BUILDING A CULTURE OF CONTINUOUS INNOVATION: HOW PIXAR AND GOOGLE ADDRESS THIS CHALLENGE?

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Abstract

The most successful companies in the global market embrace the challenge of creating a culture of continuous innovation that enables them to increase their competitiveness. In this sense, this study intends to understand and describe how two of the most successful Silicon Valley companies (Google and Pixar) embrace this challenge. The findings have identified a set of elements that serve as a reference for companies that want to be innovative. Within these elements stand out the involvement of all employees in the innovation process, support the emergence of new ideas using both top-down and bottom-up approaches, time allocation to innovation activity, the ability to accept and deal with failure and the adoption of tools that promote communication and collaboration.

Keywords: Innovation, innovation management, organizational culture, generation of ideas, competitive differential, innovative company.

Introduction

Innovation is a commonplace subject in work meetings, university conferences, and the agenda of high-level executives. In reality, what we have seen is that with the advancement of technologies, that allow the exchange and diffusion of

information, the capacity of construction and presentation of products and services has become something very close and standardized. However, consumers have preferences for brands or companies, their respective products/services, and these preferences are usually associated with unique characteristics of these companies compared to competitors.

According to Le Bas et al. (2015) and Cropley & Cropley (2017), one characteristic that generates differentiation in the winning companies compared to their competitors is in the capacity to innovate. Related to products or services, business models and pricing or in the use of the network of employees and partners innovation is the question. Consequently, it is possible to state that innovating ability is directly related to organizational attributes. In addition, one of the essential attributes of innovations is the generation of responses that, rather than answering or serving the item, provide an increase in the general perception of the problem, as well as providing tools that manage this new level of perception (Bates, 2012).

The idea of innovation and differentiation have proven to be a successful strategy as the increasing introduction of new products and services has substantially changed the business model of consolidated markets and has "killed" large competitors hitherto considered solid and powerful. Cases like the revolution that Apple has brought to the music industry with the introduction of iTunes allow people to buy music in a unitary way and according to their taste, and changes constant proposals by some internet companies-which have challenged entire value chains of various industries, the Uber and Airbnb demonstrate the power of innovation stemming from structural changes. Beyond just creating new products or functionalities, companies are increasingly differentiating themselves not only from innovations based on products and services, but on the way business is done, how companies report to customers or generate revenue.

Innovation shouldn't be executed only for business, but should be directed towards problem-solving and proposing solutions for aspects of modern life. Thus, an innovation must go beyond the invention itself, focusing on the value proposition and its practical application that helps to change the world. Within the context of humanity, innovations have more than just the vision of how to do things differently; innovation ultimately has to do with the sustainability of our planet and humanity. Additionally, it allows us to be more conscious and aligned with the demands and the need to guarantee our own future.

A key hypothesis that this study intends to explore is the connection between generating innovative ideas with the models of administration and management. From aspects related to the more traditional management models, such as how companies distributed in roles and duties that each person receives, to the decision-making models for the placement of new products for the consumer; both are factors that contribute to a company become more or less innovative. Based on this perception, this study uses knowledge of practices used in several innovative companies to seek inspiration and lessons that can help companies to take a more active attitude

in generating innovation and differentiation in the market where they operate. To better exemplify the management processes and actions that recognizably innovative companies have applied, this study uses two case studies of well-knowing companies: (i) Pixar, recognized as a top company that introduced high-quality product in the field of computer graphics and rendering software, which allowed a high recognition of his work in the film industry with the award of 19 Academy Oscars; and (ii) Google, which has been presenting a series of innovative products on a continuous basis and that contributed to change the way we communicate and interact in society, offering products such as Google search engine, Android OS, Gmail, YouTube, Google Analytics, among others. In both companies, there have been radical changes in business models, which have enabled products or services to be delivered to the consumer that had not previously been offered. These innovations in business models have helped Pixar and Google to change the way businesses are done with a focus on innovation throughout their organizational structure and on how both companies serve their consumers and partners and how their activities are planned and organized.

Silicon Valley is one of the most dynamic regions of the globe, known as a global center of technological innovation and cradle of many of the most successful startups. Piscione (2014) states that "[...] Simply put, Silicon Valley is responsible for the creation of almost all technological innovations that have changed and will continue to change the world with respect to form how we live, work and socialize." Using examples and configuration of start-ups from Silicon Valley, such as Pixar and Google, this study intends to explore common characteristics that make these companies innovative and inspire other companies to innovate. Therefore, three research questions were established:

- RQ1: What are the main characteristics and profile of innovative companies?
- RQ2: How can companies create the capacity to be innovative?
- RQ3: What are the innovation processes and tools that Silicon Companies use to promote a Culture of Continuous Innovation?

This manuscript is organized as follows: initially a literature review on innovation management, processes and tools is performed. After that, the methodology adopted by this study is presented, with emphasis on identifying the collection process. Consequently, the main findings are analyzed and discussed. Finally, the main conclusions are drawn.

1. Literature Review

1.1 The importance of innovation for competitiveness

The business environment is increasingly competitive. For a company to stand out from its competitors, it is fundamental to innovate and seek a differential value proposition. Contrary to the common sense that typically associates the concept of innovation with new technologies, innovation is much more comprehensive and encompasses a novelty in the market, a new

product, a new way to offer a service, a new production process that is more agile or that eliminates the waste, among others.

Innovating is not a purely technical or economic mechanism, but it must have a social dimension where all individuals have the possibility to express their creativity, needs, and desires. The way in which employees manage the problems inherent to the company's activity, relate to other customers and suppliers, react to competitors and adjust their strategy is influenced by the company's organizational culture (Nacinovic et al., 2009; Sharifirad & Ataei, 2012). In this sense, the organizational structure of a company must promote innovation.

It is not always easy to find organizations with appropriate organizational structures that foster innovation. In fact, according to Kalyani (2011), transforming a conservative culture into a culture in the opposite direction raises a number of important aspects for this transformation to take place. Several authors propose measures to foster innovation in companies with more conservative organizational structures, such as encouraging creativity, promoting hierarchical organizational structures, encouraging the role of individuals in the organizational structure, and medium-long term employee support (Holzmann & Golan, 2016; Mokhber et al., 2018).

The innovation process is an activity that consumes many resources, both financial and human. Nevertheless, these are not the only factors that influence innovation, arising other elements such as suppliers, customers, competitors, R&D infrastructures, etc. (Ahmed & Shepherd, 2010). The role of companies emerges as a key element of an innovation policy. According to Breschi & Malerba (2007), their connection to universities, the creation of knowledge clusters, seminars, workshops or congresses for knowledge sharing are networks that influence the process of innovation. The knowledge acquired and transferred among various stakeholders is also another element that influences the capacity to innovate (Rahimi et al., 2017). Indeed, the competitiveness of a country, a region or a company depends mainly on its ability to invest in research, knowledge, and technology, as well as in the training of skills to exploit these innovations.

Each company has its business strategy oriented to the specific market segment where they operate and carry out their activity. The different market requirements, the knowledge bases intrinsic to each employee, department or company and the external factors that influence the activity are some important starting points for the definition of innovation policies. A highly sophisticated, competitive market with a short product life cycle or the need to gain market share are some of the elements that compel companies to innovate, create new products, services or processes (Kelley, 2016; Volpi, 2017). With this, companies seek to obtain lasting competitive advantages that allow them to gain market share and become economically sustainable.

1.2 Models for innovation management

Innovation is a key fundamental strategy for organizations that intend to keep their highly competitive levels. The implementation of a culture of innovation in an organization implies a reassessment of products, services, and processes and is the best way to give the organization greater longevity and adaptability to the constant fluctuations of the market. According to Gilaninia et al. (2013) and Farrukh & Waheed (2015), organizations' strength lies in their ability to learn and acquire knowledge, namely the knowledge needed to coordinate different processes and integrate the most varied existing technological flows. Equally important is the embedded and implicit knowledge in the organization that becomes difficult to be exposed. According to Gumerova & Shaimieva (2017), implicit knowledge is acquired by experience, through errors and successes, hence difficult to describe and document.

Tidd & Bessant (2014) advocate that there is a convergence around a basic structure of innovation, in which it becomes necessary to have an adequate balance between simplifications and representations. In general, the models available for innovation management are focused on product development activity. Tidd & Bessant (2014) emphasize that the development of effective innovation management implies an understanding of the managerial structures and behaviors that best fit the business configuration.

Innovation management studies focus primarily on large companies with well-structured product development or research and development (R&D) processes and properly budgeted resources. Most of the existing models tend to focus on products with the following structure (Goffin & Mitchell, 2017): (i) structure tree with components and subcomponents; (ii) predictable levels of uncertainty; and (iii) medium or long life development cycles. Consequently, these models are characterized by their linearity, rigid structuring, and requirement of great decision-making structure throughout the development stages. In recent years, new models of innovation have emerged, which are adjusted to start-up companies, spin-offs and processes of radical innovation (Loch et al., 2008).

1.3 Innovation management practices and tools

Practices and tools for managing innovation are key resources to increase competitiveness and help companies to systematically meet new market challenges. Studies conducted by Almeida et al. (2019) and Hidalgo & Albors (2008) showed that innovation can be stimulated and supported through the use of innovation management practices and tools. Several tools have been introduced in the process of developing new products to make the innovation process more manageable. These tools are an important way to improve the output of the new product development process and have as main objective to avoid project failure and increase the chances of success (Hidalgo & Albors, 2008). According to Chai & Xin (2006), there is a positive relationship between the application of practices and tools for innovation management and organizational performance.

Most practices and tools are developed to address specific problems in the new product development process. In this way, its use arises essentially in the phases of ideation and formulation of new products (Chai & Xin, 2006). However, there are other tools and techniques with broader and more diversified objectives that can be used at various stages of the innovation process (Chai & Xin, 2006; Marcelo et al., 2014). A brief description of the most well-known techniques and tools is given in Table 1.

Table 1. Tools and techniques to support the innovation process

Tool	Purpose
Benchmarking	Method of comparing products, processes, and performance of an organization with another reference.
Brainstorming	Individual or group technique in which mental exercises are performed in order to solve specific problems, exploring the creative potential of an individual or a group
Design thinking	Used to generate creative ideas on how to improve products and services. It is an approach that seeks to solve problems collectively and collaboratively, in a perspective of maximum empathy with its stakeholders: people are placed in the center of product development - not only the end consumer, but everyone involved in the idea.
Idea Management Platform	A platform that can be used to record the ideas of all employees and thus encourage the participation of the entire team, even if it is geographically distributed, and measure the innovative activity of the company.
Lean startup	Essentially used to target an organization to new markets, whether for expansion or development. Establishes a set of processes used by entrepreneurs combining agile software development principles.
Storytelling	Can be defined as a method that uses words, sounds and/or images to convey a story, whether it be improvised or detailed.

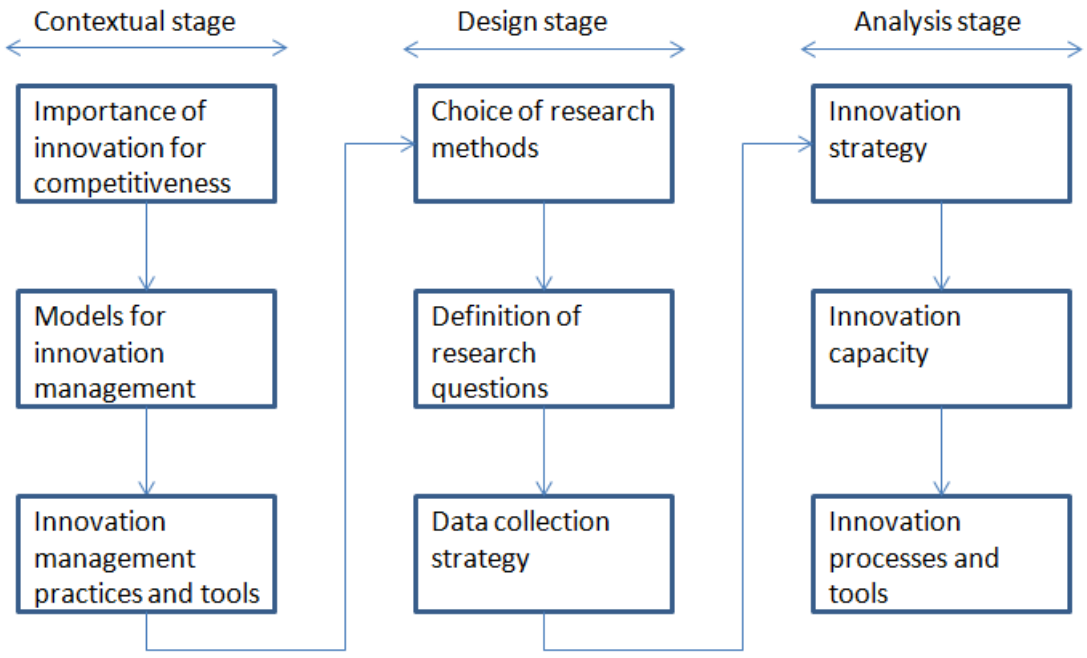
2. Methodology

A key decision in the formulation of this study was the choice of the methodological process. For this purpose, three initial alternatives were considered: (i) qualitative study; (ii) quantitative study; and (iii) mixed methods study. According to Merriam (2015), the qualitative approach allows exploring the complexity of a problem considering its contextual dimension and also allows the incorporation of data complexities in the conclusions of the study. In this sense, the qualitative methodology proved to be more appropriate because it is intended to explore and

understand how two of Silicon Valley's leading companies promote the culture of continuous innovation. This fundamental goal of the study is achieved through the analysis of the innovation process adopted by Google and Pixar, in which it becomes important to describe and understand how the management team and employees of these companies look to the process of innovation.

The methodology of this study is broadly organized into three phases (Figure 1): (i) contextual stage; (ii) design stage; and (iii) analysis stage. In the first phase, it is sought to understand how innovation can translate into a factor that increases the competitiveness of companies, seeks to describe the main innovation management models and identify a set of practices and tools that can be used by companies to promote innovation. Consequently, in the design stage, the research methods were chosen, and the research questions are defined. Equally important at this stage was to establish a data collection strategy to explore how companies Google and Pixar look to the innovation process and intend to understand how this approach is distinct from most companies. Finally, in the analysis stage, this study answers the established research questions considering the innovation strategy, innovation capacity, and innovation processes and tools used by Google and Pixar.

Figure 1. Formulation of the study methodology (author's own illustration)



Another key point of the methodology process was the adoption of case studies. Yin (2017) states that the use of case studies allows to deepen knowledge about a given reality and understand the various involved dimensions. Additionally, other advantages are also associated

with this method, such as the possibility of performing in-depth explorations, flexibility in the data analysis process and low cost of the research process (Harrison et al., 2017; Queirós et al., 2017). However, Yin (2017) advocates that in order for the case-study approach to be enough robust, four aspects should be considered: (i) construct validity through the use of multiple sources and evidence; (ii) internal validity through compliance with the standard; (iii) external validity through replication of the model by multiple case studies; and (iv) reliability through the use of reliable sources of information. In this study, the dimension of external validity was not considered pertinent since the objective of the study is not to identify innovation practices transversal to several companies, but it is intended to look exclusively to Google and Pixar.

Data collection was obtained from secondary sources. In this sense, it has become crucial to identify credible and deep sources of information to identify the innovation practices and models adopted by Google and Pixar. Five types of information sources were considered: (i) institutional website of these two companies; (ii) books published in the field; (iii) scientific articles published in indexed scientific journals and in international conferences; (iv) report of consulting firms; and (v) employee reviews and opinion makers available on personal or corporate blogs.

The use of these multiple sources allowed us to explore in depth the considered research questions and to confront evidence, since the perspective of each author can be divergent. Furthermore, this approach also allows us to establish the validity of the construct, since the use of multiple sources of evidence is a fundamental factor in the construction of a case study.

3. Results and Discussion

3.1 What are the main characteristics and profile of innovative companies?

It is possible to draw on a variety of understanding of how Silicon Valley companies work and create environments that stimulate innovation based on the work performed by Piscione (2014). From aspects related to access to funding that are willing to apply resources to new ideas. Through the technical and academic support provided by Stanford University, and the cultural and ideas mix that stimulates the exchange of views and collaboration among diverse members of the community; all help in defining the innovations that are put by companies that have research and operations in Silicon Valley. The most interesting thing is to see that all these characteristics have the main vein the ability to create connections, to join ideas and subjects not directly related to create something new. According to Piscione's placement in his book (2014, p. 116), the features that facilitate the innovation process can be summarized in the following phrase: "For years I have watched the entrepreneurs of Silicon Valley and tried to capture their unique characteristics. I have concluded that many of them are passionate, authentic, motivated by ideas, intrepid to accepted risks, trustworthy and resilient." What Piscione tries to show us is that the profiles of innovators go well beyond aspects related to the

production of innovative products. These people and companies have in fact the proper way of facing life, where the main search is associated with finding a way of making a unique contribution to society, and this contribution has to do with the use of knowledge and connections of experiences to generate something unimaginable.

Recruiting process emerges as a critical point. Google intends to favor the recruitment of generalists, in which intelligence and initiative is more important than experience. Huber (2014) states "We want to hire super-smart generalists who are problem-solvers and great athletes who can move from one challenge to another. Our performance evaluation model is very peer-based and helps us understand who is doing the hard work, who is having an impact. Promotion decisions are also peer-based and this tends to recognize and reward the people who are having the greatest impact on the organization." This view recognizes the merit and contribution of employees regardless of their functional area within the company. In fact, if an organization wants to hire talented people who cannot be recruited in cash, they must offer a work environment in which the employee feels recognized and challenged. Tran (2017) advocates that this includes three dimensions: (i) working environment; (ii) meaningful work; and (iii) employees' freedom. In this sense, Google offers incentives and awards to recognize and reward internal entrepreneurship. However, Savoia & Copeland (2011) emphasize that as important as the incentive to intra-entrepreneurship, is how the company deals with failure, which is just as relevant as the way it deals with success. The process of entrepreneurship involves a high risk and, consequently, it is important to have mechanisms that look for the process of innovation and not only for its outcomes.

It is interesting that both Google and Pixar, through their founders, structured their operations in a manner analogous to academic and research centers where the rule for the production of content and knowledge follow the principles of creating guidance from existing knowledge and the same freedom of thought and production. Schmidt et al. (2014) describe in their book how Google works (2014, p. 22): "Just like Stanford's computer science lab employees, who did not determine how master's projects should be but only give directions and suggestions, Larry and Sergey offered employees a lot of freedom and used communication to keep everyone walking in the same direction. They deeply believed in the importance of the internet and the power of the search and conveyed such opinions in informal meetings and in the special meetings held on Friday afternoons with the presence of the whole company in which any subject can raise." Likewise, Catmul & Wallace (2014, p. 100) say of Pixar: "the striking feature of the healthy creative culture is that people feel free to exchange ideas, opinions, and criticisms." On the same direction, Bird apud Rao et al. (2008) states that involved and engaged people make for better innovation. Team morale is another critical element for stimulating innovative thinking. As referred by Bird apud Rao et al. (2008) "the first step in achieving the impossible is believing that the impossible can be achieved".

What we can learn from the lesson of these innovative companies is that innovation usually comes from visions of different worlds; where companies need to create space for people to present their ideas and challenge the status quo. What some companies are doing to encourage participation and give people a voice to create internal processes of innovation is the creation of suggestion boxes. Those suggestions are evaluated by committees that define where it is worth, or not, to invest. This solution, while promoting the integration of people into the various subjects of interest of an organization, still characterizes the line of command and the imposition of limits and restrictions by creating an analysis filter following a rigid hierarchy and command standards. This structure ignores the force that an idea can gain from the associations and complements that can bring from the sum of experiences and collaboration of the other members of the workforce, killing innovation possibilities. As referred by Bird apud Rao et al. (2008), Pixar encourages people to learn outside of their areas, which improve the collaboration among employees and turn them more complete.

Other interesting point mentioned by Ziv (2017) is the importance to learn how to give and receive feedback, because people are often emotionally bound to their own ideas and are not very receptive to listening others' opinions. In this sense, Pixar encourages feedback from three different directions (Ziv, 2017): (i) top down, which contain courses given in their management training; (ii) bottom up, which include sessions for employees to practice giving feedback; and (iii) parallel, which create and encourage a culture of innovation through collaboration. The continuous feedback is an essential process in Pixar. For example, Pixar has created a system of regular meetings called "braintrust" that allows the director of each film to share their progress through storyboards or demonstrations (Ziv, 2017).

Schmidt et al. (2014, p. 230-231) tell an interesting story from one of Google's executives in the process of stimulating innovation: “Many years ago, when one of our colleagues, Udi Manber, was an engineer at Yahoo, the company concluded that it was not innovative enough. Therefore, the executives did what any well-trained colleague in an MBA course would do when faced with a problem: they elected a person to handle the situation. Yahoo executives offered the position of director of innovation for Udi and he accepted. However, after three weeks on the job, Udi realized that he had made a mistake. The bosses wanted him to organize an innovation council, with forms with which officials could suggest ideas and the procedure for the board to review and approve them. In other words, Udi's task was to organize the bureaucracy of innovation. This is a paradox...” Schmidt et al. (2014, p. 232-232) continue the analysis, making it clear that the innovation must be allowed to be tested, validated and refuted by a larger group than top managers who may have difficulties to recognize a good idea (Schmidt et al., 2014, p. 231-232): “Innovative people do not need orders to innovate, they need permission. In other words, innovation has to evolve in an organic way. Ideas arise the mutations emerging from the primordial soup and travel the long and perilous route from conception to realization. Without the course, the strongest ideas accumulate supporters and

momentum, while the often simply called weakest deliver the points. There are no procedures that implement this evolution; its defining characteristic is the lack of procedure. Consider this as the natural selection of ideas."

What we can learn from the above quotes is that the governance, structuring, and control models so commonly found in traditional corporate functions (e.g. Financial/HR/Engineering/Quality) should be adapted and viewed differently when the focus is on the discipline of innovation.

3.2 How can companies create the capacity to be innovative?

Looking at the experiences of attempting to place innovation within traditional management models, the disappointments and failures and inconsistencies of these initiatives, we may believe that traditional management models will never be integrated with innovation management. However, things are not as simple as they seem. The traditional management model has years of application in companies of various sizes, objectives, and behavior and has proved to be very useful in helping managers to create lasting and firm results. One thing that is clear in management models is that right and wrong do not exist, and the "art" aspect of management allows for adaptive and flexible tools to be created.

Schmidt et al. (2014, p. 232-233) assess the designation of a single responsible for innovation, the CIO (Chief Innovation Officer) to infer that innovation should not be represented through the creation of a hierarchical function, where limits and the roles of the various corporate areas are defined: "All companies that want to be innovative (that is, all companies) need to start by creating an environment in which the different components of creation are free to collide in new and interesting ways, and then give these new creations time and freedom to evolve and live, or-which is much more common-stagnate and die. The position of director of innovation is doomed to failure because he will never have enough power to create the primordial soup (and only the soup will win an "oops"). In other words, the CEO needs to be the CIO. God created the primordial soup of the earth, he did not delegate the task."

The placement of Schmidt et al. (2014) can be considered valid when applied the concept that innovation has no owner, and all benefit from the benefit held by various agents of an organization. On the other hand, regardless of which hierarchical level to be set by the CEO or any other Member of the organizational structure, there is a real need to establish management discipline and encourage innovation. If we think that good results are only achieved innovation from the application resources and creating awareness for the future, we can agree that the CEO is the best person to take care of the theme. However, if we go down the management levels approaching the transformation activities of a business innovation including the needs of coordination of use and search for return and increase in profit of innovations, seems like it would be interesting to have individuals or areas focused on innovation management. In this sense, the innovation function can be shared into two parts: (i) a part related to the structuring

of an environment favorable to create innovation, which shouldn't have one master, but to be responsibility of the entire organization; and (ii) a part that references thinking how resources applied to innovation can be created, whether by creating links of connection between creators and customers to better align the ideas to market requirements, or negotiating assets of innovation and knowledge (success or failure). As stated by Brooke (2016), a key principle at Google is that innovation is in nobody's job title, but is everyone's responsibility.

There is a concept that today is widely used when we talk about innovation. This concept is what we call "affordable loss", which is a principle according to Dew & Sarasvathy (2009) that believes that the results of investments in projects are uncertain, these losses must be minimized from definitions of limits of what an organization or investor is willing to lose. In a traditional view of investment and risk management, this concept might make sense, but within the concept of application and creating innovations, that might lead to organizations other levels of performance, these limits imposed by the ability to invest/waste of a company can be dangerous limiters with impacts on livelihoods of a company.

These innovation management instruments often considered sections of the rest of an organization's management models for dealing with specific issues. The problem cannot be simply solved by the creation of a position of Director of Innovation, but in the assignment of roles and duties associated with this job position that essentially: (i) promote or facilitate the connection between innovation and practical application to markets and customers; (ii) manage the innovation cycles; (iii) bring questions for creative evaluate the feasibility of continuing research; (iv) position itself as a search for partnerships; and (v) encourage the creative processes and be an effective agent of active management of innovation.

The logical way to create innovative companies is to join the forces of traditional administration and discipline of innovation, so the first can help the second in your journey. The first action to junction these two disciplines is to understand how the traditional administration can position itself as the agent who will generate the resources needed for investment in innovation. There are situations in which there are confronts for resources between the main business activity (e.g., production and delivery process) running with the allocation of resources for innovation and research, development and testing of new solutions. The best solution to treat these competitions is to create the necessary awareness on everyone in the organization that, saved proportions, should be involved both in ensuring the present and creating the future. Therefore, some companies already have established programs where part of the time of employees can be allocated to any activity or project. This is an interesting action to institutionalizes innovation, by including it as part of everyday life of the companies; when an action that is defined, we put innovation as part of the budget of the operation of the business, merging the efforts for projection of the future with the costs incurred for the current operation. It does not inhibit or prevents the generation of specific budget for innovation projects.

Anyway, it will still need evaluation committees to decide where it is worth or not worth investing. However, this initiative creates a new category of innovation, where the company allows following unexpected paths and exploring the best of your employees, which can bring very specific interests and expertise in support of the organization.

Catmul & Wallace (2014, p. 282) tell the story of how Guido Quaroni, Vice President of the Department of tools keep your employees happy and motivated, where he instituted the so-called "days of personal projects", where for two days per month the engineers under the supervision of Guido could use the resources of Pixar in anything they wanted. Another experience that also follows that same aspect is the program of "20% time" of Google that is mentioned by Piscione (2014, p. 137-138) and Schmidt et al. (2014, p. 249) where the latter mention that: “That's the power of 20% of the time, Google's program in which engineers can spend 20% of their time working on that desire. These 20% have raised a serious and great products – Google Now, Google News, traffic information in Google Maps and more – but are often misunderstood”. As stated by Steiber (2014) Google implements the 70-20-10 percent rules, which means that 70% of the employee’s time is dedicated to the core business, 20% is dedicated to work in projects associated to the core and 10% on projects not related to core business. Consequently, the employee’s performance is evaluated according to the aspects of production and innovation (Steiber, 2014).

Much more than determining a specific time for innovation-oriented work, these initiatives represent the level of organizational commitment with innovation and the freedom that is given to employees for using the creativity and all the infrastructure and knowledge accumulated from colleagues in support of an idea of personal touch. In that sense, it is not just the time that is available for innovative actions. Communication resources, machinery, technology, partners, and suppliers also can be used in this process. Now this process, with a range of actors involved, only will be successful and will have meaningful results if the company has minimal organization and instruments to facilitate the exchange and generation of collective knowledge.

3.3 What are the innovation processes and tools that Silicon Companies use to promote a Culture of Continuous Innovation?

In large part, the innovation management model should use the same management instruments normally used in any company. Financial and project management, human resource management and asset management must be used in the same way for innovative companies and to companies with no focus on innovation. Therefore, the same force that can be seen for generating innovations with a market focus, can also be used for generating innovations into internal processes. Generating ideas and innovations must be not only focused on creating new products and services to the market, but also interfering in how the company is organized and structure in their internal functions.

Google advocates that the adoption of tools and processes must be defined at the individual project level. This approach leads to a healthy amount of chaos, but the best ideas tend to gain more visibility and be diffused and adopted by other teams (Savoia & Copeland, 2011). Equally important is the construction of teams with multidisciplinary skills. Google Glass is a good example how the organization in interdisciplinary teams can be a great approach. This project was composed by interdisciplinary members with very different backgrounds such as nature scientists and designers. Equally important is to get the support of top leaders in these projects. Steiber (2014) states that the involvement of Sergei Brin (Google co-founder) in this project increased its visibility and helped it to gain credibility. Additionally, it helped the members of this team to believe in the project and to feel more motivated (Steiber, 2014).

A typical approach to involve the participation of employees in the generation of new ideas is the adoption of brainstorming sessions. Ziv (2017) states that Pixar is providing management training on the implementation of brainstorming sessions that essentially intend to teach how to listen to input without defensive. Ziv (2017) states "Instead of a culture where the most important opinion is the HiPPO's (Highest Paid Person's Opinion), we're moving toward a culture in which participants see managers as facilitators who encourage a wide array of sources, functions, and job levels to share their insights without judgment."

In addition to the traditional instruments of innovation, we have assisted to the emergence of new tools for some existing organizational functions with a focus on creating an environment conducive to exchange of knowledge and awareness on topics of aggregation innovation. Garvin (2018) gives the example of Google as a company that implements design thinking to promote inclusion on a team and offer a truly inclusive environment. According to Garvin (2018) there are three key areas that make an impact on inclusion: (i) team composition & representation (e.g., recruiting people from a diverse set of backgrounds to represent different experiences and contexts); (ii) establish psychological safety (e.g., actively listening people and soliciting feedback across the team); and (iii) open and transparent communication (e.g., transparency in the established people's role and in decision making).

Google encourages people's creativity. For that, five ingredients emerge as essential (Stillman, 2018): (i) shared vision: all employees must know and share the organization's vision; (ii) autonomy: employers should be encouraged to define their own work and align it according to the organization's strategic objectives; (iii) intrinsic motivation: employees should naturally be curious and have the desire to learn; (iv) risk-taking: enable employees to feel psychologically safe to take risks, generate new ideas and embrace new projects; and (v) connection and collaboration: provide a work environment that encourages the creation of partnerships and collaborative work.

At Pixar, creativity is also a fundamental factor for the success of his films. In addition to innovating in technology and in the development of its stories, Pixar has also innovated in the

way its team is managed. Through innovation in organizational management processes, Pixar seeks to encourage teams to develop new ideas for their films. Catmull & Wallace (2014) emphasizes the role that Pixar has played in achieving collective creativity, breaking down barriers that could prevent some employees from innovating. In this sense, Pixar promoted a culture and processes that encouraged people to share their work still in progress and promoted the support to employees from different disciplines building interdisciplinary teams.

Conclusions and Practical Implications

Innovation helps to develop new products, services, and business models that make people's life easier. For this to happen, it is fundamental that innovation is valued and duly recognized by companies. Innovation as the company's core strategy guides investments defines research focus and promotes development from the point of view of the market and stakeholders. The innovation process works differently depending on the context, the type of organization, the organization, the maturity of the products/services and the organizational culture, and other factors that involve the innovation process.

This study intended to explore and understand how two of the most recognized companies of Silicon Valley (i.e., Google and Pixar) promote a culture of continuous innovation. The results allowed us to identify a set of common elements that can serve as lessons for companies that want to be innovative.

The first lesson is that innovation is not a duty or responsibility to one person. In fact, the great innovations only occur from the collaboration and involvement of the entire organization. It is therefore essential to promote a culture of collective creativity in which all employees feel they are an integral part of the innovation process. However, the ideas and the launchers of great ideas often come from perceptions and worldviews very private and individual, so just as it is important to direct the efforts and resources of an organization to develop creative ideas, it is also important to provide freedom for people show all your intelligence and personal interests. This new way of thinking also makes us reflect on the role of traditional hierarchy and how people interact in creative environments. Companies focused on innovation have a higher propensity to consider the technical capabilities are more important than the traditional tiered command structure.

Other lessons also emerge as relevant, such as the existence of time for employees to think about new ideas and have enough time to dedicate to projects outside the main scope of their daily duties. Having confidence and openness to support these projects from the top management is a key factor. Another important aspect is the ability of the company to have risk tolerance, since the entrepreneurial activity always involves high risks of failure. Knowing how to deal with failure, learning from it, and working to find innovative solutions is a responsibility of everyone within the organization.

Some innovation processes and tools were found in these companies. Brainstorming and braintrust sessions are used at Pixar to foster communication within the company. It enables each employee in an interactive way to expose their ideas and appeal to the involvement of everyone in the innovation process. Furthermore, it is essential that there is a constructive feedback process that allows innovation initiatives to be monitored over time and thus ensure their success and integration into the company. Another practice identified as quite relevant is the adoption of design thinking that allows Google to stimulate creativity and empathy within its teams. Through it is fostered the development of divergent thoughts so that later, and using practical criteria of comparison and test of alternatives, convergent thoughts could be reached.

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