boswijk, 2016). This unique perspective might have misled the competition and the entire industry. Despite Airbnb's penetration data indicated 100,000 properties in 192 countries, and over 19,000 cities listed worldwide (Joffrion, 2012), no sign of the phenomenon emerged in Hospitality Industry Trends in 2013 like the one from the online platform hospitalitynet.org (Rauch, 2012).

To avoid surprises, in this moment it is very important for incumbent organizations to be able to create a system for identifying and measuring competition that should include also new and emerging business while scanning the periphery (Day and Schoemaker, 2005).

In the third phase named DISRUPTIVE, it becomes visible and evident the difference between a growth strategy coming from linear incumbents and the exponential curve that disruptors are tracing. Markets start to undergo radical changes. Growth rates are solid and technologies are performing incomparably better in terms of cost and efficiency than non-digital models. The businesses that have exploited this growth curve are becoming visible and are now entering the mainstream (Blecharczyk, 2018). On January 11th, 2014 Airbnb's CEO Brian Chesky, posted on Twitter: "Marriott wants to add 30,000 rooms this year. We will add that in the next 2 weeks": it is the pattern of exponential growth. As evidence of it, in 2012 the company reached its 5 millionth and its 10 millionth booking in only five months' time (Joffrion, 2012; Airbnb Celebrates Record Growth With 10 Million Guest Nights Booked, 2012). This meant, for the insurgent platform, a penetration rate of about 1% of the global hotel room from the offer side and an expected growth trend to reach 5% in only 4/5 years (Saussier, 2015).

In this phase the matter of surviving is the primary determinant of competitiveness (Barnett and Pontikes, 2004): here incumbents recognise the threat (Corbin, 2017) and decide to respond to the disruption (Bughin and Van Zeebroeck,

2017). This is a very delicate moment for legacy business, who are at risk to fall in what scholars call the "Red Queen effect" (Van Valen, 1973; Barnett and Hansen, 1996; Bughin and Van Zeebroeck, 2017). This name takes inspiration from Lewis Carroll's "Through the Looking-Glass", when The Red Queen explains Alice that "It takes all the running you can do, to keep in the same place." In business, this implies that under certain conditions a standard commitment is not sufficient for an organisation to evolve; what is required is to "run at least twice as fast as that". An extra effort that only some companies can really afford. The aggressive imitation of successful business models as opposed to developing a distinctive strategy could end in a damaging "self -reinforcing process" (Barnett and Hansen, 1996). Competition can get progressively tougher and tougher, demanding more and more investments from both entrants and incumbents, leading to a no winners condition, a "competency trap" (Barnett and Hansen, 1996).

Reactions can be different: from the acquisition of existing disruptors, like in the case of The Accor Group with the home sharing platform Onefinestay in 1996 (Hospitality On, 2022), to the creation of new business meant to compete directly with the disruptors as per Marriott example when they entered a long testing period before launching Homes&Villas in 2019 (Ting, 2019).

The fourth phase is DEMONETIZATION; the industry is entering a dangerous loop. A mix of competition and technology affects industries profitability that become progressively impoverished (Corbin, 2017; Derchi, 2021b). The constant lowering of technology prices to near-zero marginal cost makes it possible to bring a significantly lower priced offering to market. In the case of Airbnb, 2018 data showed the most popular rental price segment to be $31 -$80, definitely lower than the average price for the top 5 hotel chains which was set at $142. (Airbnb vs Global Hotel Industry, 2019). With such a gap, it becomes very difficult for traditional business, even when highly prepared. Airbnb's ability to influence incumbents pricing strategy during peak seasons is demonstrated. (Farronato and Fradkin, 2018; Iansiti and Lakhani, 2020).

The magnitude of the disruption's impact have been measured (Bughin and Van Zeebroeck, 2017). On average, incumbents are impacted on their growth trajectories on revenues (-30%) and earnings before interest and taxes - EBIT (-25%) (Bughin and Van Zeebroeck, 2017). Insurgents providing new business models are able to grow the industry by serving the latent demand for about 0,5% a year, while, at the same time, they steal share from incumbents impacting on average "2 points of year-on-year growth" (Bughin and Van Zeebroeck, 2017). Finally the impact is also on industry profitability, estimating a reduction in revenue yield per unit sold by 2% a year and affecting directly the margins of industry incumbents. Assuming a 10% in profit rate, that 2% drop would mean 20% reduction in profitability. (Bughin and Van Zeebroeck, 2017)

In the DEMATERIALIZATION phase, the physical elements of the industry disappear, gradually replaced by less and less physical supply (Herman et al., 1990; Cleveland and Ruth, 1998; Oskam and Boswijk, 2016; Derchi, 2021b). Technology and devices like smartphones have become enablers for new business and brands (Wright, 2002). Tangible products and physical spaces are becoming anachronistic and less relevant: at their place, increasingly sophisticated digital offerings. An

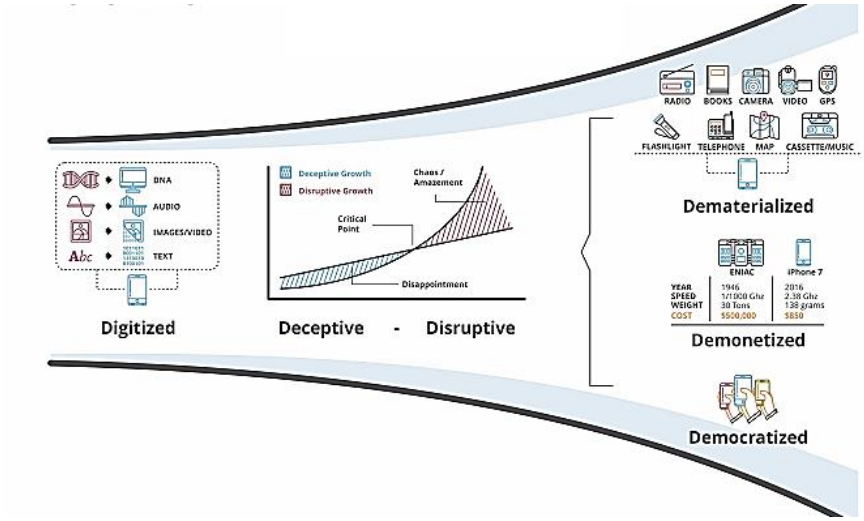
evolutionary path from a time frame of possession to the age of access (Rifkin, 2001; Oskam and Boswijk, 2016).

In Hospitality & Tourism industry, digital offerings like Tripadvisor or Airbnb do not need any of the linear world infrastructure. Airbnb's platform and Host community is sufficient to guarantee a highly satisfying experience even for business and early mass segments. (Oskam and Boswijk, 2016). Hotels and their service-scape (Bitner, 1992; Lin, 2004) must evolve as they risk being replaced by increasingly personalised hospitality sharing experiences, including business-to-business offers (Derchi, 2021b).

The sixth and final phase is the beginning of a new paradigm. Industries are DEMOCRATIZED; the access to products or services is now potentially universal. Users are now prosumers (Ritzer and Jurgenson, 2010; Kotler, 2010; Ritzer et al., 2012), tools for access to technology are increasingly user-friendly and convenient: everyone have access to technology and can participate in the next revolution. A new abundance is now created where scarcity ruled (Anderson, 2009; Ritzer and Jurgenson, 2010). This economy of "abundance and ubiquity" (Oskam and Boswijk, 2016) is directly associated with disruptive innovation phenomena (Mahto et al., 2020) and it relates with the number of people involved in the innovation, the time dedicated and the results of their efforts (Ritzer and Jurgenson, 2010).

In this phase, new kinds of firms emerge (Baum and Haveman, 2020), a new wave of organizations, "built on digital foundation" (Iansiti and Lakhani, 2020). In Hospitality & Tourism, this generation of business include booking.com, Kayak and Priceline: they are all built like software companies, using data centric operating models to serve the abundance without encountering in issues of being too big, like traditional built incumbents (Iansiti and Lakhani, 2020). Being able to process data provides opportunities for further development for better services.

Figure n. 1 - The Chain Reaction of Technologies (6Ds Model)



Source: Singularity University (2016).

Airbnb's numbers are now the ones of an industry leader. With more than 5,6 million rooms listed (Airbnb, 2022), about six times as Marriott's capacity (Iansiti and Lakhani, 2020) and a better performance than Hilton in the US (Molla, 2019), the company guarantees everyone who is sharing its purpose "Belong Anywhere" and guidelines, the possibility to participate in its community. During Covid -19 Pandemic, in full crisis for the industry the company managed to reinvent itself extending its offering by launching Online Experiences, "to connect, travel virtually and earn income during the COVID-19 crisis" (Airbnb, 2020). A new component of the "hospitality" sector is getting digitised: the disruption loop continues.

Following Christensen's theory on disruption, Iansiti and Lakhani believe Airbnb is not really disrupting the lodging business but "colliding". For the authors (2020), the platform is not about one particular innovation in technology rather than serving customer needs in a completely new way. Other scholars (Guttentag, 2015; Teixeira and Brown, 2016) consider Airbnb an example of disruptive innovation and this gives continuity to a 25 years long debate on the topic.

The described "6Ds" model provides evidence to a trend that is impacting the average lifespan of the organization; the 61-year standard for firms in 1958, declined to a 25 years span in 1980, then to 18 years in 2012 (Foster and Kaplan, 2011; Foster, 2012) and counting. Furthermore, research like the Corporate Longevity from Innosight (2018) conducted on the S&P list on multiple years, shows a dramatic decline of their average lifespan churn rate, anticipating the replacement of the 75% of them by 2027.

5. A fragmented reaction to digital disruption

Despite various examples from business leaders sharing formulas and ideas on how to react the disruption, like former IBM's CEO Virginia Rometty, who believes "*The only way you survive is you continuously transform into something else"* (Hempel, 2013), research shows different evidence: the business world is still responding weakly to disruption.

Again the Digital Vortex 2021 research provides interesting insights on this regard. The 36% of executives interviewed from the previously described 14 industries exposed to the disruption believe their organisations have not recognised the disruption yet, they do not recognise it at all or is not responding appropriately. This number increased by 2 points compared to what surveyed in the previous edition in 2019.

Among the others, 25% of them believe their relative organisations are aware of the disruption but reacting just as a "follower", and only 39% of the sample believe their organizations are actively responding to digital disruption, a result which is pretty much aligned with the 38% collected in 2019.

These results confirm Christensen's perspective (2020) that disruption is not easy to identify and to seize: executives have a "deep and nuanced knowledge" (Christensen, 2020) which can be distractive from "seeing the writing on the wall" (Christensen, 2020). For this reason, sometimes executives are better at spotting disruptions happening in other industries rather than their own.

Still from Digital Vortex 2021, the way to react to digital disruption has been measured. From a general perspective, the results showed that, for 61% of cases, executives believe their organisation's digital strategy is too fragmented. Only 21% believe their digital strategy is coordinated, while a remanent 18% answered their organization to have no digital strategy at all.

Furthermore, narrowing down the question per type of organization, the condition of "having a fragmented strategy" is present in different intensity. It is just a matter of size, the larger the organization, the more fragmented its strategy is perceived.

For small and medium companies, below 50 and between 50 and 499 employees, the presence of a fragmented digital strategy accounts respectively for 40% - 42% of cases. For large organisations between 500 and 9.999 employees, companies characterised by a fragmented digital strategy are about the 59% of cases while for the very large companies, above 10.000 units, the digital strategy is perceived as fragmented for a relevant 67%.

The challenge is complex. Research shows that more than 70% of initiatives in digital transformation fail (Bucy et al., 2016; Saldanha, 2019). In particular, the impact of tech-focused initiatives, such as those on Artificial Intelligence (AI), manage to offer specific financial benefits to only 10% of companies implementing them. (Ransbotham et al., 2020).

From one side, in this "AI driven world" (Iansiti and Lakhani, 2020) the requirements for competition have less to do with specialisation and more with a universal set of capabilities like data collection, processing and analytics as well as algorithm development. As an example, Uber's new CEO Dara Khosrowshahi's

previous experience was in Expedia: it seems clear now that what matters is more about the type of company than the knowledge of a specific industry which can be successively acquired. These universal capabilities are now changing the way to design new business and to compete (Iansiti and Lakhani, 2020).

On the other side, especially for traditional companies, finding the right organisation configuration sometimes might require entering an ever-changing mode (Pieters and Young, 2000; Hamel and Zanini, 2014, 2018). This is not only about the access to technology, but also about recognising opportunities (Derchi, 2021c). *"It's this idea of continuous transformation that makes you an innovation company*" (Ginny Rometty in Hempel, 2013).

Led by the perspective of studying and teaching the exponential development of technologies, in order to "leverage them to better humanity" (Wadhwa, in Araya, 2013, p.321), in 2008, the techno optimists (Ogden, 2012) Ray Kurtzweil and Peter Diamandis, Author and Futurist, created Singularity University, a not-for-profit American education organization which received support from main American tech companies like Google and NASA. The Singularity is in fact defined as a "technologically driven profound societal change" (Magee and Devezas, 2011, p.1366), the moment when "our models must be discarded and a new reality rules " (Vinge, 1993, p.353), the "new, rapid and radically transformative period for human life to alter our perspective of mankind past and future" (Kurzweil, 2004) driven by the exponential growth of technology. The creation of superhuman intelligence (Kurzweil, 2005) will put an end to the human era as we know it (Vinge, 1993) and we will enter a new paradigm.

From a Theoretical background, there are four main perspectives that characterize the foundations of the Singularity University field of knowledge:

- The Moore's Law (1958) for which the number of transistors per square inch on integrated circuits has doubled every 18months and the prediction that this trend would continue in the anticipated future eventually with some changes in the chip design (Thompson, 2017). A "reliable method of calculating future trends as well, setting the pace of innovation" (Schaller, 1997, p. 52).
- Ray Kurzweil's "Law of accelerating returns" (2001). Proving that the Moore's law had been working at least since 1900, before electronic computers even existed (Alier and Casany, 2017). For Kurtzweil, by applying iterative learning, systems improve progressively, making each version of computing less human-dependent than the previous ones (Kurtzweil, 2004).
- The previously detailed "Chain Reaction of Technological progress"from Peter Diamandis and Steven Kotler (2016b).
- The creation of an economy of abundance, defined as a "new portal to view disruptive innovation" (Mahto et al., 2020). As consequence of the disruption process, thanks to the emergence of digital technologies, resources cannot be considered as scarce anymore but subject to abundance, because of the diminishing marginal costs (Anderson, 2009; Rifkin, 2014; Geissinger et al., 2020) and increasing returns as opposed to the diminishing returns and rising marginal costs in traditional economy models (Arthur, 1996; Geissinger et al., 2020). The 21st century grand challenges like energy, food generation,

healthcare, water education and the environment are strictly linked with a new and connected middle class, the "Rising Billion" that can generate new opportunities "that open up whenever a new discovery is made" (Diamandis and Kotler, 2012, p. 236).

As consequence of the acceleration of the rate of improvement, we witness rapid advances in innovations leveraging these technologies (Hagel et al., 2013) which are creating scenarios and scale of change never seen before because of the simultaneity of implementation of many at the same time (Brynjolfsson and McAfee, 2011; Díaz-Piloneta et al., 2021). The concept itself of different technologies combination can be found with the name of The Fourth Industrial Revolution (4IR) by Prof. Kaus Schwab of the World Economic Forum. This describes the practical application of disruptive new technologies and the creation of new business models, designed to impact several systems in production and consumption, creating implications for the environment, economies, and society. (Combes et al., 2017; Schwab, 2017).

6. The Rise of Exponential Organizations

While exponential growth has become more and more relevant in the last few years, almost as a necessity for companies (Díaz-Piloneta et al., 2021), the concept of Exponential Organizations or ExO's has emerged from Singularity University "Exponential intellectual strand". Salim Ismail, SU's Executive Dean came out with the concept as empirical evidence of a five steps process:

- First: the development of exponential technologies. Markets are changing and technologies continue to disrupt according to an exponential logic (Kurzweil, 2001)
- Second: the creation of abundance. The key to "Abundance" is to better understand the disruption phenomena, and how innovation can be used for social change (Mahto et al. 2020): digital technologies enables billions of people to access products and services allowing scale economics and low marginal costs while serving them.
- Third. The need to apply exponential mindset to succeed and create exponential value. While incremental mindset is more deeply embedded than we might think, Exponential thinking generates results that accelerate over time (Bonchek, 2016; Chima and Gutman, 2020).
- Fourth. The emergence of disruptive business models. Disrupters often build business models that are very different from those of incumbents. (Christensen et al., 2015).
- Fifth. The role of digital technologies to make a positive contribution in helping society and organizations becoming sustainable (Ordieres-Meré et al., 2020; Dantas et al., 2021).

Defined by scholars as "very different from the organisations we usually study" (Pompa, 2019), Exponential Organizations are considered a solution for taming VUCA (Marchese, et al., 2020), being designed to leverage abundance (Ismail et al., 2018) and to respond the two main challenges of today's business management: technology

enhancement and environmental and social issues (Díaz-Piloneta et al., 2021; Von Kutzschenbach and Daub, 2021).

Exponential Organizations or ExO's, are companies "whose impact (or output) is disproportionally large— at least 10x larger— compared to their peers because of the use of new organizational techniques that leverage accelerating technologies" (Ismail et al., 2014). The definition has been released after years of research of the main innovation players including the "Unicorn Club", the 60 highest growth rate companies in the market named as such after Venture Capitalist Aileen Lee famous article on California Technology Magazine techcrunch.com.

Among this "new breed of organisations" (Ismail et al., 2014) we find companies that are considered disruptors in their market like Google (Iyer and Davenport, 2008; Parker, et al., 2017) or Uber (Pompa, 2019) as well as fast growing phenomena like Airbnb (Oskam and Boswijk, 2016; Basselier et al., 2018) or GitHub (Burton et al., 2017), that are "leveraging the strong forces of dematerialization and digitalization of our society" (Oskam and Boswijk, 2016, p.24) and distinguishing themselves for their ability to master the digital environment enabling "entirely new business models" (Parmar et al., 2014, p.6) and to serve millions of users (Mohout and Kiemen, 2017).

Finally, the "ExO Model" (Ismail et al., 2014) is the framework that describes the 11 components, or attributes an Exponential Organization is made of. It can be synthesised in the formula: MTP + SCALE + IDEAS.

- MTP or Massive Transformative Purpose acts as the North Star for the Organization. It is the intangible, value focused component that reflects the organisation's aspiration (Derchi, 2021a). It provides the direction for managerial and business decisions, overarching the entire organisation (Hollensbe et al., 2014; Ismail et al., 2014; Derchi, 2021a). Think of Airbnb's " Belong Anywhere" or Google's " Organising the world's information" kind of driver.
- S.C.A.L.E. as acronym stands for the five attributes dedicated to take advantage and exploit the abundance in the market. This group is dedicated to manage growth, creativity and uncertainty (Derchi, 2021a). Organisations can use Staff on Demand, Community and Crowd, Algorithm, Leveraged Assets and Engagement techniques, leveraging the theory of diffusion of technologies with network externality (Bonaccorsi and Rossi, 2003). Staff on Demand and Leveraged Assets allow companies to work with external resources and market them by tapping into the abundance to collect and include them. In the hospitality market, for instance, Airbnb is focused on matching online demand and offer without owning any physical asset. Algorithms are key to create value in the data aggregation process while ExO's users have social interaction in a Community and Crowd logic with Engagement techniques.
- I.D.E.A.S. The internally focused attributes are dedicated to the organizational part of the company, its internal culture and the tools needed to manage the abundance by order, control and stability (Derchi, 2021a). Organizations can implement Interfaces, Dashboards, Experimentation, Autonomy and Social Technologies. This set of attributes relates to the Organizational Theory (Baum and Haveman, 2020). In order to organise the abundance of available data, ExOs must design dedicated Interfaces and define Dashboards to measure their performance. In the case of

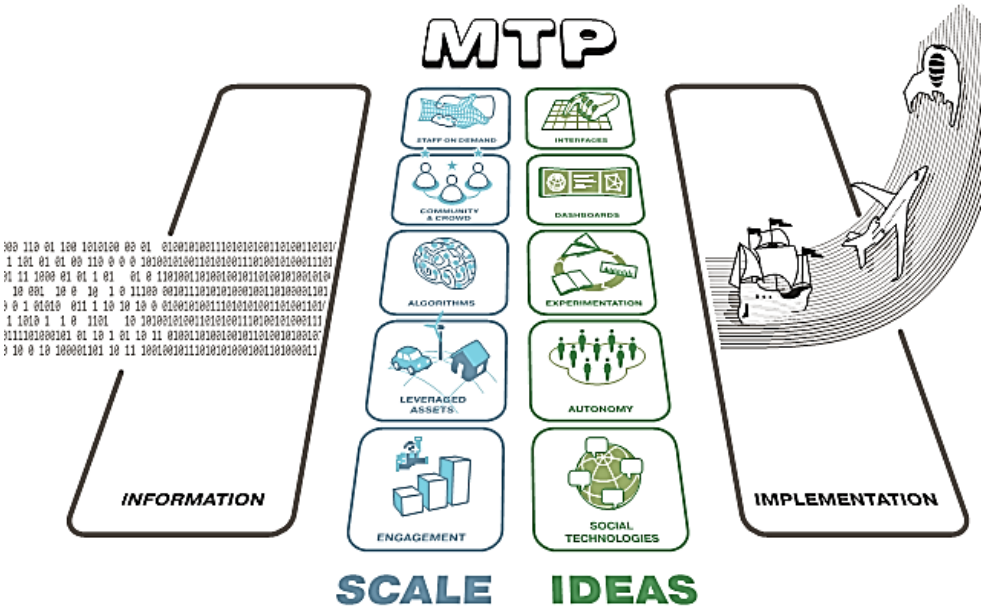
Airbnb, the organization has defined specific Experimentation process in various functions. This happens because teams are designed to operate in Autonomy and facilitate test and learn processes. To do so, teams use Social Technologies allowing remote and efficient collaboration.

It becomes an Exponential Organization the company that can implement at least four of these attributes on top of the definition of a strong and meaningful MTP that provides "focus and direction" (Ismail et al., 2018).

In the last years, various applications of the ExO model have appeared in the practitioners world in several countries. Business consultancies like Exoworks have included the "ExO Sprint" (Ismail et al., 2018) as proved methodology among their offerings with the promise to help companies in their "Exponential Transformation" or "ExT" (Ismail, et al., 2018). Several organisations have applied the ExO model. Among them P&G (Saldanha, 2019), Visa (Exoworks, 2019), HP and Stanley Black&Decker (Ismail et al., 2018) and Mylia from The Adecco Group (Ismail et al., 2021). In 2019, BDO Italia, office of the international advisory firm operating in the fields of public accounting, tax and consulting and the management and IT consultancy Altea Federation, have applied an ExO inspired model to investigate the relationship between sustainability and digital transformation (Capra et al., 2021) in the FTSE MIB Index, the major stock market index made of 40 leading and most liquid companies listed on the Borsa Italiana.

Finally, research shows that the application of the ExO methodology allows organizations to acquire Exponential Orientation (Derchi, 2021c) which allows them to have an exponential impact in all the three phases of the strategic management process: a company with Exponential Orientation can seize the opportunities offered by the ExO model in full to define the strategy for creating, implementing and protecting its own competitive advantage. This is possible because the ExO and ExT models can, if properly used, increase the company's potential (Derchi, 2021c).

Figure n. 2 - The ExO Formula



Source: Ismail et al. (2018).

7. Conclusion

To conclude, for Gans (2016) the reason that led companies to succumb to the disruption is to persist on the path that once bought them to success. Nowadays the magnitude of the current creative destruction is "defining a new age and transforming our economy" (Iansiti and Lakhani, 2020, p.39): for organisations this is "a year zero" (Pompa, 2019, p.152). New operating models will be built upon data and AI (Iansiti and Lakhani, 2020) and Ismail has the merit to have revealed this topic "in a systematic way" (Pompa, 2019, p.152). For Marchese (2020), Exponential Organisations are a valid solution to respond to the VUCA world and something new to be studied (Pompa, 2019).

Learning how to surf the disruption will be progressively more and more a necessity for companies. This, we believe, will be about innovating for the future and making changes towards the unknown.

A good dose of courage will be needed. Courage to grow our knowledge and to extend experimentation in new territories. A great dose of faith will be needed too.

Once again, Clayton's Christensen' s wisdom will have a role in it.

"*I want to be remembered for my faith in God and my belief that he wants all of mankind to be successful. The only way to make this happens is to help individual people become better people, and innovation is the key to unlocking evermore opportunities to do that*" (Christensen, 2020).

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