OPEN INNOVATION AND ORGANIZATIONAL CULTURE: GLOBAL COMPANIES BEST PRACTICE

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Keywords:
Open innovation, organizational culture, best practice

Abstract:
The main aim of this article is to present the modern approaches and best practices of transnational (global) companies in the field of open innovation and organizational cultures in their interrelationship and performance. The application of open innovation is not always an easy and immediate process; in fact, it often involves a change in the organizational culture of the company. Therefore, it is interesting to discover to what extent these two concepts of open innovation and organizational culture in their dynamic are correlated**.** The best-practice analysis of global companies is carried out, where open innovation models correlate with organizational cultures. The authors' model of open innovation network is presented. The findings confirmed a positive association between innovative culture and the scope of open sources of innovation. The development of organizational culture and open innovation are interrelated in such a direction: both influenced on companies' successful results and increased brand awareness; collaboration and trust between members and partners are, perhaps, the most important features which unit organizational culture and open innovation. The systemic view on open innovation and the findings presented are beneficial not only to educational but business and research practice.

Introduction

To successfully compete on the battlefields of 21st century business, companies must reinvent their processes and culture in order to sustain innovative solutions (Prahalad, 2008). The term Open innovation is not a new one; it was born in 2003 by Henry Chesbrough, an American economist and writer, Adjunct Professor at the Haas School of Business, at the University of California, Berkeley. Chesbrough defines open innovation as follows: 'Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology. Open innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model" (Chesbrough, 2003). In opposition, there is closed innovation, which is the traditional model, it relies entirely on internal resources and skills to generate, manage, and support new business ideas. All information is contained within the company, without any sharing with external parties.

The idea of Open Innovation (OI) is not a static concept, but rather it is constantly evolving. There is a lot of research in the field of open innovation. Vanhaverbeke and Myriam, 2014, focused on R& D projects while discussing open innovation theory and practice. There are other publications that have examined how strategy and open innovation are interconnected with each other (Dittrich and Duysters, 2007). Špaček and Hajek, 2017 discussed the concept of open innovation in the example of Czech projects in a sphere of sharing economy, the value open innovation approach can give companies, and the use of collaboration (Špaček and Hajek, 2017).

The continuous comparison between theory and practice allows companies to discover new nuances according to the contexts in which it is applied and observed. Open innovation studies must be sufficiently grounded in prior research in both open innovation and related fields (Vanhaverbeke and Myriam, 2014).

The paradigm of Open Innovation is a great opportunity for companies, which, however, must be good at placing it in their context. The application of open innovation is not always an easy and immediate process; in fact, it often involves a change in the organizational culture of the company. The Organizational Culture (OC) is the soul of the company. It can explain work performance and has always been a critical driver of innovation. In order to successfully compete on the battlefields of 21st century business, companies must reinvent their processes and culture in order to sustain innovative solutions (Prahalad, C.K., & Krishnan, M.S., 2008).

Investigating many books and research works, following many discussions in the field of open innovation and organizational culture, we discovered a lack of research works that emphasize the interrelation between OI & OC.

The article aimed to focus on the open innovation paradigm in terms of its relationship to organizational culture. The research questions: What are the peculiar features of the concepts of open innovation and organizational culture? Is there any correlation between them, and if so, to what extent and how are these two concepts correlated in their dynamic? What are the advantages and drawbacks of this correlation? Are there any common characteristics and basic unifying principles between open innovations and organizational culture in their interaction?

The research method used: literature review, content analysis, analysis of best practical examples in a field of open innovation implications, and the benefits the OI concept brings to the company, regional and global level. Some elements of international benchmarking techniques are also used, when we compare the best practice of famous global companies.

The work is divided into three foundations according to the research questions. First, we looked at the two concepts separately. Second, we looked at open innovation concepts through the lens of organizational culture. Here, we analysed the best practices of global companies, considering open innovation adventurers and their disadvantages in terms of their relationship to organizational culture. Finally, we tried to find those basic unifying principles between open innovations and organizational culture in their interaction. In the last chapters, we present our findings and conclusions.

I. Open Innovation in Theory and Practice

The advantages of OI projects are widely discussed in innovation management research and practice (see, e.g., Man & Duysters, 2005). The continuous comparison between theory and practice allows companies to discover new nuances according to the contexts in which it is applied and observed. In the following chapters, we introduce the main OI advantages and main open innovation models with some examples. It also helps us to better contextualize the topic of our investigation.

Collaboration is the hallmark of open innovation. It is the main powerful force that, in turn, reinforces organizational culture, improving employee cooperation and knowledge exchange. Collaboration can be understood in different ways: between customers and the company, between employees and the employer, between start-ups and global companies (Luksch, 2021). Collaboration in all its forms brings a series of advantages and benefits to the company (organization).

Let us try to clarify some of the main advantages and problems starting from the comparison between different studies.

1.1 Open Innovation, Comparison of Authors

The issue of open innovation is very topical, and many studies have already been done on this paradigm; there are also many conflicting opinions on it. Some authors argue that the benefits are significantly higher than the problems caused by the introduction of open innovation in an organization.

The study by Laursen and Salter (2006) reveals that companies that are more open to external knowledge are more likely to achieve innovative performance. Alexy and George (2013) study the relationship between open innovation and the market value of society, concluding that adopting open innovation practices has a positive effect on corporate value. Other scholars, however, such as Gambardella and Panico (2014) argue that the phenomenon and the potential are very little exploited.

In still other cases, open innovation is evaluated as a problematic and complex practice. Chesbrough (2007) argued that the increasing cost of developing new technology and shortening the life cycle of products make it more difficult for firms to justify high spending on innovation. Belderbo et al. (2010) underline how an excessive percentage of innovation activities carried out in collaboration with external parties have a negative effect on the market value of the company. By opening its borders, the firm can lose some control over its resources and operations, likely incurring higher coordination costs.

The theory of open innovation is therefore not essential from criticism and ambiguity. For example, Laursen and Salter associate the number of external innovation resources with openness (Laursen and Salter, 2006), while Henkel (2006) identifies openness as revealing knowledge that was previously protected within the company.

It has been seen how this tendency to 'openness' is far from perfect and, although it brings undoubted benefits, it also leads to a series of inefficiencies and problems. We will now see in open detail some advantages and disadvantages brought about by the introduction of innovation within an organization.

1.2 Benefits of Open Innovation

<u>Sharing of talent, technology, and infrastructure</u>
It may happen that there is often not enough talent available to meet market demand and capital to properly develop the innovation development of the organization. Open innovation allows companies to collaborate with as many brilliant minds as possible and create new partnerships with larger university research facilities, governments, and companies that have more resources. The best example of this is the 'increasing role of cities as a driver of open innovation and entrepreneurship, where innovators and entrepreneurs seek to engage with local governments and citizens in an effort to improve quality of life and promote local economic growth' (Cohen, 2016).

In this context, the case of the authors of the presented article is also a good example. Being involved in the student conference, we prepared this article, strongly collaborating with our scientific supervisor and conference organizers. We prepare our research papers and presentations for the coming event. Sure, many of us propose new interesting approaches or even new ideas, according to the research questions. We will then present and publicly share these ideas with others

on the University conference site. There is a mutual benefit: we master the new skills of writing the research papers; University increases their brand awareness.

New Revenue Streams and Innovations of Old Products and Services

Some projects are not part of the company's core business. This does not mean that they should be discarded. Open innovation can be leveraged to develop new activities from the core business model, and thus create new partners. The best example of open innovation is sharing (collaborative) economy models such as Airbnb, Uber. These famous companies introduced the new user-friendly business platform models to the 'old' service of the hospitality, tourism, and car service industry, among many others. When a platform enters the marketplace of a pure pipeline business, the platform nearly always wins, causing the transformative change to the industries: so Amazon changed retail buying patterns; Bitcoin challenged traditional currency; Tesla reshaped the auto industry; Airbnb upset the status quo of the hotel industry; Uber disrupted the taxi industry (Ostapenko, 2018).

Cost, Risk, and Development Timescales Reduction

Larger enterprises can get stuck in their ways, held back by red tape and stringent processes. Meanwhile, smaller start-ups may have talent but often struggle because of a lack of resources and financial muscle. When partners come together, a partnership reduces costs for small start-ups and accelerates product life cycles for larger companies. The union also spreads the risk to both companies.

Customers-Company

Users are a fundamental part of a company; they provide feedback that allows the product to improve and the brand to grow. Again, the good examples are Airbnb and Uber, Trip Adviser rewires, and star ratings. This is why it is important to involve the community in the development of a product or service, mapping the customer needs, and having feedback. This, in turn, improves customer loyalty and increases the value of the brand.

Employees-Company

A major source of employee dissatisfaction is a lack of sense of belonging to the projects they work on. When people feel more involved in the organization's goals, they are more excited to come to work (Novoseltseva, 2017).

1.3 Disadvantages of Open Innovation

Increased Coordination of Processes and Implementation Costs

If it is true that open innovation helps, through the sharing of resources, to reduce costs in terms of the purchase of technological material, experts, equipment, etc.; it is also true that with open innovation, the costs of coordinating processes and implementing them increase. Multiple ideas from different minds sometimes difficult to coexist.

Strong Dependence on Outside Knowledge

Open innovation greatly increases the entry of new knowledge and new strategies, but at the same time, it can stress a strong dependence on this external knowledge. In fact, it is a good idea, in addition to listening to the opinion of outsiders, also to have its own internal development, in order to know the ideas and have a critical thought about it. Furthermore, an internal development team allows you not to waste precious time in the event that interesting proposals do not arrive from the outside.

Ability to Disclose Information not Intended for Sharing
Open innovation is also a risk in terms of competitive potential. In fact, it may happen that information not intended for sharing is mistakenly detected, for example, the original and unique characteristic of a product, thus entailing the loss of value, of advantage in the market, and of the potential of the product itself.

Increased Complexity of Innovation Control and Regulation of How Contributors Affect a Project.
Having an open innovation means sharing information, knowledge, and much more. However, this sharing must be enshrined in some agreements; for this reason, before starting a collaboration, it is good to determine if its value is greater than the effort employed in controlling the collaboration itself.

1.4 Types of Open Innovation

There are different types of open innovation that must be classified according to the level of inclusion and the purpose of use. It is important to know the different models. It also helps us to better contextualize the topic of our investigation.

Level of Inclusion and Collaboration

- **Intracompany level**. It means that the collaboration happened within the company within different functions or business units.
- **The intercompany level** means that open collaboration is between two or more companies. Today, the modern trend is Cross-Industry Innovation (CII). CII aims to reuse existing solutions by leveraging the innovative power of partner knowledge from another industry. CII is a key concept for identifying and adapting potential (disruptive) innovations and technologies and has gained importance in recent years (Behne et al., 2021).
- **For experts:** all people outside the company who have the required knowledge to give relevant input.
- **Publicly open:** all people regardless of previous knowledge, stature, region, country.

Purpose of Use

- **Marketing:** Getting information across
- **Gathering information:** Valuable information on the market and customers
- **Finding talent:** Scouting for talent
- **R&D:** "This is the most typical form in which you develop products or services" (Isomäki, 2018).

Table 1. below introduces the more detailed content of different innovation models, based on the purpose of use and the level of inclusion and collaboration approach. We also analysed some other examples of open innovation classified according to the level of inclusion.

Below are some other examples of open innovation classified according to the level of inclusion.

Facebook (Intracompany – R&D)
Facebook uses hackathons (meetings), which help surface some of its best ideas from within its ranks. Facebook offers all employees the opportunity to think creatively, and it can even prove to be a jumping start for some budding entrepreneurs (Morikawa, 2016).

Philips (Intercompany – Gathering insight)
Philips was an early adopter of open innovation when in 1988 it opened the R & D ecosystem.
The campus is home to entrepreneurs, researchers, and product developers from all over the world who come together to create new ventures. Many of the projects created on campus focus on world

problems, such as the challenges posed by overpopulation, climate change, and failing healthcare systems (Morikawa, 2016).

Lilly (For experts – R&D)
Eli Lilly and Company launched an open innovation platform designed to help build the company's pipeline of tomorrow and identify molecules that may have application for treating multidrug resistant tuberculosis (MDR-TB).

Mc Donald (Publicly Open – Gathering insight)
Mc Donald and innovation go in the same direction.
The company engages customers by letting them suggest and create their favourite sandwiches. With the mobile app, customers can register their preferences and then customize their product.

Table 1: *Different Open innovation models*

		Level of inclusion			
		Intra-company	**Inter-company**	**For experts**	**Publicly open**
Purpose of use	**Marketing**			Conveying information about niche products	Sharing information about new product
	Gathering insight	Gathering tacit knowledge from employees	Gathering useful tips from partners	Getting relevant input from the pros in the field	Getting customer feedback to build relevant products
	Finding talent	Finding unrecognized talent inside the company	Finding hidden expertise in partnering firms	Recruiting experts from various fields (ex. Moodle)	Finding the best match for the open job position
	R&D	. Uniting business units for product development	Utilizing collective knowledge between firms	Developing products that require specific expertise	Developing products with the largest possible audience

Source: Authors based on Isomäki model, 2018

By keeping their classic products, Mc Donald still manages to follow a constantly evolving market, satisfying local and global demands.

1.5 Open Innovation Methods

Open innovation has more than one nuance and cannot be generalized. Open innovation has benefits, but also brings many risks; open innovation can be used in many areas. Here are some examples of open innovation methods.

Open Innovation Challenge

An open innovation challenge is an event in which entrepreneurs, researchers, and specialist teams compete against each other to try to solve a defined problem in the industry. Innovation challenges help companies gather ideas and find solutions.

An innovation challenge can be of two types: Internal or Open, and the difference consists in the type of participants it is addressed to.

In the case of the internal innovation challenge, it is the human resources within the organization. An Open Innovation Challenge, on the other hand, allows you to obtain new ideas both from inside and outside the organization, and thus also to have a foreign point of view.

An example is Unilever's innovation portal, which seeks solutions to the problems companies face with the packaging, transportation, and storage of food products (Startup Geeks, 2021).

Open innovation can be used as a way to connect with talented young professionals and recruit new talent for the company. Innovation challenges for individuals and universities can be a good way to do this.

Crowdsourcing

In crowdsourcing, a company works with an accelerator to find innovation. The company presents an initial problem, question, or theme and encourages outsiders to come up with ideas or potential solutions.

This model reduces R&D costs and reduces production time, as your company can maintain open communication channels with your audience, gaining input at every stage of production.

Crowdsourcing is perfect when you have some time to wait for ideas to come in and to pick and choose the best ones. The problem is that many companies turn to crowdsourcing when they need something right away. If you are in a crisis of time, an open community may not have the freedom to conduct due research and provide well thought out,, carefully thought out and fully developed ideas, so in that case, it is best to entrust the task to an internal team (Wenning, 2016).

Open Innovation Labs

An open innovation lab is a dedicated workspace that operates outside the normal routines and practices of the business. In doing so, it allows the team to think and work differently.

The team in the lab operates like a start-up in several ways. Quite often, the teams that work in these laboratories comprise new hires and external experts, who will collaborate to provide solutions to targeted problems or come up with ways to improve existing products, services, or systems at the company (Isomäki, 2018).

II. Open Innovation and Organizational Culture

2.1. Organizational Culture

There are many definitions of Organizational Culture (OC). Basically, OC includes the organization's vision, values, norms, systems, symbols, language, assumptions, beliefs, and habits. The Organizational Culture is the collection of values, expectations, and practices that guide and inform the actions of all team members. A great culture exemplifies positive traits that lead to better performance. It is a guide for member behaviour and is expressed in member self-image, inner workings, interactions with the outside world, and future expectations (Needle, 2004).

Simply stated, organizational culture is 'the way things are done around here' (Deal & Kennedy, 2000). Organizational culture is a set of shared assumptions that guide what happens in organizations by defining appropriate behaviour for various situations (Ravasi & Schultz, 2006; Cancialosi, 2017).

The organizational culture tells the company how to respond to a crisis, how to adapt to new customer demands, or how the manager has to correct an employee who makes a mistake.

Culture is a key advantage when it comes to attracting talent and outperforming competition. The culture of an organization is also one of the top indicators of employee satisfaction and one of the main reasons that almost two-thirds (65%) of employees stay in their job (Wong, 2021). For example, Wong, 2021, discovered that more than 77% of workers consider a company before applying, and almost half of employees would leave their current job for a lower pay opportunity in an organization with a better culture. The culture of an organization is also one of the top indicators of employee satisfaction and one of the main reasons that almost two-thirds (65%) of employees stay in their job (Wong, 2021). The culture is different, and it is important to find and develop what makes your company unique.

In the following chapter, we show the main qualities of a successful organizational culture.

2.2. Qualities of a great organizational culture

Cultures of high-performing organizations consistently reflect certain qualities that you should seek to cultivate. Based on several research works (O'Donnel & Boyle, 2008; Wong, 2021), we choose the main qualities of a great organizational culture. There are the following.

Alignment
Alignment occurs when the goal of the employees and the goal of the company go in the same direction.

Appreciation
A culture of appreciation is one in which all team members acknowledge the contributions of others.

Trust
With a culture of trust, team members can express themselves and rely on others to have their back when trying something new.

Performance
In these companies, talented employees motivate each other to excel, and as shown above, greater profitability and productivity are the results.

Resilience
A resilient culture will teach leaders to be alert and respond to change with ease.

Teamwork
Collaboration, communication, and respect between team members. When everyone on the team supports each other, employees will get more done and feel happier.

Innovation
A culture of innovation means that you apply creative thinking to all aspects of your business, even your own cultural initiatives (Wong, 2021).

In the following chapter, applying the benchmarking technique, we are going to introduce the paradigm of open innovation from the point of view of relationship to organizational culture.

2.3. Relationship between Open Innovation and Organizational Culture

Open innovation and organizational culture are very closely linked. When we are talking about the classical models of management, we should say that the classical type of leadership with top-down decision making, the hierarchical organizational structures, closed or reserved mentality of people who are not involved in the company strategy are typical characteristics of these models of organizational behavior. Here, it is difficult to speak about the open innovation concept. In fact, open innovation goes hand in hand with a culture that is inclined to openness, collaboration, and sharing.

On the practical examples of famous global companies, we analysed their organizational behaviours from the context of the relationship between organizational culture and open innovation. (Table 2).

Table 2: *Example of the organizational culture of global companies*

GLOBAL COMPANY	ORGANIZATIONAL CULTURE	RELATION BETWEEN OC AND OI
SAMSUNG	The cultural organization focuses on achieving a high degree of innovation that involves human resource development strategies. Samsung's organizational culture intersects with all areas of the company and influences the degree of competitiveness it has in the global market.	Samsung's characteristic of focusing on human resources helps the open innovation implementation process. Collaboration and sharing within the company make open innovation easy to apply.
LEGO	LEGO's cultural organization is based on openness, creativity, imagination, quality, attention to detail, and the constant desire to improve.	LEGO has a very strong community and is very good at exploiting it. Company, employees, and customers that we met to get to work together and develop ideas, this is open innovation.
MOZILLA	Mozilla is strongly linked to the Open Source community, and the culture reflects that. The aspects that distinguish it are the decentralization of projects and the openness, anyone can connect to the meeting and propose their idea.	Mozilla has been a highly innovative and open company since its inception, as confirmed by its Open Source community, which is one of the best-known types of open innovation. A company that exploits the sharing of tools and ideas to grow.
P&G	P&G has a purpose-oriented organizational culture seen as a goal that guides individual and group activity towards the success of both. The company combines quality and value as factors that influence employee behavior.	The organizational culture of P&G focused on the alignment of objectives between employees and the company, favours open innovation as employees are aware of the company's ideas and share them, and are therefore protagonists and not mere spectators.
APPLE	Apple's cultural organization is based on creative innovation. The main characteristics of Apple's culture are: maintaining a high level of innovation, creativity, consistency, secrecy, which does not mean closure, and the desire to always be first in the market.	Even Apple like Mozilla has always been a very innovative company. The creativity and consistency they have always had have allowed them to open numerous collaborations, establishing themselves as world leaders in their field and as one of the companies with the best open innovation.

Source: Authors

As can be seen from Table 1 that we put organizational culture in front of the research topic question, then we analysed the best practice in this field and commented on their OC in relation to open innovation. These companies have already implemented the open innovation paradigm due to their innovative and open culture. We discovered that the companies are all united by strong leadership and by their propensity for open innovation, which is made possible by their innovative and open cultural organization. The companies listed above are willing to share their talents, their infrastructures, and their technologies to bring values and increased the company value. They formed the collaboration and trust atmosphere between the members within the company and with the internal partners. The question is how exactly is it happening, we mean how the companies manage to do so? The following chapters aim to answer these questions.

2.4. The Open Innovation Networks

Introducing open innovation into a company is not easy at all; there are a thousand parameters and a thousand situations to take into consideration. First, the cultural organization of the company itself. If the company has a strong propensity for innovation, then it will be easy to use the paradigm of open innovation, but if, on the other hand, the company has a much-closed culture, then it will be very difficult to push towards a model of transparency and collaboration.

Open innovation is not just a paradigm, but a lifestyle for a company. Open innovation means collaboration and flexibility: collaborating within the company, externally, with its customers, and flexibility, that is, being able to listen, understand, and above all learn from experts and opinions that often and can differ from one's own.

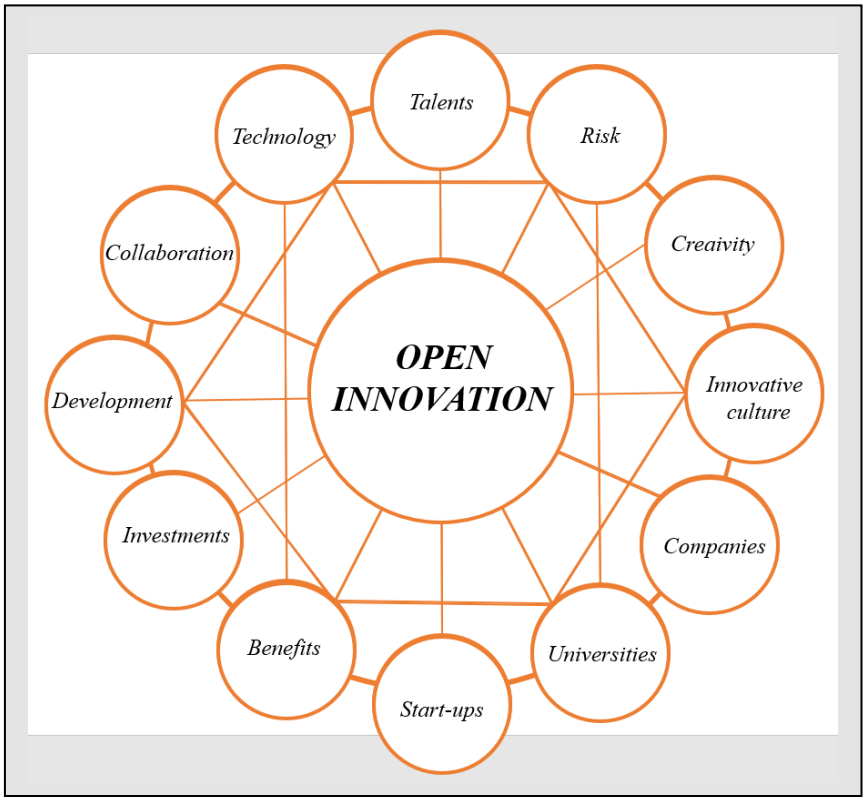
Open innovation is an important step for a company, and you need the intelligence to understand the right way to implement it and the time to find ways to propose it.

However, open innovation is not just about benefits and advantages; open innovation is also about fatigue and risks. Sometimes the risks are greater than the benefits, and this is where you need to be careful to step back and take some time to think. Innovation attracts and excites, but it is easy to get carried away by too much emphasis and overdo it.

We are therefore faced with a paradox, the euphoria due to the increase in the flow of learning and the increase in resources is soon transformed into "excess", it is no more enough to walk, but you want to learn to fly, you always go looking for something more with the risk of falling and having to start over.

We have discovered that there are many independent components that bind themselves by becoming dependent and making up the open innovation (see Figure 2). If one component develops, then the other develops as well; if one fails, the others suffer.

Figure 1: *The Open Innovation Network*



Source: Authors

From Figure 1 above, it is possible to see how large the open innovation network is. Many elements intertwine and bond and become dependent on each other. Among the most important are the innovative culture, risks, and collaboration. The 'innovative culture' is because open innovation is applicable in a company with an innovative cultural organization; 'the risk' is coming because when you decide to engage in open innovation, you have to evaluate risks and sometimes accept them; 'collaboration' because collaboration and in the same way share technologies, infrastructures, and ideas are fundamental in open innovation.

2.5. Open Innovation Best Practices of Global Companies

As we have previously seen, there are many types of open innovation. There are also many ways to apply open innovation within a company. All of them greatly depended on the type of company, as well as the established and developing organizational culture.

Below are some examples from best practices of global companies, where open innovation models correlate with organizational cultures of chosen companies (Table 2).

Table 3: *Examples of best practice of global companies introduced open innovation models*

GLOBAL COMPANY	ADVANTAGES	DISADVANTAGES
SAMSUNG	By partnering with startups, Samsung aims to benefit from the variety of innovations that smaller companies have already achieved by integrating them into their products.	On the other hand, the kind of company that aims to bring about new innovations that require high initial investments is typically better invested in or just acquired.
LEGO	LEGO allows its users to help create products that satisfy their desires listening to their feedback and proposals. This allows you to reduce the risk in research and development.	But make sure you can implement at least some of the more popular ideas, or users will not feel they have made an impact.
MOZILLA	Mozilla uses an approach to Open Innovation, which is that of Open Source, the source code of a product is open, and anyone has the right to develop the software.	Many types of proprietary hardware need specialized drivers to run open-source programs, which are often only available from the equipment manufacturer. This can potentially increase the cost of your project.
P&G	P&G bypassed a lengthy R&D process by partnering with OraLabs to release a new lip balm, a market that was suddenly trending. By communicating its needs, P&G also creates competition for solution providers and, therefore, can choose the best partner.	The risk in this case for P&G is that of having a strong dependence on external knowledge. The strategy saves time, but in some cases, it is better to have an internal development team that knows the culture and needs of the company.
APPLE	Apple's strength lies in regulating and controlling its open innovation so that application developers can create their products to work in the Apple environment, while not having visibility into other aspects of internal research and development.	However, you have to think about whether being in control gives you enough value. Regulating openness also means that collaboration may not create breakthrough innovations.

Source: Authors

From Table 3 above, the advantages and disadvantages of applying open innovation models are given. There are more benefits of using open innovation approaches, but do not forget that there are also closed innovation approaches. For example, for this reason, Procter and Gamble created internal development teams, members of which better know the culture and needs of the company, despite also having cooperation with external teams and organizations. A clear example of the relationship between OI & OC is applied in a great company, Apple. In fact, Apple has an organizational culture for creative innovation. The cultural characteristics of the company focus on maintaining a high level of innovation that involves creativity and a mind-set that defies conventions and standards. Business depends on cultural support and consistency, which are crucial to the competitiveness and leadership of the sector, especially in dealing with aggressive and rapid technological innovation and product development.

Apple's organizational culture supports rapid innovation.

The company is frequently rated as one of the most innovative companies in the world. Based on this cultural trait, the firm trains and motivates its employees to innovate in terms of individual work performance and contributions to product development processes. Rapid innovation ensures

that the company continues to introduce new products that are profitable and attractive to target customers (Meyer, 2019).

In summary, it is important to evaluate the applicability of open innovation for companies according to the context, analysing the various situations. In each case, determining whether the obtainable value is greater than a risks is the question of great importance in the strategic decisions of any company.

III. Open Innovation and the Health Emergency

Open innovation also plays a fundamental role in the economy, both locally and globally. In fact, Open Innovation can accelerate economic recovery. Open innovation has played and will play a fundamental role in the battle against the Coronavirus in the world in the future. The Open Innovation Approach has made it possible to slow down the pandemic. This happened due to the right company / organization strategy, as well as the successful collaboration of a company with many other organizations.

Some areas of the economy will take a long time to recover and should be the first to focus on. Others, on the other hand, benefit from the pandemic situation. Digital transformation and acceleration during the Covid-19 pandemic bring new knowledge flows deriving from open innovation, new growth opportunities. The innovation of consulting more parallel development options and allowing to grasp more open in allows and solution any solutions or not suitable.

The first step in combating the spread of the disease is to become faster and more flexible. Within the collaboration approach, each part can be involved, contributing with their properties and knowledge, improving, and speeding up the development times of innovations. Furthermore, open innovation drives the reuse and recombination of resources. If we look at the vaccines that have spread, they are in many cases the result of collaborations between start-ups, universities, and large companies.

UNDP (United Nations Development Program) provides a good example of open innovation during the pandemic. During the Covid-19 pandemic, the UNDP Accelerator Lab, together with the Ministry of ICT and Innovation, Rwanda, Africa, brought health professionals to design and deploy antiepidemic robots. These advanced robots help to screen people and detect COVID-19 cases at Kigali International Airport and provide additional services at local hospitals and treatment centers, including food and medication delivery (Richards, 2021).

Another example is the successful experience of the Czech Technical University. In response to the spread of the pandemic and the lack of pulmonary ventilators, the research team, led by Professor Karel Roubik, the Faculty of Biomedical Engineering, was formed in March 2020. For the treatment of patients from the Czech Republic and all over the world under a license from the CTU, they began to develop CoroVent a pulmonary ventilator. Thanks to the funds raised by Czech citizens, local and international organizations/companies and after the certification given by Czech Ministry of Health and approved by World Health Organization ventilators, CoroVent was mass-produced by Mico Medical, the Trebic-based company and distributed first to many Czech hospitals, then to other people. (CTU, 2021).

As we can see, collaboration, sharing of resources, and mutual support are the keywords of this partnership against the emergency on local and global levels.

IV. Recent Statistics on Open Innovation

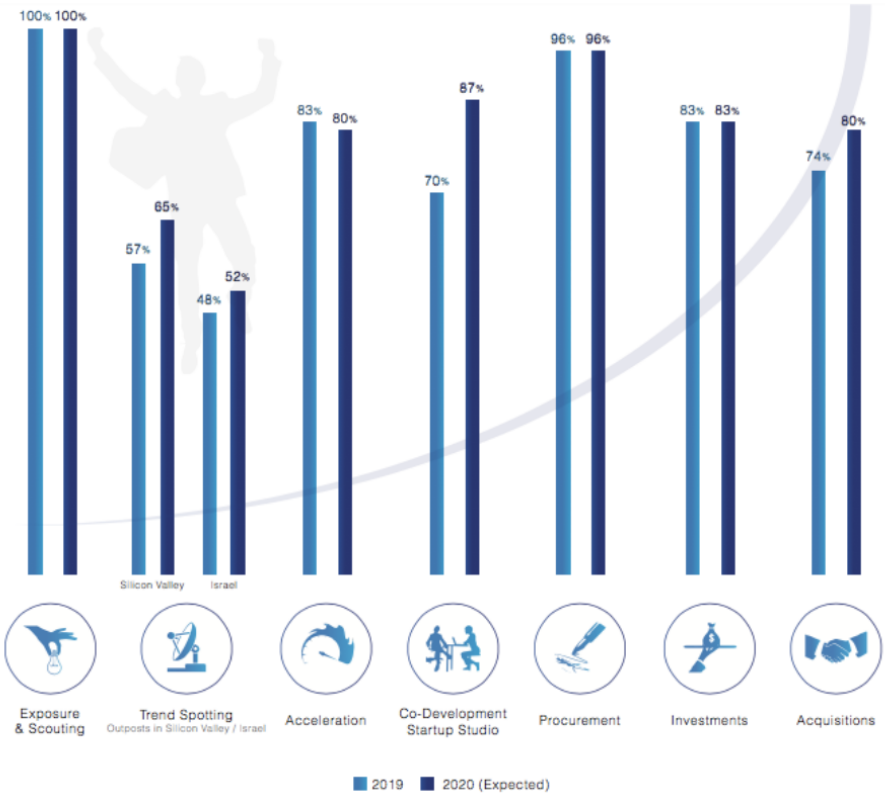
The paradigm of Open Innovation is constantly evolving and being discussed. It spreads quickly and flexibly throughout the world and in various companies. Let us now look at some reports, and with the help of percentages and statistics, we try to define the current scenario and frame the evolution of the phenomenon in recent years.

4.1. Collaboration between Companies and Start-ups

In the following paragraph, we analyse the most important trends in Open Innovation and in particular the collaboration between companies and start-ups through the data collected by Mind The Bridge and Nesta during the Open Innovation Forum held during the Scaleup Summit in Madrid in 2020.

a) **Procurement will continue to be the predominant mode of involvement between companies and start-ups.**
96% of the Corporate Start-up Stars will continue to engage start-ups commercially through funded POCs (proof of concepts) and pilot projects.
b) **A growing interest in start-up acquisitions, and continuity of investments.**
80% of Corporate Start-up Stars plan to acquire start-ups in 2020 (versus 74% in 2019). 83% of Corporate Start-up Stars will continue to invest in start-ups.
c) **Business start-up accelerators are losing momentum.**
More and more companies are abandoning/downsizing their start-up acceleration programs. It is a clear trend now (down from 83% in 2019 to 80% expected in 2020). (Mind the Bridge, 2021)

Figure 2: *Start-up Corporate Collaboration: Macro-trends*



Source: Mind the Bridge

Where do Corporate Start-up Stars go hunting for innovation?

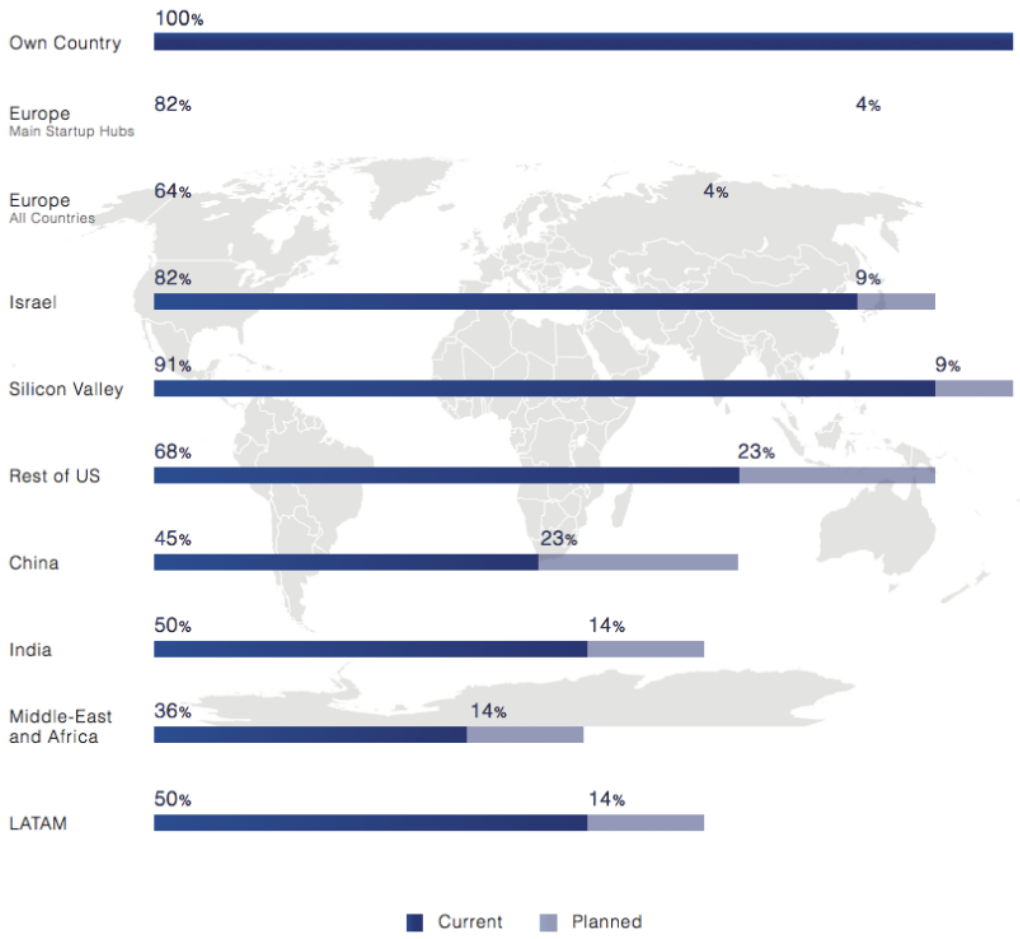
In addition to their country of origin (100%), the Corporate Start-up Stars are focused on the main global technology hubs:

- Silicon Valley (91% are already active; the remaining 9% foresee it in the near future)
- Israel and the main European clusters (London, Paris, Berlin) follow (82%).

Outside of the major hubs mentioned above, there is still not enough critical mass of mature start-ups to justify dedicated scouting investments.

"In fact, scouting produces results where there is a strong concentration of mature start-ups. Europe, with the exception of a few major hubs, China and India - have not yet reached a critical mass in terms of both volume and quality. However, we see a growing interest in looking at these geographic areas. ***Alberto Onetti, President of Mind the Bridge and SEP Coordinator.*** (Mind the Bridge, 2021)

Figure 3: *Start-up scouting: geographies*



Source: Mind the Bridge

Involvement between Start-ups and Companies: Main Obstacles to Overcome

What are the main obstacles to transforming open innovation into action and producing results?

- Rigidity of processes (68% of respondents);
- The lack of resources (budget and team for open innovation are considered insufficient by 41% of the interviewees);
- The lack of involvement of the business units (41%);
- The corporate culture of risk aversion (in addition to the lack of internal entrepreneurial culture). (Mind the Bridge, 2021)

4.2. Open Innovation, the Italian Scenario

Let us now analyse the Italian Open Innovation scenario based on the data that emerged from the Fifth Observatory on Open Innovation and Italian Corporate Venture Capital.
Between September 2018 and September 2020, investments in innovative start-ups increased by almost 84%.

When analyzing the statistics, it is immediately evident that:

- The turnover produced by start-ups and innovative SMEs is approximately 1.46 billion euros;
- The vast majority of corporate partners of innovative start-ups (68.7%) and innovative SMEs (58.4%) are based in the north of the country;
- The distribution of innovative start-ups and SMEs is rather homogeneous throughout the Italian territory;
- The start-ups and innovative SMEs that benefit from Corporate Venture Capital investments (about 29% of the total) are those that contribute most to job creation (about 43% of the total);
- The economic indices of start-ups and innovative SMEs with CVC investments are better than the economic indices of start-ups and innovative SMEs with investments by Specialized Operators and Family & Friends (€ 95,000 for CVC investments, against € 76,000 for Family & Friends investors and € 16,000 of investors among Specialized Operators) (Spremute Digitali, 2020)

Today, open innovation is a model widely used all over the world, and, also in Italy, about 75% of large companies have adopted open innovation approaches, albeit in different ways from case to case. The 2020 Open Innovation Observatory records that currently in Italy there are about eight thousand Corporate stakes in the ecosystem of innovative Start-ups and SMEs and that over the past 10 years, over a billion and 700 million have been invested by Corporate companies in Start-ups and SMEs; numbers that show how much even in Italy companies believe more and more in the added value deriving from collaboration with innovative companies. (Di Bartolomei, 2021)

Conclusion.

Within this paper, insights are given on the approach to consider open innovation and organizational culture in their relationship. Introducing open innovation as a **paradigm that states that companies can and must make use of external ideas**, we discovered many benefits of open innovation on different levels (intracompany, intercompany level, collaboration for experts, and open innovation for the public). We proposed the model of an open innovation network, where there are many independent components that bind themselves by becoming dependent and organizing the open innovation model success and practically applicable. Based on best practices of famous global companies who already introduced the open innovation approach, we discovered many adventures and drawbacks of OI, such as lack of support from stakeholders, the disclosure of information not intended for sharing, the possibility of losing one's competitive advantage, the increased complexity of control over the project due to lack of strategic alignment, and lack of communication.

The organizational culture is the main bone of open and closed innovation development. However, innovation culture does not always have a direct effect on the percentage of sales of new and modified products, but rather through marketing and organization types of innovation, employee cooperation, as well as inter cooperation with universities, experts, other companies. Trust in communication and collaboration between the members of companies within the company, as well as with internal parties, is the main linking principle that connects integrative cultures and open innovation model development. We prove this message with practice companies.

Open innovation and organizational culture are both about a sincere and mutually trusted collaboration that create long-lasting relationship, openness between many involved parties, and mutual value creation, leading to the company excellence. Rephrasing the famous expression, we can conclude: ‘The winners take it all: open innovation, attractive organizational cultures, and best performance results’.

Literature:

ALEXY, O. e GEORGE, G. *Category Divergence, Straddling, and Currency: Open Innovation and the Legitimation of Illegitimate Categories*. Journal of Management Studies, 50(2), 173-203. - 2013

ALLEN, David. *The Sharing Economy. Review* – Institute of Public Affairs, 67(3), p. 24-27. – 2015

BEHNE, Alina, BEJNKE, Jan and TEUTERBERG, Frank. *A Framework for Cross-Industry Innovation: Transferring Technologies between Industries.* International Journal of Innovation and Technology Management 2021, No 03, 2150011. DOI: 10.1142/S0219877021500115

BELDERBOS, R., FAEMS, D., LETEN, B. e LOOY, B. *Technological Activities and Their Impact on the Financial Performance of the Firm: Exploitation and Exploration within and between Firms.* Journal of Product Innovation Management, 27(6), 869-882. – 2010

BERTOLAMI Giovanni. *Risolvendo il paradosso dell'innovazione: come la protezione della proprietà intellettuale promuove l'innovazione aperta* – Tesi triennale in Economia, Università degli studi di Padova – 2018

CANCIALOSI, Cris. *What is Organizational Culture?* – Online 17.07.2017
Available from https://gothamculture.com/what-is-organizational-culture-definition/

CHESBROUGH, Henry, W. "*Open Innovation: the New Imperative for Creating and Profiting from Technology* " January 2003, by Harvard Business School Press. ISBN: 9781578518371 – 2003

CHESBROUGH, H. *Open business models.* Boston: Harvard Business School Press. – 2006

COHEN, Boyld, ALMIRAL, Esreve and CHESBROUGH, Henry.*The City as a Lab: Open Innovation Meets the Collaborative Economy.* Journal of California Management Review, November 2016 59(1): pp. 5-13 DOI: 10.1177/0008125616683951

CTU- Czech Technical University in Prague. *One year has passed since the first successful clinical use of the unique CoroVent pulmonary ventilator from the Faculty of Biomedical Engineering of the CTU* – online 01.11.2021 Available from https://aktualne.cvut.cz/en/reports/20211101-one-year-has-passed-since-the-first-successful-clinical-use-of-the-unique-corovent

DI BARTOLOMEI Paolo, *Open innovation, la collaborazione chiave per il successo: lo scenario in Italia* – Network digital 360 – online 2021
Available from: https://www.agendadigitale.eu/cultura-digitale/

GAMBARDELLA, A. e PANICO, C. (2014). *On the management of open innovation.* Research Policy, 43(5), 903-913.
HENKEL, J. *Selective revealing in open innovation processes: The case of embedded Linux.* Research Policy, 35(7), 953-969. -2006

ISOMÄKI, Atte. *Open Innovation – What It Is and How to Do It* – online 29.11.2018
Available from https://www.viima.com/blog/open-innovation

LUKSCH, Alessandra. *Il ruolo dell'Open Innovation durante la pandemia* – online 15.09.2021
Available from https://blog.osservatori.net/it_it/open-innovation-durante-la-pandemia-henry-chesbrough

de MAN, A.-P., & DUYSTERS, G. *Collaboration and Innovation: A Review of the Effects of Mergers, Acquisitions and Alliances on Innovation.* Technovation, 25(12): 1377–1387. - 2005

MAZUR, Jolanta & ZABOREK, Piotr. *Organizational Culture and Open Innovation Performance in Small and Medium-sized Enterprises (SMEs) in Poland,* International Journal of Management and Economics, Warsaw School of Economics, Collegium of World Economy, vol. 51(1), pp. 104-138 - September 2016

MEYER, Pauline. *Apple Inc.'s Organizational Culture & Its Characteristics (An Analysis)* – Online 15 February 2019
Available from http://panmore.com/apple-inc-organizational-culture-features-implications

MIND THE BRIDGE, *What are the Macro-Trends for 2020 in Open Innovation?* – online 2020
Available from: https://mindthebridge.com/open-innovation-outlook-2020-report/

MORIKAWA, Merit. *16 Examples of Open Innovation – What Can We Learn From Them?* – online 20.11.2016. Available from https://www.viima.com/blog/16-examples-of-open-innovation-what-can-we-learn-from-them

NEEDLE, David. *Business in Context: An Introduction to Business and Its Environment.* – 2004

NICA, Elvira and & POTCOVARU, Anna-Madalina. The Social Sustainability of the Sharing Economy, Journal of Economics, Management, and Financial Markets 10(4): pp. 69–75. 2015

NOVOSELTSEVA Ekaterina. *Open Innovation: Benefits, Case Studies And Books* – online 10.10.2017 Available from https://apiumhub.com/tech-blog-barcelona/open-innovation-benefits/

NUNES Marco and ABREU, Antonio. *Managing Open Innovation Project Risks Based on a Social Network Analysis Perspective* – online 13.04.2020 Available from https://www.researchgate.net/figure/Benefits-and-Limitations-of-Open-Innovation-and-Closed-Innovation_tbl1_340627960

O'DONNEL, Orla and BOYLE, Richard. *Understanding and Managing Organisational Culture.* First published in 2008 by the Institute of Public Administration ISBN: 978-1-904541-75-2

PRAHALAD, C.K. and KRISHNAN M.S. *"The new age of innovation: Driving co-created value through Global Networks".* McGraw-Hill Hill Professional, May 4, 2008 - Business & Economics, 304 pages.

RAVASI, David.; SCHULTZ, Marie. "*Responding to organizational identity threats: Exploring the role of organizational culture".* Academy of Management Journal, 49 (3): 433–458. - 2006
RICHARDS Robbie. *Open Innovation: What It Is and Models to Inspire Your Business* – online 30.11.2021. Available from https://masschallenge.org/article/open-innovation

RICHARDSON, L. *Performing the sharing economy.* Geoforum, 67, 121-129. – 2015

ŠPAČEK, Miroslav and HÁJEK Jiří. "*Open innovation and sharing economy as key building blocks of collaborative economy approach"* - September 14, 2017

STARTUP GEEKS. *Innovation Challenge: significato, esempi e vantaggi* – Online
Available at: https://www.startupgeeks.it/innovation-challenge/#Cose_una_Innovation_Challenge

SPREMUTE DIGITALI, *Open Innovation in Italia: i dati e le conferme dal quinto Osservatorio* – Spremute Digitali - online 2020 Available from: https://spremutedigitali.com/open-innovation-in-italia/

OSTAPENKO, Galina. *Creating a Platform Based Business Model In Dental Industry. International Journal of Professional Business Review*4 (1):106. August 2018. DOI: 10.26668/businessreview/2019.v4i1.106

VANHAVERBEKE, Vim and CLOOD, Myriam. *Theories of the firm and open innovation.* Journal research policy, May, 30, 2014. DOI: 10.1093/acprof:oso/9780199682461.003.0014

WENNING, Maria. *Open Innovation and Crowdsourcing Best Practices* – online 20.01.2016 Available at:https://blog.hypeinnovation.com/open-innovation-and-crowdsourcing-best-practices

WONG, Kellie. *Organizational Culture: Definition, Importance, and Development* - April 9, 2021 Available from: https://www.achievers.com/blog/organizational-culture-definition/

YUN, Jinhyo, Joseph, ZHAO, Xiaofei, JUNG, Kwangho and YIGITCANLAR, Tan. *The Culture for Open Innovation Dynamics* – Published 22 June 2020, International Journal of Management and Economics 51(1):104-137

Acknowledgement

In this last part, we express our gratitude to all the people involved in the completion of this article. First, we would like to thank our supervisor, Mrs. doc. Ing. Galina Ostapenko, CSc. for her continuous availability and meaningful support in developing and realization the idea of this article. We improved a lot our writing skills and expertise thanks to her. The authors thank Mrs. Ing. Gabriela Antošová, Ph.D. for all the organization and communication.